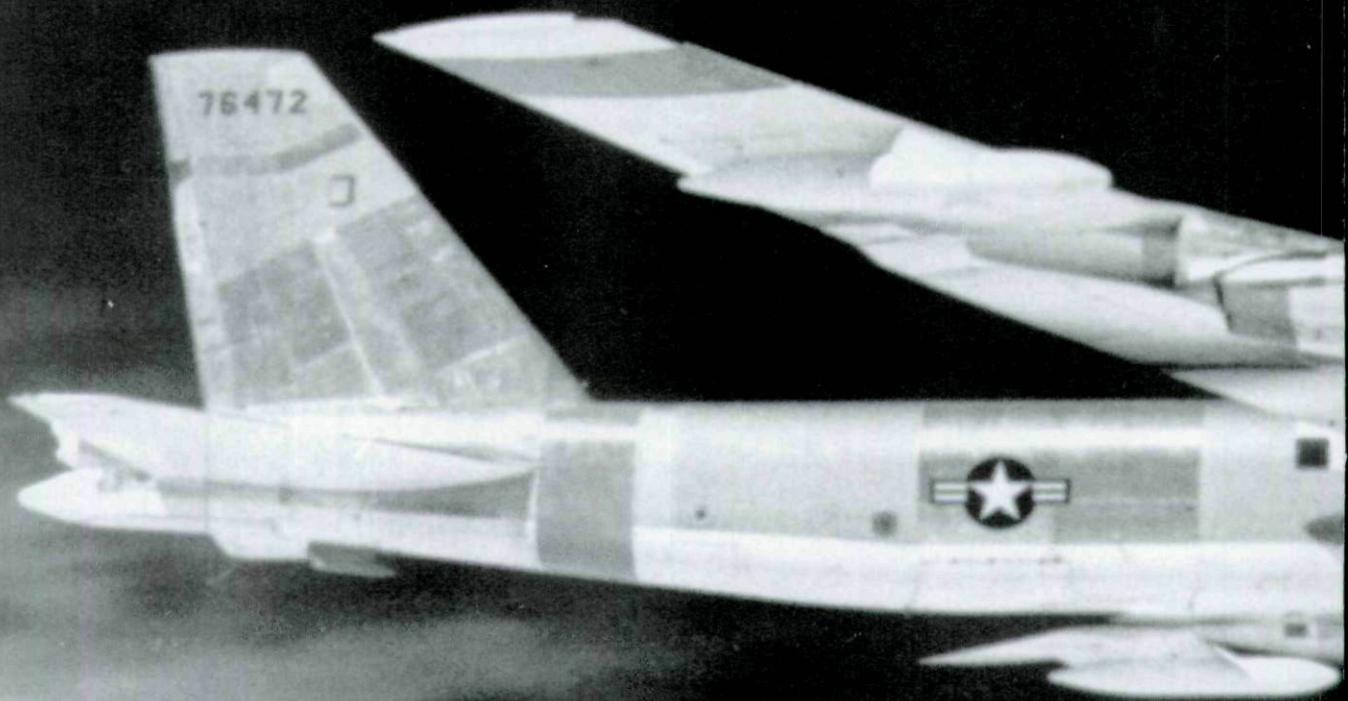


The Air Force's Legacy of Nuclear Deterrence



Enduring War



General Norton A. Schwartz
Chief of Staff, U.S. Air Force

(Overleaf) USAF test-launch of an AGM-28 Hound Dog missile, a stand-off nuclear missile that remained in the inventory for 15 years.

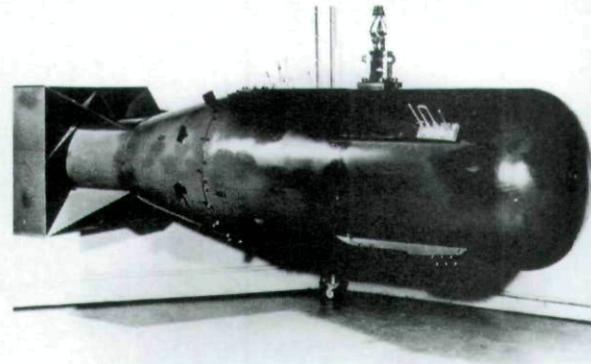
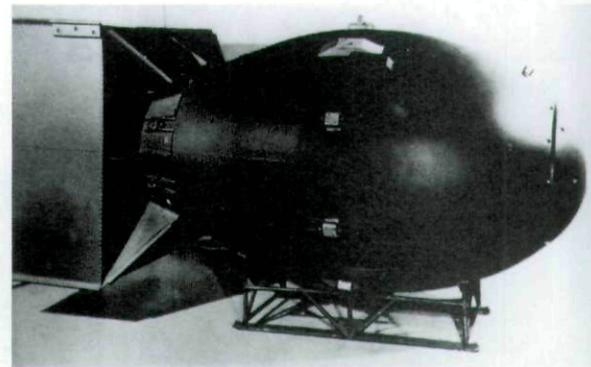
(Right top) Fat Man, the atomic bomb dropped on Nagasaki.

(Right below) Little Boy, the Hiroshima atomic bomb.

On August 6, 1945, President Harry S. Truman released a statement to the American people and the world that opened a new era in history:

Sixteen hours ago, an American airplane dropped one bomb on [Hiroshima] and destroyed its usefulness to the enemy. That bomb had more power than 20,000 tons of T.N.T. It had more power than two thousand times the blast power of the British "Grand Slam" which is the largest bomb ever used in the history of warfare.... It is an atomic bomb.¹

Three days after the crew of the B-29 *Enola Gay* dropped "Little Boy" on Hiroshima; the crew of *Bockscar* dropped "Fat Man" on Nagasaki. The two atomic bombs killed tens of thousands of people and destroyed the two cities. The explosions, coupled with the declaration of war by the Soviet Union on Japan on August 8, 1945, convinced Emperor Hirohito that the U.S. now had "a cruel new weapon" that could destroy the Japanese homeland.² Certainly, other actions, including the Air Force's firebombing of major enemy cities between March and August 1945, destroyed Japan's war production industry and drove millions of evacuees from the Japanese urban areas, and the U.S. Navy's blockade of Japan's maritime supply line set necessary preconditions for victory. Although the war against Japan ended, President Roosevelt's decision to develop an atomic weapon and President Truman's decision to employ it ushered in the atomic age.³ The advent of these awesome weapons also prompted a reconsideration of national security strategy, based on a rapidly evolving novel theory of nuclear deterrence. These developments, which took place during successive presi-



dential administrations, placed great demands on the Services to adapt quickly to meet new national policies.⁴

From the fallout of Hiroshima and Nagasaki to the global instability of the present day, the importance placed on nuclear deterrence as a pillar of national security policy has varied as a factor of fiscal reality, advanced technology, geopolitics, and national security priorities.

This article recounts how the Air Force met the demands of nuclear policy. Section I, "Evolution in

The B-29 *Enola Gay*, which dropped the first atomic bomb, "Little Boy" on Hiroshima.





Relative Stability," discusses how Airmen during the early days of the Cold War established the famed Strategic Air Command (SAC) to meet the nation's deterrent strategy, and how SAC effectively maintained its alert ready strike force for more than forty years. Section II, "Turbulent Times," describes how Airmen, in the post-Cold War era, adapted successfully to significant shifts in the international environment and national policy. The final section, "Beyond the Horizon," outlines the Air Force's plans to meet the challenges of the future as guardians of a nuclear arsenal that remains a vital component of the nation's nuclear strategy.

