

Nuclear Enterprise

According to the National Security Strategy, “We will protect our investment in foundational capabilities like the nuclear deterrent.” Additionally, the Flight Plan for the Air Force Nuclear Enterprise states, “Nuclear weapons are extraordinary. Their effects are orders of magnitude beyond even the most advanced conventional weapons and deterring their use against the United States and our allies is essential to preserving our way of life. For this reason, as long as nuclear weapons exist, there will be no mission more important than maintaining nuclear deterrence and safeguarding the Nation’s nuclear capabilities.” To achieve nuclear mission success at the operational and tactical levels, Airmen must understand the importance of the nuclear enterprise, how it shapes strategy and policy, and most importantly, their role in supporting the nuclear mission. This unique capability can only be maintained and poised for delivery if NCOs continue to instill values of accountability, discipline, and compliance into their daily activities for all subordinates to see. Although the Nuclear Enterprise hasn’t employed weapons since WWII, the need for its deterrent power is still as relevant as ever. It is every NCO’s duty to understand the Nuclear Enterprise, its importance to National Security and priority among Air Force missions.

Nuclear weapons dramatically changed the Principles of War in 1945 and continue to do so today. Charged as the guardians of freedom and justice, every Airman must accept 100% accountability for their actions and those they supervise while eliminating complacency and carelessness. From the administration, inspections, and inventories performed daily to providing quality customer service for members under the Personnel Reliability Program (PRP), Airmen play a crucial role in today’s nuclear enterprise.

The Nuclear Era

The potential to control nuclear energy and the dangers it posed was first described in a letter sent by physicist Dr. Albert Einstein to President Franklin D. Roosevelt in 1939.

Scientists who fled their native countries had requested Dr. Einstein’s assistance in bringing attention to Germany’s recent efforts to produce their own atomic energy. By early 1942, after suffering a series of military defeats in the Pacific, the United States, prompted by top Washington officials, researched and developed their own atomic energy and the creation of the world’s first atomic bomb. As part of the infamous “Manhattan Project,” scientific teams were instructed to produce nuclear bombs in time to affect the outcome of World War II.

On 16 July 1945, Manhattan Project scientists successfully detonated the first nuclear explosive device at the Trinity Site near Alamogordo, New Mexico. This test led to President Harry S. Truman’s decision to use a nuclear bomb against the Japanese in hopes of ending the war.

On 6 August 1945, the Army Air Corp dropped the first atomic bomb, dubbed Little Boy, on Hiroshima, Japan using a B-29 bomber named the Enola Gay. The attack destroyed 90 percent of the city’s buildings and resulted in an estimated 100,000 military and civilian casualties. When the Japanese failed to respond to President Truman’s call for surrender, another B-29 bomber, nicknamed Bockscar, dropped a second bomb, known as Fat Man, on the city of Nagasaki on 9 August 1945, resulting in another 70,000 dead and countless wounded. On 14 August 1945,

Japan finally surrendered thus ending WWII. To this day, the United States is the only country and the Army Air Corps (now the US Air Force) the only military branch to have employed nuclear weapons.

Proliferation and Nonproliferation

For more than 60 years, there has not been a single employment of a nuclear weapon. Since the last use in summer of 1945, world leaders have concentrated on preventing the production, distribution, and employment of nuclear weapons. One of the most effective methods is the use of multi-national treaties with the most successful treaty to date being the Nuclear Non-Proliferation Treaty (NPT).

Nuclear proliferation is a term used to describe the spread of nuclear weapons to nations that are not recognized as “Nuclear Weapon States” (NWS) by the NPT. Opened for signature 1 July 1968, the NPT defined what a NWS was, provided security for non-nuclear weapon states, and provided incentives to sign the treaty. Article IX, paragraph 3, of the NPT defines a NWS as “one which has manufactured and exploded a nuclear weapon or other nuclear explosive device prior to 1 January 1967.”

