

**DEPARTMENT OF THE AIR FORCE**

**PRESENTATION TO THE UNITED STATES SENATE ARMED SERVICES  
STRATEGIC SUBCOMMITTEE**

**SUBJECT: NUCLEAR WEAPONS SECURITY**

**STATEMENT OF:**

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ARMED SERVICES STRATEGIC COMMITTEE**

Mr. Chairman and members of the Committee, thank you for the opportunity to speak to you today about Air Force nuclear weapons security. Nuclear weapons continue to be at the center of US National Security Policy. The Air Force fully understands the value of these weapons to America and as such affords them the highest protection. From the most senior levels of leadership, to the airmen in the field, Air Force personnel understand the tremendous responsibility associated with safely and securely handling nuclear weapons. Accordingly, the Air Force has established comprehensive operational and oversight procedures to ensure nuclear weapons and weapon systems receive special consideration due to their national policy implications. Due to their military importance, their destructive power, and the potential consequences of an accident, incident, or unauthorized act, there is no higher Air Force priority than maintaining the surety of our nuclear weapons.

## **Background**

DoD policy specifies four DoD Nuclear Weapon System Safety Standards to serve as the foundation for all nuclear weapons safety matters: 1) There shall be positive measures to prevent nuclear weapons involved in accidents or incidents, or jettisoned weapons, from producing a nuclear yield; 2) There shall be positive measures to prevent deliberate prearming, arming, launching, or releasing of nuclear weapons, except upon execution of emergency war orders or when directed by competent authority; 3) There shall be positive measures to prevent inadvertent prearming, arming, launching, or releasing of nuclear weapons in all normal and credible abnormal environments; and 4) There shall be positive measures to ensure adequate security of nuclear weapons, under DoD Directive 5210.41.

It is DoD policy to protect nuclear weapons from loss, theft, sabotage, unauthorized use, and unauthorized or accidental damage or destruction. This policy is based on a peacetime

environment. While adherence to prescribed security procedures during wartime may be impractical, particularly in a combat theatre, the same peacetime philosophy for protecting nuclear weapons remains in effect. However, in times of transition to war and during wartime, commanders are expected to use those resources available to them to provide security for weapons and to ensure their survivability.

Nuclear weapons require special protection because of their political and military importance, their destructive power, and the consequences of an unauthorized deliberate or inadvertent prearming, launching, firing, or detonation. Nuclear weapons must not be subjected to adverse physical environments except when such exposure is dictated by operational requirements. The safety of the public, operating personnel and property, and the protection of weapons from capture, theft, damage, and unauthorized use or loss are of paramount importance during all phases of operations involving nuclear weapons.

Positive measures are taken to ensure the complete physical control of nuclear weapons during all phases of their life cycle. To ensure a balanced security system, physical security procedures, forces, and facilities must be combined. Survivability must be a significant consideration in the design of a security system. In providing protection for nuclear weapons, accurate assessments must be made of all relevant factors including: weapon location, the configuration in which they are maintained, the nature and capabilities of potentially hostile forces, and the reliability and capabilities of personnel responsible for working with or protecting them.

Security is considered early during the research, development, and acquisition of nuclear weapon systems and the modernization and updating of our existing systems. DoD components

participating in the acquisition and development process for new or modernized systems must get a security concept of operations approved by the Under Secretary of Defense for Policy.

Physical security requirements have a major impact on the affordability and life-cycle costs of a nuclear weapon system. Similarly, modernization or product improvement efforts on existing systems must include reevaluation of system security provisions early in the process to assess the utility of new technology and to determine changing security requirements because of changes in deployment mode, location of the systems, or other factors.

### **Air Force Responsibilities**

DoD guidance (DoDD 3150.2, *DoD Nuclear Weapon System Safety Program*) mandates the Air Force assume the following responsibilities: 1) Ensuring the safety and security of all nuclear weapons and nuclear weapon systems for which the Air Force has a DoD life-cycle management responsibility;

2) Conducting nuclear weapon system safety studies, reviews, and safety assessments on U.S. nuclear weapons and Allied systems using U.S. nuclear weapons to support the DoD Nuclear Weapon System Safety Program; 3) Ensuring nuclear weapons technical inspections are conducted; 4) Establishing safety design and evaluation criteria for nuclear weapon systems; 5) Conducting safety certifications of nuclear weapon systems, including DoD support equipment and software that affects nuclear safety; and 6) In coordination with the Defense Threat Reduction Agency, participating in a joint Service working group to define requirements for the maintenance of nuclear weapon safety databases.