Evolution in Relative Stability

During the Cold War, the Soviet threat shaped American military and diplomatic decision making around a dangerous but stable bipolar alignment. Because of this threat, the United States strived to maintain "nuclear and conventional capabilities sufficient to convince any potential aggressor that the costs of aggression would exceed any potential gains that he might achieve."⁵ Although other nations would develop nuclear weapons during this period, the Soviet Union alone possessed an arsenal that rivaled America's capabilities. U.S. policy makers concluded that "the most significant threat to U.S. security interests remained the global challenge posed by the Soviet Union."⁶

From 1946 to 1989, seven distinct presidential policies were formulated in response to the strategic challenge posed by the Soviets Union: the Truman Doctrine, Eisenhower's New Look and massive retaliation; Kennedy's flexible response; Johnson's policy of assured destruction; Nixon's combination of *realpolitik* and *détente*; Carter's countervailing strategy; and Reagan's emphasis on

nuclear force buildup and negotiated weapons reduction. In these years of relative stability in U.S. strategy, the Air Force's response to national policy was characterized by precision, accountability, reliability, and innovation.⁷

Precision, Accountability, and Reliability

The Strategic Air Command (SAC) was established in March 1946, along with Tactical Air Command (TAC) and Air Defense Command (ADC). It is important to note that the predecessor to SAC was the Twentieth Air Force of World War II commanded by General Henry H. "Hap" Arnold in Washington, reporting *directly* and *accountable* to the Joint Chiefs of Staff (JCS). This was the global strategic air force, the model and predecessor to SAC that operated the B-29s against Japan and solidified the postwar Air Force's claim to the strategic atomic mission. With creation of the Unified Command Plan of December 1946, approved by the President, SAC became a specified command and its mission became one of the highest priorities in national defense: "There is established a Strategic Air Command composed of strategic air forces not otherwise assigned. These forces are normally based in the United States. The commander of the Strategic Air Command is responsible to the Joint Chiefs of Staff..."⁸

SAC formed the bedrock of U.S. Cold War nuclear deterrence policy. Army Air Forces (AAF) regulations tasked SAC to "provide and operate that portion of the AAF which is maintained in the United States, and in such other areas as may be designated from time to time, for the employment of air attack in any location on the globe . . . either independently or in cooperation with other components of the armed forces."⁹ General Carl A. Spaatz, Commanding General, AAF, defined SAC's mission:

Conduct long-range offensive operations in any part of the world, either independently or in cooperation with land and naval forces

Conduct maximum range reconnaissance over land or sea, either independently of or in cooperation with land and naval forces

Provide combat units capable of intense and sustained combat operations employing the latest and most advanced weapons

Train units and personnel for the maintenance of the strategic forces in all parts of the world

*Perform special missions as the commanding general, Army Air Forces may direct.*¹⁰

In 1948, General Hoyt S. Vandenberg asked world-renowned aviator Charles A. Lindbergh to evaluate SAC's readiness. Lindbergh's evaluation revealed several serious inadequacies: lack of facilities and methods; poor living conditions; flight crews incompetent in core flying areas due to cross-



training; and under-manning.¹¹ As Lindbergh noted:

*...accident rates are high, landings are too rough and fast, crew duties are not smoothly coordinated, equipment is not neatly stowed in flight, engine and accessory troubles are excessive, and there are not enough training missions which simulate the combat missions which would be required in event of war.*¹²

*Numerous assignments to temporary duty, an intensive cross-training program, and extra-curricular flying activities have seriously interfered with training in the primary mission of the atomic squadrons. Resulting absences and frequent changes in home locations have had a bad effect on family relationships and over-all morale.*¹³

Due in part to the findings of this report and in part to other concerns, General Vandenberg decided that SAC needed new leadership. Consequently, on September 21, 1948, Headquarters U.S. Air Force announced General Curtis E. LeMay as Commander of SAC and reassigned General George C. Kenney as Commander of Air University, Maxwell AFB, Alabama. As SAC historian Walton S. Moody observed, "LeMay had the right kind of experience, with a record of taking over faltering organizations and getting them into shape."¹⁴

General LeMay's leadership was pivotal in the development of this discipline. When he took command in 1948, he told SAC members that they were no longer preparing for war, but that they were at war.¹⁵ "We had to operate every day as if we were at war," he later recalled, "so if the whistle actually blew we would be doing the same things that we were doing yesterday with the same people and the same methods."¹⁶ General LeMay insti-

tuted regulations, policies, and procedures that stressed the importance of the discipline required for war. LeMay firmly believed a highly specialized strategic force was paramount for credible nuclear deterrence:

*A deterrent force is one that is large enough and efficient enough that no matter what the enemy does, either offensively or defensively, he will still receive a quantity of bombs or explosive force that is more than he is willing to accept. . . . A deterrent force is an effective nuclear offensive force which is secure from destruction by the enemy regardless of what offensive and defensive action he takes against it.*¹⁷

In order to prepare SAC for its new mission, LeMay borrowed from his experiences in Europe and the Pacific during World War II, instituting a more rigorous and realistic training program:

*We believe that, by working hard and maintaining our efficiency at the highest possible standards, that is the best thing we can do to assure [that] wars large or small will not happen.... I think that most wars are started when one nation thinks it could beat the other one. If they didn't think they were going to win, they certainly would never start it.*¹⁸

After learning of impractical training routines on which bomber crews trained, LeMay ordered more realistic training and enforced standards. For example, bombing crews routinely conducted training missions at 12,000-15,000 feet, an altitude far below that required for combat operations. At these lower altitudes, crews were not required to use the uncomfortable supplemental oxygen system necessary at combat altitudes and radar equipment functioned more effectively.¹⁹ Crews also regularly conducted radar bomb runs against targets with large radar reflectors in the middle of the ocean which made them easily identifiable. LeMay ordered that bomber crews fly at higher altitudes, wear the complete combat ensemble, and attack targets with small radar reflectors. These realistic training standards eventually increased the efficiency and effectiveness of bomber crews. Major General John B. Montgomery, former SAC Director of Operations, affirmed that the efficient approaches implemented by General LeMay "brought 3,000 crews up to combat strength and effectiveness as SAC executed three sequential development plans" from 1948 to 1949.²⁰

LeMay also reorganized maintenance functions for improved efficiency. Before LeMay, squadrons accomplished most maintenance functions, so maintenance personnel were part of the operational squadron. The SAC commander moved all maintenance specialists from the squadron level to the group level, focusing them on the fleet as a whole.²¹ Consequently, the increase in sortie generation rate meant that more aircraft were available for flying. Although crew members complained about these changes—squadron commanders were accustomed to controlling all maintenance func-

A SAC bomber crew scrambles for its aircraft.



tions in the operational squadrons—LeMay implemented his changes on the basis of his desire for “effectiveness not niceties.”²²

Accountability was to become the benchmark of SAC culture to ensure that the Air Force met the nation’s demands. General LeMay described his approach this way, “We checked all of these things, all the time. We had a team go out. They would take off from Offutt, HQ SAC, clear for one base but land at another, and hand the commander a letter: Execute your war plan.”²³ Deviating from the checklist meant inspection failure. When wings failed inspections, their commanders were often relieved of command.²⁴