Currently there are 189 countries subscribed to the NPT, making it the single most universal arms control agreement in history. Of those countries, there are only five NWS: the United States, the United Kingdom, France, Russia, and the People’s Republic of China. These five countries are obligated not to transfer nuclear weapons, nuclear devices, or any nuclear weapon technologies to any non-nuclear weapon state. All 189 NPT nations have agreed upon a universal stance to detect, secure, and dispose of these weapons. Only four recognized sovereign states are not part of the NPT: India, Israel, Pakistan, and North Korea. Only three of these countries (India, Pakistan, and North Korea) have openly admitted that they possess and have tested nuclear weapons. They remain classified as non-nuclear weapon states (NNWS).

The spread of nuclear weapons and technologies presents a growing global risk. At the center of this “balance of control” is the US Air Force, ready to act at a moment’s notice. No longer are proliferation and non-proliferation issues reserved for those Airmen directly associated with nuclear weapons and nuclear missions. Each member of the US Air Force has a critical role in keeping the scales of proliferation in balance.

The mission of the US Air Force is to fly, fight, and win in the air, space, and cyberspace arenas of war. This mission statement meets departmental requirements as defined in Title 10, Subtitle D, Part I, Chapter 807, of the US Code, “The Air Force shall be organized, trained, and equipped primarily for prompt and sustained offensive and defensive air operations.” But how does that role fit into the nuclear enterprise? As a core function, the US Air Force must, in conjunction with the other services, bear the accountability and responsibility for its share of the nuclear deterrence initiative and the nuclear “umbrella.”

The United States remains committed to world peace in a nuclear age with international partnerships, highly-trained US Air Force personnel, advanced deterrence, and non-proliferation

processes. However, these efforts could be undermined if regional and political concerns aren't identified and prevented.

Current Regional and Political Concerns

One of the difficulties in enforcing the NPT involves the use of nuclear energy as a source of electrical power. When compared to traditionally generated electricity, the electricity generated from the heat of a nuclear reaction is much cleaner with less waste. This makes for a valid case for countries that wish to pursue the use of nuclear technology for electricity.

To further your study of regional nuclear security issues, you will now examine two regions of concern: Iran, North Korea.

Iran

For decades, the Islamic Republic of Iran has endangered the security of the region and the United States and failed to live up to its international responsibilities. In addition to its past illicit nuclear program, it continues to support terrorism, undermine peace between Israelis and Palestinians, and deny its people their basic civil rights. Many years of refusing to engage Iran had failed to reverse these trends until a deal was reached in July of 2015. This deal, led by the United States and negotiated with five other nations including Iran was proposed to significantly limit Iran's ability to produce weapons grade nuclear material over the next decade. With Iran's history of subversive behavior, critics are still unsure of the legitimacy of the Iran's commitment to follow the terms of the deal. The United States seeks a future in which Iran meets its international responsibilities, takes its rightful place in the community of nations, and enjoys the political and economic opportunities that its people deserve. Yet, if the Iranian Government refuses to live up to its obligations of this new deal and to the international community, it will face greater isolation.

North Korea

North Korea has continued to defy the international community with more nuclear devices and missile tests. The 2010 attacks on South Korea's Yeonpyeong Island and North Korea's latest and most powerful nuclear test in September of 2016 have caused the UN's Security Council to remain diligent in bringing peace to the region.

Additionally, the typical routine continues with condemnation followed by a round of sanctions which eventually leads to gridlock in enforcing the sanctions due to the competing interests of the major world powers.

The possibility of a regional arms race increases as North Korean defiance continues to unsettle regional stability. As Japan and South Korea still consider developing their own nuclear deterrent and missile defense system in the Cold War-like environment of north-east Asia, China will naturally regard itself as the real target. Furthermore, the current crisis again underlines the critical need for an international consensus in the nuclear non-proliferation realm. This must be framed in an updated collective structure that reflects contemporary realities and transcends short-term national interests and also addresses the long-term international interest in global

stability and order. Parallels can be drawn to the Iran nuclear challenge, which similarly threatens a regional arms race in the Middle East.