## **Safety and Security of all Nuclear Weapons and Nuclear Weapon Systems**

In planning the security system for nuclear weapons, priority of efforts and resources are given to the protection of nuclear weapons themselves. Additional security is commensurate with the threat to or vulnerability of the weapons, space limitations, and environmental factors. In order to ensure the safety and security of our nuclear weapons and nuclear weapons systems the Air Force focuses on four critical elements of physical security; 1) Selection and use of personnel, 2) Two person policy, 3) Security procedures and equipment, and 4) Security system concepts.

### **Selection and Use of Personnel**

Personnel associated with and directly influencing the security of nuclear weapons can be classified as command and supervisory, operational, security, support, and maintenance. Individuals are selected for these positions after extensive screening. The personnel screening and selection process, as well as the requirement for a continuing evaluation by supervisors and co-workers, is detailed in DoD Directive 5210.42 *Nuclear Weapon Personnel Reliability Program*. The screening process used in the Personnel Reliability Program (PRP) ensures all individuals are of the utmost reliability and personally certified to work nuclear related duties by their unit commander or other senior official. Certification may occur after completion of a formal course of instruction or experience gained by on-the-job training. All personnel having access to nuclear weapons shall have a security clearance commensurate with the level of classification of materials to which they may have access.

## **Two-Person Policy**

No lone individual shall have access to a nuclear weapon. During any operation that may require access to nuclear weapons, there is a minimum of two authorized persons, each capable of detecting incorrect or unauthorized procedures with respect to the task to be performed and familiar with applicable safety and security requirements. Two authorized personnel are physically positioned where they can detect incorrect or unauthorized procedures with respect to the task or operation being performed. When application of the two-person policy is required, it is enforced by the persons who constitute the team during the entire period they are accomplishing the task or operation assigned and until they leave the area within which the two-person policy is required.

## **Security Procedures and Equipment**

Intrusion detection systems and security force personnel ensure positive identification and control of all persons entering Limited and Exclusion Areas. Entry control procedures ensure no lone individual is permitted in an Exclusion Area or to have access to a nuclear weapon. In addition, maintenance or crew personnel, making up a two-person team with a designated sole vouching authority, verify all entries into the Exclusion Area

## **Security System Concepts**

Security for nuclear weapons is provided by in-depth systems that provide deterrence, detection, delay, and denial of individuals who are not authorized access to a nuclear weapon. These same systems provide protection from damage attempts including standoff attacks.

Security systems are designed in response to actual validated threats or postulated threats that may arise as adversary intentions develop.

Detection is accomplished through physical or electronic measures that detect possible threats to nuclear weapons at the earliest possible point when an attempt or the preparation for an attempt to penetrate the system is being made. Delay consists of active and/or passive security measures using either equipment or personnel, or a combination of both, to inhibit intruders from reaching their objective. Denial is the ultimate goal of delay and is the nullifying, repulsing, or termination of an attack. Essential to the proper operation of security systems are: assessment measures to determine the size and intention of an unauthorized intrusion, response by security forces specifically designated and trained for countering intruders, and diverse and redundant communications to ensure command and control.

The efficient installation and operation of the security system, including the training and exercising of response forces, is sufficiently imposing to deter potential attacks. Deterrence is the first line of defense, but is only effective when supported by an active, operational security system. Consequently, security forces are trained, as they would be expected to be employed. Such training includes, as a minimum, use of individual and crew-served weapons, small unit tactics, and annual force-on-force exercises.