Inspections, including no-notice inspections to check constant mission readiness, ensured the nation’s nuclear enterprise met the established rigorous standards. General David A. Burchinal, one-time SAC member and later Director of the Joint Staff, remarked:

Then we got into “No-notice.” In other words, you would go into a period where orders might come to your wing without warning. All of a sudden, the word would come through; you went to the airplane, and you took off twelve airplanes out of the wing.²⁵

Operational readiness inspection teams often arrived unannounced at a base and ordered the base commander to execute their war plans. Commanders who performed well during the inspections usually gained status, those who failed found new jobs.²⁶

Standardization was the hallmark of SAC’s ability to ensure the viability of the nuclear deterrent mission. Standardization meant that everyone in the command followed written procedures

explicitly, performed their jobs quickly with precision, and worked as a team toward mission accomplishment. In November 1948, LeMay ordered his numbered air force commanders to make standardization programs a priority across the command. Each crew position received technical manuals and checklists that outlined detailed procedures required to accomplish each specific task.²⁷

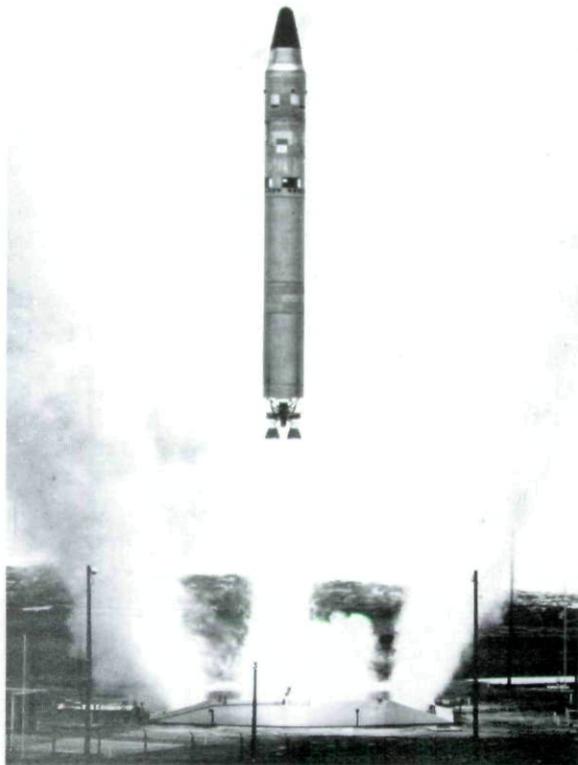
This focus on compliance with standardized procedures produced immediate results, especially with respect to bombing accuracy, which increased dramatically. At the beginning of 1949, crews averaged a miss distance of 3,679 feet; by the end of the year the miss distance for medium bombers (B-29s/50s) was 2,928 feet—despite flying longer missions at higher altitudes.²⁸ SAC accident rates also declined dramatically. At the onset of LeMay’s tenure at SAC, the command averaged more than 60 accidents per 100,000 flying hours; LeMay believed that the problem was a lack of checklist discipline.²⁹ He demanded that crews follow checklist standard operating procedures (SOPs) or he would hold them and their commanders accountable. In addition, he demanded wing commanders fly to Offutt AFB to personally brief him on any accident. Within two years of implementing these changes, SAC had the lowest accident rate in the Air Force.³⁰ LeMay justified his uncompromising leadership approach in large part by citing the great risks that handling nuclear weapons entailed. A “Zero Defects” standard seemed to be the only acceptable one.

In August 1949, the Soviet Union joined the atomic age with a successful atomic bomb test. Then came the Korean War and disturbing intelligence reporting of Soviet advancement in long-range ballistic missiles research. In January 1950,



(Above) A missile combat crew in a launch control center. In this case, the two-man crew indicates it is for the solid-fuel Minuteman ICBM.

(Right) A liquid-fueled Titan II ICBM launches.



concomitant with his decision to go ahead with a crash program to develop the hydrogen bomb, President Truman directed a "reconsideration of national security strategy." The resulting document, NSC-68, emphasized that the U.S. would have to maintain its deterrent capability to conduct strategic air operations against the Soviet Union and underlined the importance of building up SAC.

The Air Force's strategic deterrent program meshed with the Eisenhower administration's New Look policy. The so-called "limited war" in Korea paved the way for the New Look. The Air Force convened its leadership at Bar Harbor, Maine, in the

summer of 1952 to promulgate a major "New Phase" outlining the resources required to maintain a powerful, permanent strategic deterrent force. On January 12, 1954, Secretary of State John Foster Dulles struck the keynote for the New Look:

Local defense must be reinforced by the further deterrent of massive retaliatory power.... We need allies and collective security. Our purpose is to make these relations more effective and less costly. This can be done by placing more reliance on deterrent power and less dependence on local defensive power.³¹

With the evolution of the New Look, SAC became the military arm of U.S. foreign policy. General LeMay emphasized that "offensive air power must now be aimed at preventing the launching of weapons of mass destruction against the United States or its Allies. This transcends all other considerations...."³² In 1957, LeMay recommended that SAC and TAC be combined into an "Air Offensive Command" under a single commander. The next step, according to LeMay, would be "unified control of all air offensive forces, regardless of service, under a single air commander."³³

In the late 1950s, the Air Force supported integrated strategic planning and greater accountability in the nuclear chain of command. The Eisenhower administration's 1958 Reorganization Act provided the Secretary of Defense increased unity in strategic planning and operational direction. General Thomas D. White, USAF Chief of Staff, supported the administration, observing before Congress that it was crucial "that our combat forces be organized into truly unified commands and that our strategic and tactical planning be completely unified."³⁴

In August 1960, Secretary of Defense Thomas S. Gates directed establishment of the Joint Strategic Target Planning Staff (JSTPS), consisting of personnel from all services. The JSTPS would prepare and maintain a National Strategic Target List and a Single Integrated Operational Plan (SIOP) to commit weapons to specific targets. The JSTPS was located at SAC Headquarters with the Commander-in-Chief, SAC, as Director of the planning staff. This was a landmark decision in strategic nuclear planning and accountability.

Innovation

Since before the end of World War II, the United States military services had also conducted research in missile technology, these efforts were mired in "stop-and-go development, unrealistic requirements, divided authority, low priorities, and indecision over whether the emphasis should be on ballistic or winged missiles."³⁵

The consensus of scientific opinion at this time predicted that a ballistic missile capable of carrying a nuclear warhead would not be feasible until the mid-1960s; nuclear payloads were simply too large and too heavy. However, technological advances in

(Right) Gen. Bernard A. Schriever.



nuclear weapons, specifically the development of a fusion nuclear warhead, changed that reality.³⁶ Staying on the cusp of innovation and abreast of emerging technologies, in March 1953, Brig. Gen. Bernard A. Schriever learned about the successful test of a hydrogen nuclear device. Hydrogen bombs would be lighter but more powerful than atomic bombs, so when coupled with an intercontinental ballistic missile (ICBM) would require less thrust.³⁷ Armed with this information, General Schriever urged the Air Force Scientific Advisory Board to formalize their findings and issue a report that confirmed the feasibility of a light-weight, high-yield warhead. This technological breakthrough coupled with General Schriever's foresight had a tremendous impact on national policy.