Western policy-makers continue to struggle with the ambiguity of the North Korean regime and are haunted by the uncertainty and unpredictability of its future. China and South Korea's fear of a North Korean meltdown remains a frightening possibility. After all, they would have to deal with the immediate fallout, including waves of refugees and other drastic realities.

Nuclear Enterprise Organization

The US Air Force nuclear enterprise consists of people, processes, procedures, and systems to conduct, execute, and support nuclear weapon systems and operations. It is built upon a well-defined mission and infrastructure that requires Airmen to possess specific intellectual and technical competencies.

The nuclear enterprise also includes required supporting systems, lifecycle activities, assorted delivery platforms, and strict security measures. Each of these components contributes to the US Air Force's commitment to provide and carry out reliable, safe, and responsive nuclear deterrence capabilities. In addition, it includes US Air Force organizations responsible for nuclear policy and guidance, as well as relationships with other entities who contribute to the Nation's nuclear deterrence mission.

Strategic Air Command

In 1946, one year before the Air Force became a separate service, Strategic Air Command (SAC) was created. Its mission was to be the one command to provide guardianship and control of all nuclear-capable bombers and intercontinental ballistic missiles, also known as ICBMs. This command controlled the majority of nuclear assets throughout the Cold War—from 1946 through 1992. SAC prided itself on its strict rules for accountability and reliability in the nuclear arena and the ability to execute those weapons with precision when called upon by our Nation. SAC's motto, "Peace Is Our Profession," plainly stated the importance of the deterrent effect the command provided.

In 1992, SAC and Tactical Air Command (TAC) combined to become Air Combat Command (ACC). The nuclear-capable bombers and fighters were assigned to ACC. The ICBMs were initially assigned to ACC as well but were later transferred to Air Force Space Command (AFSPC). This organizational change marked the beginning of a period of diminished strategic consideration for the nuclear enterprise and its mission.

The nuclear enterprise changed again in 2009 when the Air Force Global Strike Command (AFGSC) was created to ensure oversight of the Air Force nuclear mission and provide re-ignition to the enterprise. This change highlighted the nuclear enterprise's continued relevance and priority as a major deterrence factor.

Organizational Structure

Past incidents in the US Air Force's guardianship of nuclear weapons and nuclear weapons-rated material (NWRM) resulted in the resignation of the Secretary of the Air Force and the Air Force

Chief of Staff in 2008 and led to a review of the decline of the US Air Force nuclear enterprise. That review and the report of the Secretary of Defense task force resulted in an effort to reinvigorate the US Air Force nuclear enterprise and brought about another reorganization of the nuclear mission.

In 2009, Air Force Global Strike Command (AFGSC) was created to ensure oversight of the nuclear-capable bombers and ICBMs. This move was designed to restore the faith of the country and its allies in the US Air Force's ability to safeguard the country's nuclear assets and to execute nuclear weapons with precision when called upon by the Nation. Global Strike Command is located at Barksdale AFB, Louisiana and reached initial operating capability in September of 2009. All nuclear mission bombers and ICBMs are under the guidance and leadership of Global Strike Command.

Global Strike Command encompasses two numbered Air Forces: 8th Air Force is responsible for all nuclear-capable bombers and 20th Air Force is responsible for all ICBMs. Once again, the US Air Force is dedicated to the nuclear mission and continues to be a critical part of nuclear employment strategy.