### **Nuclear Weapon System Safety Studies, Reviews, and Safety Assessments**

The Air Force safety review process is mandated by Air Force Instruction 91-102 *Nuclear Weapon System Safety Studies, Operational Safety Reviews, and Safety Rules*. This instruction provides guidelines to ensure nuclear weapons are designed, maintained, transported, stored, and operated in a safe and secure manner. The Air Force supports these goals by:

convening the Nuclear Weapons System Safety Group (NWSSG) to evaluate nuclear weapon systems, proposing nuclear weapon system safety rules for Secretary of Defense (SECDEF) approval, conducting Technical Nuclear Safety Analysis (TNSA), and conducting Nuclear Surety Inspections according to Air Force Instruction 90-201, *Inspector General Activities*.

### **NWSSG Functions**

The NWSSG reviews nuclear weapon system designs and operations to determine if they meet the DoD Nuclear Weapon System Safety Standards and proposes safety rules and recommends changes to improve nuclear weapon system surety.

### **Nuclear Surety Inspections (NSI)**

NSIs are designed to evaluate a unit's capability to manage nuclear resources while complying with all nuclear surety requirements. An NSI may be combined with other MAJCOM inspections to reduce the number of unit inspections.

NSIs are conducted at each nuclear-capable unit at least every 18 months. NSI inspection requirements must be completed within 18 months after completing the last NSI. The nuclear capable unit is provided the NSI rating when all phases are completed. If a unit does not meet the 18-month inspection requirement and is not granted a waiver, they will be decertified. MAJCOM commanders will ensure nuclear weapons are maintained in a safe, secure, and reliable environment until the unit is recertified. Recertification must be accomplished by conducting an Initial NSI. Units may be selected at the discretion of the MAJCOM IG to receive a minimum notice inspection that will key on a unit's ability to perform its nuclear mission.



Units are rated in 13 functional areas: Management and Administration, Technical Operations, Tools, Test, Tiedown, and Handling Equipment, Storage and Maintenance Facilities and Condition of Stockpile, Security, Safety, Personnel Reliability Program Management, Logistics Movement, Explosive Ordinance Disposal, Nuclear Control Order Procedures, Emergency Evacuation Denial and Command Disablement, Use Control, and Supply Support. .

If the unit is rated “Unsatisfactory” under pass/fail criteria, it may be reinspected prior to inspection team’s departure. If the unit is not reinspected to at least a “ Satisfactory” level, the inspected unit must discontinue that portion of its operation until reinspected or corrective measures are implemented and approved by the MAJCOM commander pending reinspection. A reinspection (NSI or LNSI) will be conducted within 90 calendar days for units rated “Unsatisfactory” that do not achieve an overall “Satisfactory” rating on an on-the-spot reinspection.

### **Ensuring nuclear weapons technical inspections are conducted**

Air Force Instruction 91-102, *Nuclear Weapon System Safety Studies, Operational Safety Reviews, and Safety Rules*, mandates the requirement for Technical Nuclear Safety Analysis (TNSAs). Prepared by the Nuclear Weapons Product Support Center, a TNSA is an independent technical analysis of the nuclear weapon system. Personnel who prepare the TNSA may not represent organizations directly responsible for designing, developing, producing, maintaining, operating, or providing logistics for the weapon system under evaluation.

TNSAs describe the weapon system in depth, ensures compliance with DoD Nuclear Weapon System Safety Standards in normal and abnormal environments, provides engineering analysis of the weapon system design, identify deficiencies, and recommend corrective actions

for the weapon system to comply with AFI 91-107, *Design, Evaluation, Troubleshooting, and Maintenance Criteria for Nuclear Weapon Systems*, or DoD Directive 5210.41, *Security Policy for Protecting Nuclear Weapons*. TNSAs also assess physical security features planned for the weapon system, identify security deficiencies, and propose necessary corrective actions. The analysis also includes a qualitative risk assessment of the weapon's likelihood of violating any of the DoD Nuclear Weapon System Safety Standards or causing plutonium scatter.

### **Safety design and evaluation criteria for nuclear weapon systems**

DoD Nuclear Weapon System Safety Standards form the basis for the Air Force's nuclear weapon system safety design and evaluation criteria. Because the Air Force's goal is to design a system that significantly exceeds the basic safety criteria, the weapon system designer may add reasonable safety features to improve safety yet meet operational design requirements. The Air Force or the Department of Defense may prohibit or restrict operational use of a nuclear weapon system if the minimum safety criteria are not satisfied.