Such advances in technology highlight the interdependent relationship between technology and national security policy. The advent of smaller sized and higher yield nuclear warheads provided decision makers new alternatives. The potential capabilities of the hydrogen bomb stoked the imaginations of Air Force officials, notably Trevor Gardner, special assistant for research and development. Convinced that the simultaneous development of the hydrogen bomb and ballistic missiles was critical to meeting national security objectives, Gardner formed an evaluation committee, informally known as the Teapot Committee.³⁸ Dr. John von Neumann chaired the committee, which included several other renowned scientists, engineers, and industrialists. General Schriever's office provided staff support.

In its February 1954 report, the Teapot Committee confirmed the feasibility of fielding an ICBM before the mid-1960s, provided it was accom-

panied by a radical reorganization of the acquisition process; it recommended the creation of a new agency that would be "relieved of excessive detailed regulation."³⁹ The growth in Soviet conventional strength, missile technology, and nuclear technology gave urgency to implementing these changes.

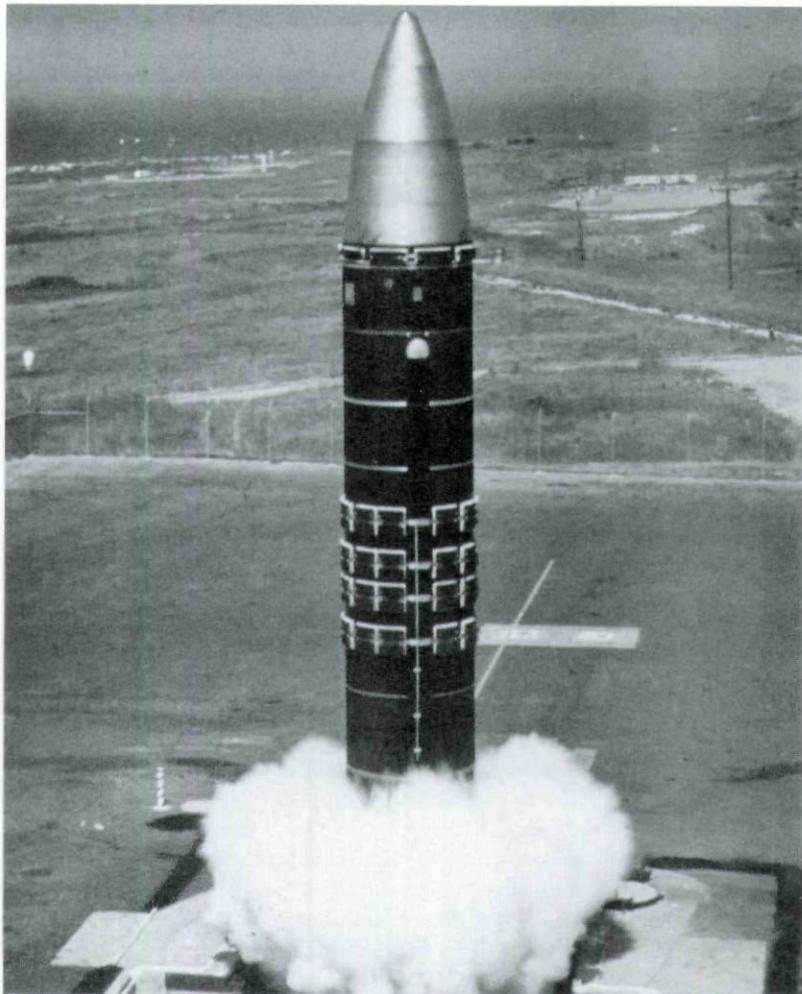
In accordance with the Soviet threat, the committee's recommendations, and the administration's strategic goals, the Air Force reorganized its acquisition process. Prior to ballistic missile development, the Service used a single prime contractor to develop new weapon systems.⁴⁰ This approach worked reasonably well for simple systems, but was woefully inadequate and cumbersome for more complex systems—changes in design, performance specifications, and components often resulted in cost overruns and program delays.⁴¹

Mr. Gardner convinced Secretary Talbott and Chief of Staff General Nathan Twining that ballistic missile development was too important to follow the traditional acquisition process. In March 1954, Secretary Talbott and General Twining directed the Air Research and Development Command (ARDC) to establish a military-civilian group to "redirect, expand, and accelerate the Atlas [ICBM] program."⁴² Schriever's Western Development Division (WDD) managed the ICBM program. He reported directly to the commander of ARDC, bypassing the bureaucratic hurdles in the decision-making process and giving him the necessary responsibility, autonomy, and flexibility to develop an ICBM in short order.⁴³

General Schriever introduced several measures that ensured collaboration of effort, sharing of ideas, and efficiency. He ordered the separate teams developing Atlas and Titan to maintain as much interchangeability between the subsystems as possible. Further, he developed a computer capacity to "automate management information on a nearly instantaneous basis, permitting him and his managers to track progress in the various programs."⁴⁴ This allowed General Schriever to concentrate on improving performance.

Another important area where General Schriever made improvements was in ballistic missile testing. He abandoned the original plan of building test vehicles to speed up the testing process and instead used actual Atlas A missiles for test; as testing progressed, the test community used more complex Atlas variants. This incremental approach to testing not only accelerated the developmental and testing processes, but also allowed for recognition of emerging problems at relevant points in the design process.

Staying attuned to developments that might further improve capabilities, WDD explored the feasibility of using solid rather than liquid propellant for ballistic missiles. First known as Weapon System Q, the WDD used solid propellant to develop the three-stage Minuteman in a remarkable three years. By 1962, at the time of the Cuban missile crisis, the Air Force provided the nation ten Minuteman missiles in underground silos ready for combat. Inception to full operational capability took



(Above) A Peacekeeper ICBM test launch.

(Right) The B-52s also dropped iron bombs, in great numbers, when called upon.

