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SECRETARY OF THE AIR FORCE**

**AIR FORCE INSTRUCTION 91-101**

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*Safety*



**AIR FORCE NUCLEAR WEAPONS SURETY  
PROGRAM**

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This Instruction implements AFD 91-1, *Nuclear Weapons and System Surety*. It outlines general responsibilities for the Air Force Nuclear Weapons Surety Program and defines implementing requirements. This Instruction applies to all Air Force personnel, nuclear certified equipment, and facilities involved with nuclear weapons, nuclear weapon systems, and radioactive materials-related programs. Personnel involved with nuclear weapons, nuclear weapon systems, and radioactive materials are responsible for compliance. This Instruction is applicable to the Air Force Reserve (AFR) and Air National Guard (ANG) units performing nuclear missions. Refer recommended changes and questions about this publication to the Office of Primary Responsibility (OPR) using the AF Form 847, *Recommendation for Change of Publication*; route AF IMT 847s from the field through the appropriate functional's chain of command. Send major command (MAJCOM) supplements to AFSC/SEWN, 9700 G Avenue SE, Kirtland AFB NM 87117-5670, for coordination before publication. Unless noted otherwise, AF/SE is the waiver authority for provisions in AFI 91-101. Ensure all records created as a result of processes prescribed in this publication are maintained in accordance with AFMAN 33-363, *Management of Records*, and disposed of in accordance with the Air Force Records Disposition Schedule (RDS) located at <https://www.my.af.mil/afrims/afrims/afrims/rims.cfm>.

**SUMMARY OF CHANGES**

Interim change (IC) 2 adds paragraph 2.9.12. to clarify Air Force Commanders' nuclear surety roles and responsibilities at joint basing installations where the Air Force is a supported Component. A margin bar indicates newly revised material.

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## Chapter 1

### PROGRAM INFORMATION

**1.1. Goal.** The goal of the Air Force Nuclear Weapons Surety Program is to incorporate maximum nuclear surety, consistent with operational requirements, from weapon system development to retirement from the inventory.

**1.2. Safety Standards.** The Air Force Nuclear Weapons Surety Program ensures personnel design and operate nuclear weapons and nuclear weapon systems to satisfy the safety standards in Department of Defense (DOD) Directive 3150.2, *DOD Nuclear Weapon System Safety Program*. The DOD safety standards are:

1.2.1. There shall be positive measures to prevent nuclear weapons involved in accidents or incidents, or jettisoned weapons, from producing a nuclear yield.

1.2.2. 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.

1.2.3. There shall be positive measures to prevent INADVERTENT prearming, arming, launching, or releasing of nuclear weapons in all normal and credible abnormal environments.

1.2.4. There shall be positive measures to ensure adequate security of nuclear weapons, pursuant to DODM S-5210.41-M\_AFMAN31-108V1, *The Air Force Nuclear Weapon Security Manual*, DODM S-5210.41-M\_AFMAN31-108V2, *General Nuclear Weapon Security Procedures*, and DODM S-5210.41-M\_AFMAN31-108V3, *Nuclear Weapon Specific Requirements*.

## Chapter 2

### RESPONSIBILITIES

**2.1. Commanders'/Directors' Emphasis.** Commanders at all levels are responsible for the success of the Air Force Nuclear Weapons Surety Program. Commanders MUST emphasize that safety, security, control, and effectiveness of nuclear weapons are important to the United States. The following is not an all inclusive list of restrictions dealing with nuclear weapons. Commanders should review the Weapon System Safety Rules (WSSR) for their specific weapon system(s) found in AFIs 91-111 thru 91-117.

2.1.1. Do not use nuclear weapons to troubleshoot faults, that is, to confirm a fault exists, to aid in fault isolation, or to verify fault correction. AFI 91-107, *Design, Evaluation, Troubleshooting, and Maintenance Criteria for Nuclear Weapon Systems*, contains specific guidance.

2.1.2. During exercises, do not wear complete chemical ensembles when handling war reserve nuclear weapons. Remove the gas mask (to aid in identification) and gloves (to ensure weapons are not inadvertently damaged).

2.1.3. Storing nuclear weapons in one facility and conventional munitions in another facility within the same weapons storage area (WSA) is not considered simultaneous presence and does not require MAJCOM approval. Conventional munitions inherently part of a nuclear weapon system and/or nuclear weapon component (e.g. forward shroud, forward section, electrical explosive devices, and limited life components) located in the same assembly, surveillance, and inspection (AS&I)/maintenance and inspection (M&I), vault or storage facility are not considered simultaneous presence. Do not store nuclear weapons and conventional munitions together, except:

2.1.3.1. As part of flightline or protective aircraft shelter operations conducted according to nuclear weapon system safety rules.

2.1.3.2. The MAJCOM/CC may approve the temporary storage of nuclear and conventional munitions within a WSA facility to facilitate the warehousing of these materials in order to meet immediate operational requirements. AFMAN 91-201, *Explosive Safety Standards*, and Technical Order (TO) 11N-20-7, *Nuclear Safety Criteria*, contain specific guidance. Reference AFMAN 91-201 for storage requirements of nuclear weapon components within a weapons storage and security system (WS3) vault.