The Air Force Safety Center (AFSC) manages the nuclear safety design and evaluation program for the Air Force by developing design and evaluation criteria, approving deviation requests, and identifying criteria for, and approving troubleshooting and maintenance procedures and operations on loaded nuclear weapon systems.

### **Safety certifications of nuclear weapon systems, support equipment, and software**

Air Force Instruction 91-103, *Air Force Nuclear Safety Certification Program*, governs the Air Force's nuclear safety certification program. This program evaluates hardware, software, and procedures against specific nuclear safety criteria before use with nuclear weapons. The program's goal is to prevent nuclear weapon accidents and incidents.

The Air Forces certifies the following hardware and software: combat and non-combat delivery vehicles; operational and support equipment used to move, support, store, handle, load and unload, or mate and demate nuclear weapons; components that directly interface (electrically or physically), with a nuclear weapon, critical component, certified software, or are identified in a current launch activation path; items that could degrade the command, control, and status reporting capability; new and currently certified critical components and software; all hardware or software used to directly control critical functions such as targeting, enable, or launch commands or data generation; Tamper Detection Indicators (TDI) used in an operational system, as well as TDIs used in a non-operational environment for storage and transportation; operational and maintenance hardware and software used to command and control critical functions and perform status reporting; facility lifting and suspension systems (such as cranes, hoists, and suspended frames) used to lift, support, or move nuclear weapons; modifications to non-specialized equipment that could impact the item's primary structure, electrical and hydraulic power systems, load-bearing capacity, steering and braking capability, or positive control features; as well as any changes resulting in noncompliance with specific directed design criteria. Additionally, the Air Force certifies all test equipment that: verifies the proper operation of the critical function circuits of a combat delivery vehicle or directly interfaces with nuclear weapons or operationally certified critical components; operationally certifies, decertifies, or verifies proper operation of applicable nuclear certified items; or identifies system anomalies or failures in special test or maintenance programs.

**Coordinated effort with the Defense Threat Reduction Agency (DTRA), to define requirements for the maintenance of nuclear weapon safety databases.**

Per Air Force Instruction 91-102, *Nuclear Weapon System Safety Studies, Operational Safety Reviews, and Safety Rules*, the Air Force in conjunction with DTRA, Department of Energy (DOE), and US Strategic Command (as part of the NWSSG), reviews nuclear weapon system designs and operations to determine if they meet the DoD Nuclear Weapon System Safety Standards, proposes safety rules, and recommends changes to improve nuclear weapon system surety to the SECDEF for approval through the Joint Staff. Specifically, the NWSSG reviews weapon system modifications, changes in operational procedures, or proposed tests to determine if nuclear surety is affected. The NWSSG requests an Operational Plan Data Document (OPDD), or OPDD change, and schedules an NWSSG study when nuclear surety is affected. The NWSSG also serves as the Air Force focal point for DOE field reviews of nuclear weapon system safety rules. The NWSSG publishes a semiannual report containing the status of NWSSG recommendations due to Assistant to the Secretary of Defense, Nuclear & Biological Defense Programs (ATSD (NCB)) by the 1st of January and July with information copies to the Chairman Joint Chiefs of Staff (CJCS) and DOE. Finally, the NWSSG assigns an Air Force member to nuclear safety studies or operational safety reviews conducted by other military Services if the Air Force also uses the weapon system under evaluation.

**Summary**

The Air Force has aggressively managed its Nuclear Surety and Safety Programs for the last 54 years. Nuclear weapons require special protection because of their political and military importance, their destructive power, and the consequences of an unauthorized deliberate or inadvertent prearming, launching, firing, or detonation. When dealing with nuclear weapons

there is no room for substandard performance. The Air Force recognizes the need to continually monitor our nuclear safety and security processes in response to the dynamic global threat. There will be challenges in the future. Effective intelligence gathering, system vulnerability assessments, responsive improvement programs, communication, and dedicated Air Force professionals are the key. The partnerships we have with the other services, government agencies, and other stakeholders will be critical to our success. United, we can overcome these challenges and sustain our nuclear surety and security into the 21<sup>st</sup> century.