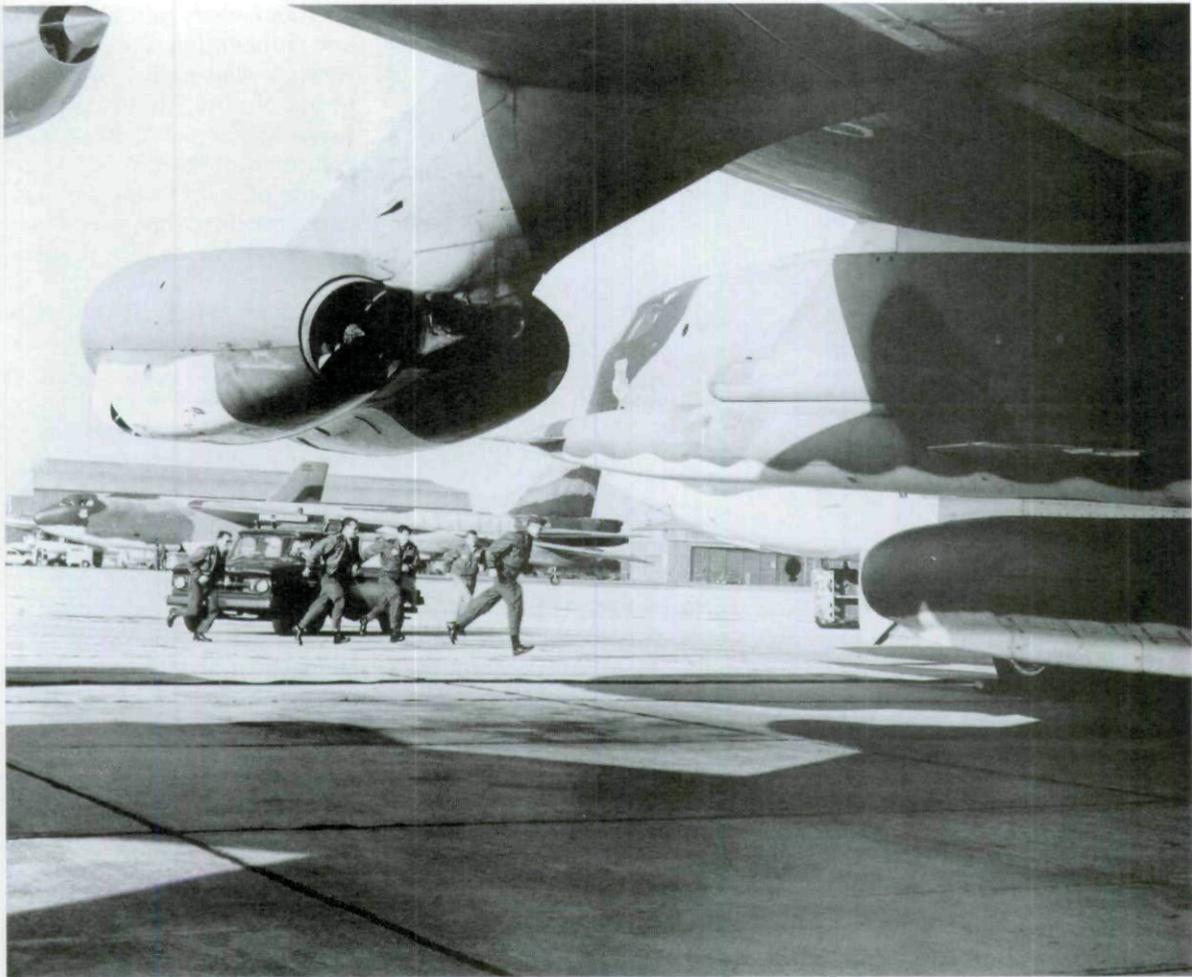


only four years and eight months.⁴⁵ The efficiency and innovative prowess demonstrated by the Airmen who delivered these crucial capabilities ahead of schedule to meet the policy demands of the Cold War are perhaps best captured by General Schriever's own words, "The world has an ample supply of people who can always come up with a dozen good reasons why a new idea will not work and should not be tried, but the people who produce progress are a breed apart. They have the imagination, the courage, and the persistence to find solutions."⁴⁶

During the Cold War, Airmen successfully adapted to the varying demands of every U.S. president. SAC stood strong and very capable of meeting any presidential nuclear policy directive. In a similar manner, the innovations in acquisition processes implemented by General Schriever ensured that any modifications required by policy changes occurred rapidly, thus providing policymakers flexibility, resiliency, and a credible nuclear force. As the Cold War drew to a close, significant changes in the global security environment and dramatically different presidential policies prompted Air Force senior leaders to rethink the Air Force's nuclear deterrent posture.

Prior to the development and full operational capability of U.S. Navy submarine-launched ballistic missiles, SAC stood alone as the nuclear deterrent force. After the introduction of Polaris submarines, SAC was responsible for two thirds of the nuclear triad—land-based ICBMs and strategic bombers. The advent of the Triad and the acquisi-

Members of a SAC B-52 combat crew race to their aircraft, one of many on ground alert, available on a moment's notice to carry the crew and the attached Hound Dog missiles on a nuclear mission.



tion of tactical nuclear weapons by TAC, ADC, as well as the Air Force's overseas major commands led to the creation of the SIOP.

Turbulent Times

SAC's culture of precision and accountability as well as the excellence in acquisition programs exemplified by General Schriever stood the Air Force in good stead in meeting national objectives during the Cold War. However, the international environment—and the strategic assumptions beneath nearly five decades of national security policy and Air Force operations—changed dramatically with the disintegration of the Soviet Union. The bipolar world ended in the early 1990s, with the United States emerging as the world's preeminent superpower. In this unipolar order of nation states, non-state actors and extremist groups began to exercise more influence. Within this new world order, President George H.W. Bush continued reductions of U.S. nuclear forces, but still firmly advocated nuclear deterrence policy. When President William J. Clinton took office, his administration conducted the first Nuclear Posture Review (NPR) in 1993. The NPR concluded that nuclear weapons remained a vital part of deterrence and that the U.S. needed to maintain the Triad as a critical component of nuclear deterrence. It also concluded that the START-II limitations

“sustained U.S. nuclear deterrence.”⁴⁷ In 1997, President Clinton approved a revised U.S. nuclear policy, stating the Cold War was over and that nuclear weapons would play a smaller but substantial role in U.S. national strategy.

Following President Clinton, President George W. Bush faced an entirely different set of global challenges. The rise of non-state actors and the tragic events of 9/11 caused the national security establishment to reassess nuclear deterrence. Even before these events, sensing a need for change, President Bush ordered a second NPR. The 2001 NPR concluded that a strategic posture based solely on offensive nuclear forces for deterrence was unsuitable for today's global environment. This NPR established several new paradigms. First, it introduced a New Triad that completely broke away from traditional thinking. The 2001 NPR declared the traditional nuclear Triad obsolete and proposed a New Triad composed of offensive weapon systems, defensive weapon systems, and a responsive infrastructure. Second, it “mainstreamed” nuclear weapons by making them one of many offensive strategic capabilities, thereby deemphasizing their importance and the rationale for modernizing nuclear forces.

Secretary of Defense Donald Rumsfeld explicitly addressed this nuclear deterrence paradigm shift in January 2001, when he affirmed:

The venerable B-52 has been a mainstay in the fleet since the 1950s.



*The credibility, safety, reliability, and effectiveness of the nation's nuclear deterrent must remain unquestioned. But it must be adapted to 21st Century deterrence needs. Credible deterrence no longer can be based solely on the prospect of punishment through massive retaliation. Instead, it must be based on a combination of offensive nuclear and non-nuclear defensive capabilities.*⁴⁸

In accordance with the 2001 NPR, the 2006 National Security Strategy (NSS) declared “the new strategic environment requires new approaches to deterrence and defense.”⁴⁹ It redefined national strategy, stating that deterrence “no longer rests primarily on the grim premise of inflicting devastating consequences on potential foes.”⁵⁰ The NSS required both offensive and defensive weapons suitable for the new global environment in the form of a “New Triad,” which was to consist of, “offensive strike systems (both nuclear and improved conventional capabilities); active and passive defenses, including missile defenses; and a responsive infrastructure, all bound together by enhanced command and control, planning, and intelligence systems.”⁵¹

While national policy no longer placed nuclear weapons as the centerpiece of deterrence strategy, they still remained relevant. In light of these changes, the Air Force adapted accordingly, embarking on a new approach to ensure mission reliability, precision, accountability, and innovation.

Air Force Reorganization

Given a new global environment and new policy approaches, the Air Force embarked on a differ-

ent path toward deterrence that sought to balance nuclear and non-nuclear swords and shields. In particular, the Air Force responded to policy changes with major organizational changes that reflected competing tensions. On one hand, there was an increased demand for conventional air and space capabilities; fiscal realities and treaties also required reductions in the nation's nuclear arsenal. On the other hand, the Air Force retained responsibility for much of the nuclear deterrence mission and therefore remained accountable for providing a viable nuclear force.