2.1.3.3. The Wing/CC may approve the immediate storage of nuclear and conventional munitions within a WSA facility for 72 hours in the event of fire, flood, or natural disaster, or if the nuclear storage facility can no longer be secured and initiate PINNACLE EMERGENCY EVACUATION (OPREP-3PEV) procedures prescribed in AFI 10-206, *Operational Reporting*. Storage for more than 72 hours requires MAJCOM/CC approval.

2.1.3.4. Storage of nuclear and conventional munitions within a WSA facility for more than 90 days requires a waiver be granted by AF/SE. At a minimum, the waiver shall include a mitigation plan containing: the reasons for requesting the waiver, risk

assessment, any corrective action or actions to ultimately correct the waiver, and expected duration of the waiver. While the waiver is in existence it will be reviewed at least quarterly by the affected Wing/CC and MAJCOM/CC for validity and progress updates.

2.1.4. Implement local procedures to:

2.1.4.1. Prohibit direct overflight, in airspace controlled by the base, of WSAs, weapon movements, nuclear loaded aircraft, and aircraft shelters with nuclear weapons inside. Over flight of aircraft shelters where the weapons inside are secured in a WS3 vault is permitted.

2.1.4.2. Ensure aircraft with forward firing ordnance, to the maximum extent possible, are not parked pointed toward Prime Nuclear Airlift Force (PNAF) flightline operations and active convoy routes.

2.1.4.3. Ensure aircraft with forward firing ordnance are limited, to the maximum extent possible, from sweeping across PNAF flightline operations and active convoy routes.

2.1.4.4. Prohibit direct overflight of PNAF aircraft during ground operations within that airspace controlled by the base.

**2.2. Headquarters United States Air Force (HQ USAF):**

2.2.1. Air Force Chief of Safety (AF/SE) oversees the Air Force Nuclear Weapons Surety Program.

2.2.1.1. Establishes program requirements.

2.2.1.2. Publishes instructions and guidance on the various portions of the program.

2.2.1.3. Maintains liaison for nuclear surety matters with organizations outside the Air Force.

2.2.1.4. Advises Office of the Secretary of the Air Force, Office of the Assistant Secretary (Acquisition) (SAF/AQ) of required nuclear surety technology.

2.2.1.5. Provides augmentation, through Air Force Safety Center, to AFIA/OV Nuclear Surety Inspection (NSI) oversight teams in support of SAF/IG NSI oversight responsibilities.

2.2.1.6. Issues coordinated guidance on radiological health matters pertaining to nuclear weapons.

2.2.1.7. Provides, at the request of commanders, Nuclear Surety Program Visits and Functional Expert Visits to assist in developing a robust and compliant nuclear surety program.

2.2.1.8. Establishes the minimum content of the Nuclear Surety training program.

2.2.1.8.1. Creates and distributes standardized nuclear surety lesson plan and testing material to MAJCOM Chiefs of Safety.

2.2.1.8.2. Provides the testing material to the MAJCOM Chiefs of Safety.

2.2.2. Deputy Chief of Staff, Operations, Plans and Requirements (AF/A3/5) is the single point of contact to the Joint Staff.

2.2.3. Assistant Chief of Staff, Strategic Deterrence & Nuclear Integration (AF/A10) develops policy for SECAF approval and guidance, and sets goals and priorities for nuclear surety technology.

2.2.3.1. Provides classification guidance and publishes standards for controlling defense nuclear information.

2.2.3.2. Provides coordinated procedures for the Nuclear Weapons Personnel Reliability Program (PRP).

2.2.4. Deputy Chief of Staff/Logistics, Installations & Mission Support (AF/A4/7):

2.2.4.1. The Director of Logistics (AF/A4L) is the single point of contact for nuclear weapon and nuclear weapon system logistic matters. AF/A4L develops and publishes nuclear weapons and delivery systems maintenance and supply chain guidance.

2.2.4.2. The Civil Engineer (AF/A7C) is the single point of contact for nuclear weapon explosive ordnance disposal matters.

2.2.4.3. Air Force Director of Security Forces (AF/A7S):

2.2.4.3.1. Develops and publishes guidance for the physical security of nuclear weapons and nuclear weapon systems.

2.2.4.3.2. Evaluates nuclear weapon system designs for their impact on nuclear security.

2.2.5. The Surgeon General (AF/SG) and AF/SE issue coordinated guidance on radiological health matters.

### **2.3. Major Commands (MAJCOMs), Field Operating Agencies (FOAs), and Direct Reporting Units (DRUs), as appropriate:**

2.3.1. Establish a nuclear surety program and provide guidance to subordinate units.

2.3.2. Ensure compliance with pertinent AF guidance and TOs.

2.3.3. Establish a program to ensure personnel are trained and certified on the following applicable functional tasks:

2.3.3.1. Nuclear weapons handling, storage, and maintenance.

2.3.3.2. Loading and unloading of weapons.

2.3.3.3. Mate and demate of weapons.

2.3.3.4. EOD component diagnosis and recovery procedures.

2.3.3.5. Security procedures.

2.3.3.6. Custody procedures.

2.3.3.7. Operational control.

2.3.3.8. Weapon convoys.

2.3.3.9. Nuclear certified equipment tracking and flag word reporting at both nuclear and non-nuclear units.

2.3.4. Ensure individuals assigned to nuclear safety positions are trained and hold a rank or grade commensurate with their duties.