Nuclear Deterrence Theory

The end of the Cold War shed light on the role of nuclear weapons in US national security. Nuclear weapons and operations continue to underpin US deterrence initiatives, but they are not as obvious in today's national security as they were during the Cold War. According to Joint Publication (JP) 1-02, deterrence is "a state of mind brought about by the existence of a credible threat of unacceptable counteraction." The theory of modern deterrence centers, around our nuclear capabilities. Elbridge A. Colby, author of the article, "Why Nuclear Deterrence is Still Relevant" explains this reasoning. He postulates that a modern world without nuclear weapons would lead to rapid changes in power balances driven by technological advances and varying growth of global powers. These different factors could determine the winner of a war thus rendering them unreliable for deterrence. He sums up his point by stating, "This is why nuclear weapons remain as relevant today as they have ever been in the past." For nuclear weapons are by far the most effective method of deterring aggression. The primary purpose of maintaining the US nuclear arsenal is to discourage an enemy from pursuing, procuring, and employing nuclear weapons or other weapons of mass destruction (WMD). Nuclear weapons create massive amounts of damage and suffering to intended targets and surrounding areas. The fear of counteraction from other nations and the possible political consequences of the use of nuclear weapons are factors that have determined the need for nuclear deterrence. A report issued by the Washington Institute on Near East Policy states that the "Cold War experience suggests that deployments of weapons and troops are often necessary to make pledges [of deterrence] credible."

Deterrence can be viewed as a product of three inter-related factors: a nation's capability multiplied by its will, multiplied by others' perceptions of that capability and will. All Airmen are vital to this formula. If Airmen fail to adhere to proper procedures and guidance resulting in mission degradation, the capability and will of our force comes into question. This could degrade

the credibility of our force in the eyes of our adversaries, thus compromising the desired level of deterrence.

Deterrence = Capability x Will x Perception

In the United States, the military is an important part of this capability factor, and the US Air Force contributes to that capability through its weapons, people, and perhaps most important, its readiness. Although the Nation's capability involves all instruments of national power—Diplomatic, Information, Military powers, and Economic (DIME)—in this chapter you will focus on nuclear capability.

Not only does nuclear deterrence support national security strategies, the US also extends deterrence to uphold the security of other friendly nations.

Simply stated, extended deterrence is less about retaliation and more about posturing to convince an enemy that they are unlikely to achieve political and military objectives by attacking the US or its allies.

This international protection, known as the “nuclear umbrella,” grants security and confidence to US allies. The US Air Force acts as a guardian of freedom and justice while managing and executing nuclear responsibilities. The service maintains the perception of US capability and will to suppress, prevent, and avenge a nuclear attack on any nation that is protected under the nuclear umbrella.

The US Air Force contribution to US nuclear capability is vital to national security, nuclear deterrence, and the defense of its allies. As Airmen, you are guardians responsible for the security, accountability, safe handling, transport, readiness, and employment of the world's largest known nuclear weapons inventory. These responsibilities demand dedication and expertise from many career fields and thousands of Airmen every single day. US Air Force leaders and supervisors, regardless of duty location or US Air Force specialty, must communicate to their subordinates the importance of every task and activity, no matter how small, and emphasize the importance of military discipline as part of national security, capability, and deterrence.

It is clear that the nuclear enterprise will be a viable deterrent option for many years to come but future deterrence could rely more heavily on the diplomatic, economic and informational forms of our national powers. With increased terrorist activity and cyber-attacks occurring globally, this will not eliminate the need for nuclear deterrence. These other deterrence factors will merely share strategic consideration with the military power.

As NCOs, you must stay adaptive to the changing environment of deterrence and although nuclear weapons are the centerpiece of modern deterrence, future deterrence will most certainly require additional considerations.

Nuclear Surety

The primary purpose of the Nuclear Surety Program is to ensure all associated materiel, personnel, and procedures related to nuclear weapons are safe, secure, and that personnel and weapon systems remain reliable. The Department of Defense (DOD) and Department of Energy (DOE), through the National Nuclear Security Administration (NNSA) are responsible for the elements of safety, security, and reliability.