To a substantial degree, the Air Force's strategic struggle with its nuclear enterprise during the post-Cold War period was a by-product of national policy. As former Secretary of Defense Dr. James Schlesinger observed in his 2008 report on the Air Force nuclear enterprise, “Changes made by the Air Force after the Cold War were in response to the defense downsizing of the 1990s as well as national leadership priorities.”⁵²

With less national emphasis on nuclear weapons during this period, the Air Force lost sight of the importance of maintaining a viable air and space power-based nuclear deterrent capability. According to the Air Force Blue Ribbon Review of Nuclear Weapons Policies and Procedures report, as the size of the nuclear arsenal was reduced, the Air Force shifted emphasis to conventional missions, which were—and remain—in high demand.⁵³ Dr. Grant Hammond, Dean, NATO Defense College, eloquently summarized the Air Force's attitudinal disposition towards nuclear weapons:

The Air Force went from a theology of nukes in the

An ICBM test launch from Vandenberg AFB, California, one of a series designed to ensure missile safety and reliability.



*Cold War, where we thought very consciously and persistently about nukes, to an agnosticism of nukes, where we knew they were there, we knew they were important, but we really did not spend much time thinking about their use or our stewardship of them.*⁵⁴

In 1992, these shifting national priorities and an anticipated peace dividend following the end of a long and costly stand-off with the Soviet Union prompted one of the largest organizational changes in Air Force history. Having remained relatively constant since 1947, the major command structure, which before 1992 consisted of thirteen major commands—seven operational and six support—was reduced to six operational commands and two support commands. With respect to the nuclear enterprise, SAC and TAC combined to become Air Combat Command (ACC). Under the new construct, ACC was responsible for all Air Force “fighters, bombers, ICBMs, reconnaissance aircraft, command and control aircraft, some tactical airlift, and some tankers.”⁵⁵ More importantly, ACC and Air Force Space Command (AFSPC) were now both responsible for different parts of the nuclear mission and served as force providers for United States Strategic Command. This fragmentation of nuclear forces, which split responsibility between ACC

(bombers) and AFSPC (ICBMs), resulted in the loss of a single champion for all USAF nuclear issues.

The primary goal of the reorganization was “to increase combat capability through air power integration, develop a clear and simple organizational structure, and unify command”⁵⁶ while enhancing peacetime efficiencies, increasing combat effectiveness, and maintaining nuclear competence.⁵⁷ Given shrinking defense budgets coupled with the reduction in nuclear weapons, the reorganization clearly met only part of its mandate by allowing the Air Force to better meet conventional requirements.

Throughout the past two decades, the reorganization allowed the Air Force to expertly conduct numerous conventional conflicts while drawing on a competent and capable nuclear deterrent force built during the Cold War. Also, improvements in the accuracy and effectiveness of precision guided munitions and of conventional explosives reduced interest in tactical nuclear weapons. Also, improvements in The Air Force prosecuted Operations NORTHERN WATCH and SOUTHERN WATCH in Iraq; Operations ALLIED FORCE and DELIBERATE FORCE in the Balkans; Operation ENDURING FREEDOM (OEF); Operation IRAQI FREEDOM (OIF); Operation NOBLE EAGLE (ONE), and many other small scale contingents.

A B-52 with a full complement of Air Launched Cruise Missiles under its wings as viewed from its tanker aircraft.



cies—18 years of continuous conventional employment of which the nation and Airmen should be proud. Since 9/11, the Air Force has flown almost 400,000 sorties in OIF, nearly 221,000 sorties in OEF, and roughly 54,000 in ONE; additionally, the Air Force has airlifted nearly 2,500,000 short tons of cargo and expended 2,000,000 munitions. These intensive conventional and unconventional operations succeeded in part due to the leadership, skill, and innovation of Airmen that blossomed under the commands formed in 1992. Further, throughout these conflicts, the constant readiness of Air Force bomber and missile forces provided the nation a backstop of strategic deterrence. To some degree, the successful adaptation of the Air Force in accordance with national policy in the immediate post-Cold War period enabled the nation to fight repeatedly across the globe without sufficient attention to nuclear deterrence.⁵⁸

However, the bill for this emphasis on conventional operations inside and outside the Air Force eventually came due. The Defense Science Board Report on Nuclear Weapons Surety affirmed the negative impact of the Services focusing so intensively on conventional conflicts. The report concluded that “nuclear missions were devalued and there existed a long term trend minimizing the perceived importance of the nuclear deterrent to national security.”⁵⁹ Further, the report declared that “dispersal of responsibility for nuclear matters throughout the enterprise: OSD, Joint Staff, Strategic Command, Air Force” contributed to the decline of the importance of the nuclear enterprise.⁶⁰

Over several years and many military engagements, the Air Force’s nuclear sustainment system became fragmented and the pool of nuclear-experi-

enced Airmen atrophied as SAC veterans retired and less time was allocated to maintaining nuclear operational proficiency. Air Force leadership failed to advocate, oversee, and properly ensure the maintenance of nuclear-related skills. Deficiencies in inspection processes also contributed to the erosion of the culture of accountability and rigorous self-assessment formerly associated with the Service’s high standards of excellence in nuclear mission areas. Military down-sizing since the end of the Cold War reduced the size of nuclear forces and adversely impacted the modernization or recapitalization of some systems in the Air Force nuclear enterprise. Air Force concepts of operations evolved to emphasize non-nuclear missions and capabilities. Air Force contributions to expeditionary joint and coalition operations and a renewed emphasis on irregular warfare methods began to overshadow the Air Force’s traditional competency in nuclear deterrence.⁶¹

Beyond the Horizon

Although the benefits of the Air Force’s post-Cold War reorganization were substantial, its ultimate cost to the nuclear enterprise was high. True to the spirit of precision, accountability, and innovation that are the Air Force’s legacy in nuclear and non-nuclear matters, recent failures in the nuclear enterprise require adjustments to ensure that the Air Force continues to meet the full spectrum of the nation’s security requirements. Harkening back to its foundational principles, the Air Force recently instituted wide-ranging changes to ensure that its commitment to the nuclear enterprise continues to meet the policy objectives of the Commander in Chief and keep our nuclear weapons safe, secure,

and reliable.

Credible strategic deterrence requires an unwavering commitment to nuclear deterrence as its cornerstone. It is basic to national security and to our allies. The hallmarks of our performance standards when it comes to the nuclear deterrence mission are precision and reliability. A culture of compliance, clear organizational structures, and active governance processes are the principal pillars to achieve sustained excellence in this most vital mission area. We are building a composite structure of sustainment, operational, and Air Force headquarters organizations that are appropriately resourced with focused processes to ensure safe, secure, and reliable operations. We must enable current and future capability, advocacy, and a culture of compliance throughout the Air Force while implementing processes that provide appropriate accountability and oversight to our nuclear mission.

To effectively reinvigorate the nuclear enterprise, the Air Force will need to restore a culture of compliance with exacting adherence to standards, focus on sustainment, rebuild our nuclear expertise, invest in our nuclear capabilities, organize to enable clear lines of authority, and secure confidence in our stewardship role through open communication. These tasks are not new. Generals LeMay, Schriever, and the generations of Airmen who supported or followed them showed us the way; we just need to get back on that one familiar path.