Safety

Safety is the application of engineering and management principles, criteria, and techniques to protect nuclear weapons against the risks and threats inherent in their environments within the constraints of operational effectiveness, time, and cost throughout all phases of their life cycle. Sometimes Airmen fail to follow safety precautions both on and off duty. They may cut corners to speed up a task, be complacent, possess a lack of commitment towards the task, or display careless behavior. This may possibly be due to peer pressure, a lack of training or the need to meet mission time constraints. A lack of sound safety procedures can result in harm to personnel and nuclear materials. Injuries to personnel can result in decreased manpower to support and secure nuclear assets.

Security

Security is the total spectrum of procedures, facilities, equipment, and personnel employed to provide the protection against loss of custody, theft, or diversion of a nuclear weapon system; the protection against unauthorized access; and the protection against unauthorized actions, vandalism, sabotage, and malicious damage. Security involves active and passive protective measures laid out by the DOD and executed by the individual services. This is accomplished through the implementation of the Nuclear Weapons Security Standard: Deny unauthorized access to nuclear weapons; prevent damage or sabotage to nuclear weapons; prevent loss of custody; and prevent, to the maximum extent possible, radiological contamination caused by unauthorized acts.

Reliability

Reliability is an ability to be trusted to do what is expected or has been promised. Reliability has two key components: nuclear weapons system reliability and individual reliability.

Nuclear Weapon System Reliability

Nuclear weapon system reliability is maintained through an extensive testing, inspection, and maintenance program to guarantee the weapons will work if ever called upon by our Nation's leaders. The specific elements of these testing, inspection, and maintenance programs are outlined by the individual services and their respective nuclear configurations.

Nuclear weapon delivery systems are tested routinely by the individual services under operational conditions from nuclear-capable aircraft, ICBM test silos, and submarines. These tests use dummy or instrumented warheads on a test range to monitor bomb or missile

performance and accuracy. Each weapons delivery platform has extensive testing data to demonstrate the reliability of the weapon delivery system.

Nuclear warhead reliability is a complex challenge during an era in which the United States is not currently conducting underground nuclear tests. With stringent modern-day testing policies in place, confidence in the predicted performance of the nuclear warheads is now maintained through an ongoing process of surveillance, assessment and certification, and refurbishment.

Individual Reliability

Individual reliability encompasses two processes:

1. The Personnel Reliability Program (PRP) ensures that only those persons whose behavior demonstrates integrity, reliability, trustworthiness, allegiance, and loyalty to the United States shall be allowed to perform duties associated with nuclear weapons.
2. The two-person concept requires the presence at all times of at least two persons, each certified under PRP, knowledgeable in the task to be performed, familiar with applicable safety and security requirements, and each capable of promptly detecting an incorrect act or improper procedure throughout the task performed.

Within the PRP, each Airman has a personal responsibility. They must reconcile all legal issues, be financially sound, and maintain required security clearances. Various base agencies like medical and dental, legal, finances, and security forces are available to support Airmen in need of complying with personnel reliability issues. Maintaining both system and individual reliability are vital in ensuring the surety of the nuclear enterprise and the employment of nuclear weapons.

Nuclear Employment

The day-to-day commitment to precise and reliable nuclear operations is the cornerstone of a credible nuclear deterrence program. This commitment allows for rapid nuclear employment options for attainment of strategic objectives. That being said, nuclear employment authority rests solely with the President of the United States. Working with the Secretary of Defense, the President may determine nuclear weapons are required to resolve a situation. Presidential decisions on national security matters are issued through National Security Presidential Directives (NSPD). NSPDs provide the President's general direction on how to plan for the employment of nuclear weapons. This is further amplified through the DoD Nuclear Weapons Employment Guidance (NUWEP) and the Joint Staff Nuclear Supplement to the Joint Strategic Capabilities Plan (JSCP). Then, Combatant Commanders take this guidance and formulate their operational plans, which may or may not include nuclear weapons, to support their objectives. The following planning and employment factors must be considered:

- Political objectives
- Knowledge of enemy force strength and disposition
- Number, yields, and types of weapons available
- Status/disposition of friendly forces at the time
- Strategic situation

- Type and extent of operations to be conducted
- Military effectiveness
- Damage-limitation measures
- Environmental and ecological impacts
- Precise calculations as to how all these factors interact

Employment planning also considers the characteristics and limitations of available nuclear forces to optimize force survivability and combat effectiveness.

Airmen are also involved in conducting “ground-level” tasks to support nuclear weapons planning. They conduct research on enemy forces, up channel weapon related material information and assist in coordinating status reports with allied forces when deployed.

When nuclear planning and employment factors have been considered, the President has a land, air, and sea based nuclear arsenal at his disposal for nuclear employment. This arsenal has three legs and is referred to as our Nuclear Triad.

The Nuclear Triad

The Nuclear Triad is best explained by 2013’s Flight Plan for the Air Force Nuclear Enterprise. This plan states, “The triad is structured to provide the President options that mitigate risk across a range of adversaries and scenarios. This includes risk from pre-emptive strike; systemic failure of a warhead or delivery system; technologies or targeting strategies that reduce the effectiveness of a given weapon system; or technological surprise. As U.S. Force structure is reduced, maintaining the balance of attributes that gives strength and synergy to the triad in order to minimize risk and preserve options will become even more important.

The Air Force believes the best blend of deterrence attributes can be achieved using a triad that includes:

- Air Force intercontinental ballistic missiles (ICBMs)
- Air Force nuclear capable bombers
- Navy submarine launched ballistic missiles (SLBMs)

The responsiveness of ICBMs, the flexibility of bombers, and the survivability of submarine launched ballistic missiles provide synergistic attributes that manage risk and provide options that address all scenarios of strategic deterrence, extended deterrence, and assurance. This synergy means that triad forces are intricately linked. Changes to the structure and posture of an individual leg of the triad affects the remaining legs and, more importantly, influences the perceptions of adversaries, allies, and neutral parties.”

From your earlier reading, you learned that to defend our nation we must provide safe, secure, and reliable weapons systems. This is key for reliable nuclear employment. This can only be ensured by NCOs practicing and enforcing process discipline, accountability, and compliance in daily duties.

Summary

The US Air Force nuclear enterprise is a composite of weapons systems, support functions, and personnel all dedicated to the US Air Force nuclear mission to support the national security strategy. To fully appreciate the US nuclear weapons program, you must know the history of nuclear weapons, the theory of nuclear deterrence, regional and political security concerns, the nuclear enterprise, its structure, the nuclear weapons employment process, and nuclear surety.

As an Airman, you must never forget that, regardless of specialty, the consequences of failing to perform your assigned duties can be catastrophic to the overall safety and security of the Nation. As a military service member, you are held to a much higher standard than your civilian counterparts. Your professionalism, discipline, and vigilance must permeate the Air Force culture every day, at every installation... worldwide.

It only takes four kilograms of plutonium—an amount the size of a soda can—to produce a nuclear bomb. Consider that, since the break-up of the former Soviet Union, an estimated 650 tons of nuclear weapons-usable material, plutonium, and enriched uranium have been left unsecured and without regular inventory. That's about the equivalent of 162,500 soda cans. The bomb dropped on Hiroshima, Little Boy, was approximately equal to only 16 cans. Accountability of nuclear weapons and related materials is a leading, international nuclear security concern. Insufficient accountability could lead to proliferation and boost NWRM 'black market' sales, which frustrate non-proliferation efforts.

Will deterrence work in the future? How many rogue nations will thwart non-proliferation efforts and obtain nuclear weapons or other WMD? How do you discourage an unknown enemy and eliminate all threats to US national security and way of life? Currently, these challenges have no definitive answers.

In spite of these challenges, today's Airmen contribute every day in an effort to achieve a future of world peace. Today's Airmen are experienced, equipped, and responsible for much more than ever before and continue to learn, train, and conduct their daily operations to the best of their ability to ensure the American people, allied nations, and enemies never doubt the US Air Force's capabilities and will.