Culture of Compliance

We are rebuilding a nuclear culture of compliance that reflects robust inspection processes faithful to our proud heritage. All assessments and inspections will apply common standards to effectively uncover, analyze, and address systemic weaknesses within the nuclear enterprise. This will require the combined efforts of leaders and multiple organizations committed to these objectives. Leaders at all levels are making nuclear mission oversight and self-assessment a top priority. Leadership will take ownership and responsibility for assessments and enforcing accountability.

Nuclear Expertise

The nuclear enterprise must have properly trained, seasoned professionals focused on the nuclear deterrence mission. The Air Force is examining education and training across the enterprise, improving identification and tracking of nuclear expertise, and establishing a force development construct to ensure that senior leadership are involved in the development of future nuclear leaders. The Air Force will rebuild its expertise through Air Force-wide training, education, and career force development initiatives to create an institutional understanding of its nuclear responsibilities.

Investment

The Air Force will provide needed investment and resources for this vital mission area in support of a clear, long-term commitment to sustain, modernize, and when directed recapitalize its nuclear capability. Based upon national guidance as well as combatant command and major command requirements, the Air Force will deliver reliable and modern operational capabilities that meet our nation's nuclear requirements.

Organization

The creation of Air Force Global Strike Command (AFGSC), the Strategic Deterrence and Nuclear Integration Directorate (AF/A10), and the strengthening of the Air Force Nuclear Weapons Center (AFNWC) will ensure that the Air Force has the proper organizational structure to manage, sustain, develop, and represent the Air Force nuclear enterprise. The AFGSC consolidates all nuclear-capable bombers and ICBMs under one command, placing a single commander in charge of all Air Force nuclear operations, including training and equipping for all B-2, B-52, and ICBM weapons systems. As Air Force Secretary Michael Donley has stated, this approach "restores the necessary focus on the nuclear mission [and] provides a clear chain of command for all Air Force nuclear forces."⁶² Learning from our legacy of compliance and accountability, this new command will produce improved inspections, a greater emphasis on developing nuclear expertise, a synergistic system to track nuclear materials, and a keenly focused culture.

The new A10 Air Staff directorate reports directly to the Chief of Staff of the Air Force, and is responsible for policy oversight and integration of all nuclear enterprise activity and issues. By elevating nuclear matters to a direct reporting relationship to the Chief of Staff and centralizing all nuclear policy responsibilities into one organization, the A10 directorate will increase institutional focus and provide a single point of contact at the headquarters for the management and integration of nuclear issues.

Sustainment

The Air Force is also consolidating all nuclear sustainment matters under an expanded AFNWC at Kirtland AFB. This action will address previously ambiguous chains of command by transferring nuclear-related program management responsibilities from the Space and Missile Systems Center to the AFNWC. In addition, the center will extend positive inventory control over all nuclear-related materials entrusted to Air Force custody.

This approach restores the necessary focus on the nuclear mission, provides a clear chain of command for all Air Force nuclear forces, and allows for one-to-one alignment between operations in AFGSC and sustainment with the AFNWC. In essence, the new command has one source for

nuclear sustainment, and the AFNWC has one operational customer.

Conclusion

Airmen and students of history must be mindful of the enduring importance of deterrence in national security policy and the paths Airmen have followed to provide pivotal capabilities. Nuclear deterrence isn't a fading construct in national security; Airmen must be mindful of all we provide in this critical area. When America's armed forces are called to dissuade, deter, or if necessary, defeat adversaries that threaten our nation, we must be ready.

Nuclear forces continue to represent the ultimate deterrence capability that supports U.S. national security. Because of their immense destructive power, nuclear weapons deter in a way that simply cannot be duplicated by other weapons. The Air Force provides America with a wide variety of capabilities that contribute to nuclear deterrence.

Since its birth on September 18, 1947, the Air Force has been entrusted with the nation's nuclear deterrence mission. National policy has changed from administration to administration, and over the past sixty years the Air Force has for the most part successfully adapted to meet these changes with innovation, accountability, precision, and reliability. Today, the Air Force confidently moves forward to sustain that legacy, ensuring our performance in the future is faithful to a proud heritage

fashioned by Generals Curtis LeMay, Bernard Schriever, and many other Airmen. Credible nuclear deterrence is essential to the security of our nation, our allies, and our friends. Congress charged the Air Force and the larger defense nuclear enterprise to fix the culture, instill accountability, unity of command, and standards. The Air Force will restore its credibility by improving unity of command and effort, developing the technical skills of Air Force personnel, reinforcing nuclear mission responsibilities, promoting a culture of compliance and precision, and improving enterprise-wide oversight. These actions will ensure that we have the right culture, the right people, the right investment, and the right organizational structure in place to ensure that the Air Force provides widely recognized and respected capabilities with the intended strategic effect: enduring nuclear deterrence in the 21st Century.

The American people depend on the Air Force to deliver precise and reliable nuclear deterrence capabilities as it has for decades. Airmen accept this mission with pride, professionalism, and a solemn commitment to the highest standards of excellence. In restoring this critical mission, we will remain true to our Airmen's Creed—*we will never falter and we will not fail!* ■

NOTES

1. Statement by the President Harry S. Truman, Aug 6, 1945, (Springfield, Mo.: Truman Library Online, 1946), http://www.trumanlibrary.org/whistlestop/study_collections/bomb/large/documents/pdfs/59.pdf#zoom=100 (accessed 25 Oct 2008).
2. Richard B. Frank, *Downfall* (New York: Random House, 1999), pp. 290-91. Henry Kissinger, *Diplomacy* (New York: Simon and Schuster, 1994), pp. 398, 433-37, 446, 494, 506. Japan surrendered on Aug. 15 and signed the surrender document on Sep. 2, 1945, aboard the USS *Missouri*.
3. A nuclear weapon is an explosive device that derives its destructive force from nuclear reactions, either fission or a combination of fission and fusion. Nuclear weapons that produce their explosive energy through nuclear fission are called fission bombs, or atomic bombs. Nuclear weapons that produce nuclear energy from nuclear fusion are thermonuclear bombs.
4. For more information on nuclear deterrence theory, see Bernard Brodie's *The Absolute Weapon: Atomic Power and World Order*, Harcourt, 1946; *Strategy in the Missile Age*, Princeton University Press, 1959; *From Cross-Bow to H-Bomb*, Dell, 1962; Indiana University Press (rev. ed.), 1973; *Escalation and the Nuclear Option*, Princeton University Press, 1966; *The Future of Deterrence in U.S. Strategy*, Security Studies Project, University of California, 1968. Also see Thomas C. Schelling's *Arms and Influence*, Yale University, 1966. Other works by Colin Gray and Keith Payne provide tremendous insight into nuclear deterrence.
5. U.S. Congress, *U.S. Nuclear Weapons: Changes in Policy and Force Structure* (Washington, D.C.: Congressional Re-

search Services Report for Congress, Aug 10, 2006), pp. 3-5.

6. *Ibid.*

7. The Truman Doctrine was a proclamation by President Truman—espoused in speeches, national security documents, and legislation—that the United States would seek to contain communism, thwart Soviet aggression in Europe, stop the spread of communism throughout the world, curtail Soviet influence in international politics, and lend economic and military assistance to Greece and Turkey. The *New Look* shifted an emphasis from conventional military capabilities to air-atomic based capabilities. Land and naval force expenditures and sizes decreased, while air force and missile forces expenditures and sizes increased. Massive retaliation served one purpose: deterrence of nuclear war with the Soviet Union. President Eisenhower stated, "to depend primarily upon a great capacity to retaliate, instantly, by means and at places of our choosing." Flexible response was the Kennedy Administration's strategy to counter multiple threats, fight different types of wars, and counter Soviet aggression in multiple levels of war. Although flexible response simultaneously included nuclear weapons, it deemphasized their importance; flexible response focused on improving nonconventional capabilities. Assured destruction was a strategic concept in which two opposing sides using nuclear weapons would destroy each other. President Nixon developed a foreign policy posture based on negotiation and strength, *realpolitik*, and *détente*, which literally means an easing of tensions. Secretary of Defense Brown introduced the term countervailing—a strategy that denies the other side any possibility that it could win—but it doesn't say that our side would win.

8. JCS 1259/27, JCS Unified Command Plan, Dec 11, 1946, RG 218, 323, 361, 1946-1947 (2-26-45), Nat'l Archives II. When the USAF was established on September 18, 1947, as part of the National Security Act of 1947, the SAC mission was in effect folded into the responsibilities of the USAF.
9. Army Air Forces Headquarters, "AAF Regulation No. 20-20, Organization: Strategic Air Command," (Oct. 10, 1946), p.1 in Melvin G. Deaile, III, *The SAC Mentality: The Development of Organizational Culture within Strategic Air Command, 1948-1951*. Adams Center Virginia Military Institute, Mar. 29, 2005. Lt Col Deaile wrote this paper while a Ph.D. student at the University of North Carolina—Chapel Hill.
10. Walton S. Moody, *Building a Strategic Air Force* (Air Force History and Museum Program; 1995, Washington, D.C.), pp. 65-66.
11. *Ibid.*, p. 228.
12. Report, C. A. Lindbergh to Gen. H. S. Vandenberg, CSAF, Sep. 14, 1948, atch to memo, Col F. M. Hoisington, Chief Personnel & Administration Division, to Maj. Gen. D. M. Schlatter, Asst Dep Chief of Staff, subj: The Lindbergh Report, Oct. 19, 1948, RG 341, DCS/Ops, Asst for AE, S 1948, 319.1 Rots AEC, T & T Etc, Box 16, MMB, NA in Moody, p. 226.
13. *Ibid.*
14. Moody, p. 229.
15. Deaile, p. 8. Adams Center Virginia Military Institute, Mar. 29, 2005. Lt Col Deaile wrote this paper while a Ph.D. student at the University of North Carolina—Chapel Hill, N.C.
16. *Ibid.*, p. 3.
17. Robert F. Futrell, *Ideas, Concepts, Doctrine: Basic thinking in the United States Air Force 1961 - 1984*, (Washington, D.C.: Air Force History and Museums Program, United States Air Force, 1997), p. 464.
18. *Ibid.*, p. 450.
19. *Ibid.*, pp. 34-35.
20. Maj. Gen. John B. Montgomery, interviewed by Captain Mark C. Cleary, Apr. 30 - May 1, 1984. Harry Borowski, *A Hollow Threat: Strategic Air Power and Containment before Korea*, pp. 166-70 in Deaile.
21. *Ibid.*, p. 31.
22. *Ibid.*
23. An Interview with Generals Curtis E. LeMay, Leon W. Johnson, David A. Burchinal, and Jack J. Catton, *Strategic Air Warfare*, Edited by Richard H. Kohn and Joseph P. Harahan (Office of Air Force History, United States Air Force, Washington, D.C., 1988).
24. Deaile, pp.40 - 41.
25. Lemay, Johnson, Burchinal, and Catton Interview.
26. Deaile, p. 41.
27. *Ibid.*, p. 36.
28. Office of SAC History, "History of Strategic Air Command, 1949," (Offutt Air Force Base, Neb., K416.01, AFHRA: 1950), p. 141 in, Bernard C. Nalty, *Winged Shield, Winged Sword Volume II A History of the United States Air Force* (Washington, D.C: Air Force History and Museums Program, 1997), p. 38.
29. Deaile, p. 40.
30. *Ibid.*, p. 41.
31. Quoted in Moody, p 460.
32. Address by LeMay to USAF Commanders Conference, Jan 28, 1957, in Robert F. Futrell, *Ideas, Concepts, Doctrine: A History of Basic Thinking in the United States Air Force, 1907-1964*, Maxwell AFB, Ala: AU Press, 1974, p. 221.
33. *Ibid.*
34. Hearings before the House Committee on Armed Services, 85th Congress, 2d Session, *Reorganization of Dept. of Defense*, No. 83, pp. 6427, 6344-91.
35. Jacob Neufeld, *Bernard A. Schriever, Challenging the Unknown* (Washington, D.C.: Office of Air Force History, 2005), p. 7.
36. The Soviet Union successfully detonated an atomic weapon in August, 1949. This event motivated the American defense establishment to develop a fusion weapon. See Bernard C. Nalty, *Winged Shield, Winged Sword, Volume II, A History of the United States Air Force* (Washington, D.C: Air Force History and Museums Program, 1997), pp. 54-55.
37. *Ibid.*, p. 9.
38. *Ibid.*
39. *Ibid.*
40. *Ibid.*, p. 10.
41. *Ibid.*
42. *Ibid.* Atlas was a liquid fueled intercontinental ballistic missile. The first operational Atlas missile (D model) was assigned to Strategic Air Command in 1959 and remained on alert until it was replaced by the Minuteman in 1964.
43. Nalty, pp. 53-96 . The Titan missile, operational from 1962-1987, was developed in concert with the Atlas and the two comprised the backbone of U.S. nuclear deterrence during the early to mid-1960's.
44. Neufeld, p. 14.
45. *Ibid.*, p. 20.
46. *Ibid.*, p. 26.
47. David M. Kunsman and Douglas B. Lawson, *A Primer on U.S. Strategic Nuclear Policy*, Sandia National Laboratories, SAND2001-0053 (Albuquerque, N.M., Jan 2001), pp. 65-69.
48. Hon. Donald M. Rumsfeld, "Testimony," Senate, *Confirmation Hearing*, 107th Cong., 1st sess., 2001, 3. on 11 Jan 2001. <http://armed-services.senate.gov/statemnt/2001/010111dr.pdf> (accessed 15 Nov 2008).
49. U.S. President, "The National Security Strategy (NSS) of the United States of America," (Washington, D.C.: White House, 2002), p. 27.
50. *Ibid.*
51. NSS, 22.
52. Headquarters United States Air Force, *Reinvigorating the Air Force Nuclear Enterprise*, Air Force Nuclear Task Force, Oct. 24, 2008, p. 1.
53. *Ibid.*
54. Dr. Grant Hammond is Dean, NATO Defense College.
55. *Ibid.*
56. Bussiere, pp. 17-19.
57. *Ibid.*
58. Peyer, *Major General Polly A. Air Force Blue Ribbon Review of Nuclear Weapons Policies and Procedures*. Washington, DC: Headquarters U.S. Air Force, Feb. 8, 2008, pp. 4-6, 63-66.
59. Welch, Larry D. *Report on Unauthorized Movement of Nuclear Weapons*. Defense Science Board Report. Washington, D.C.: Department of Defense, 2008, pp. 7, 15.
60. *Ibid.*
61. *Ibid.*
62. Hon. Michael B. Donley, *Reinvigorating the Air Force Nuclear Enterprise*" (address, Center for Strategic and International Studies, Washington, D.C., Nov. 12, 2008).

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