2.3.5. Ensure subordinate unit civil engineer staffs:

2.3.5.1. Develop an Air Force Emergency Management Plan to include addressing nuclear accidents/incidents IAW AFI 10-2501, *Air Force Emergency Management Program and Operations*.

2.3.5.2. Assist Disaster Response Force members in the development of checklists, and advise on training and equipping personnel to respond to nuclear accidents and incidents.

2.3.5.3. Perform timely inspections, tests, and maintenance on facilities and equipment used with nuclear weapons.

2.3.5.4. Coordinate plans for building or modifying nuclear weapon facilities per AFI 63-125, and AFI 91-103, *Air Force Nuclear Safety Design Certification Program*.

2.3.6. Ensure their subordinate security forces function guidance complies with nuclear surety requirements.

2.3.7. Send data on proposed changes to nuclear weapon systems and noncombat delivery vehicles to Air Force Nuclear Weapons Center (AFNWC) or the appropriate program executive office/program manager.

2.3.8. Conduct NSIs of nuclear-capable units in accordance with AFI 90-201, *Inspector General Activities*, and T.O. 11N-25-1, *Department of Defense Nuclear Weapons Technical Inspection*.

2.3.9. Support the Nuclear Weapon System Safety Group (NWSSG) in accordance with AFI 91-102, *Nuclear Weapon System Safety Studies, Operational Safety Reviews, and Safety Rules*.

2.3.10. Identify a single point of contact for all nuclear issues.

2.3.11. Establish a Nuclear Weapons Surety Council to examine and resolve problems affecting the successful execution of the organization's nuclear weapon program and will act as a review board to assist the MAJCOM commander in ensuring that all facets of the nuclear weapon surety program function in an effective manner.

2.3.12. AFR and ANG units with nuclear tasked units or personnel will provide headquarter and unit-level OPRs to coordinate and assist the gaining unit with the duties and responsibilities outlined in this Instruction.

**2.4. Air Force Materiel Command (AFMC).** In addition to the responsibilities listed in paragraph 2.3., serves as the Air Force focal point for the technical aspects of nuclear surety:

2.4.1. Compiles a technology base and supports development of nuclear safety design and evaluation criteria for publication in AFI 91-107.

2.4.2. Evaluates the nuclear safety effects of all designs, maintenance processes and practices, or modifications of nuclear weapon systems or components for which AFMC has program management responsibility. This includes compliance with AFI 91-102 and AFI 91-103, *Air Force Nuclear Safety Design Certification Program*, and AFI 63-103, *Joint Air*

*Force—National Nuclear Security Administration (AF-NNSA) Nuclear Weapons Life Cycle Management.*

2.4.3. Provides consultant and technical services to support the requirements of AFI 91-108, *Air Force Nuclear Weapons Intrinsic Radiation Safety Program.*

2.4.4. Publishes data on weapons maintenance, shipping and storage configurations in the appropriate 11N-series TOs and EOD procedures in the 60-series TOs.

2.4.5. Reviews nuclear mishap reports pertaining to materiel or technical data deficiencies, takes corrective action when appropriate; and provides reports and summaries as required by AFI 91-204, *Safety Investigations and Reports.*

2.4.6. Provides the single point of contact within the Air Force for the management and coordination of nuclear weapon and associated equipment material defects and deficiency procedures as specified in T.O. 11N-5-1, *Unsatisfactory Reports.*

2.4.7. Ensures Air Force Nuclear Weapons Center manages the Air Force Nuclear Certification Program IAW AFI 63-125.

2.4.7.1. Ensures product centers and air logistics centers have policies and procedures in place to identify nuclear certified items, processes, and modifications and assess modifications to determine if nuclear certification is required as by AFI 63-125.

2.4.7.2. Provides nuclear certification program guidance to MAJCOMs/Product Centers/Air Logistics Centers.

2.4.8. Provides technical support for the NWSSG.

2.4.9. Maintains an engineering liaison office collocated with United States Air Forces in Europe (USAFE) to:

2.4.9.1. Provide support for nuclear surety programs for ally-operated systems.

2.4.9.2. Provide pertinent nuclear weapon system safety rules to allied nations.

2.4.9.3. Ensure the design of ally-operated systems meet Air Force nuclear certification criteria when allied nations have engineering responsibility.

2.4.9.4. Evaluate efforts for which USAFE has engineering responsibility; including support equipment, hardware, software, firmware, and procedures; against AFI 91-102, AFI 91-103, and AFI 91-107 requirements.

## **2.5. United States Air Forces in Europe (USAFE):**

2.5.1. In addition to the responsibilities listed in paragraph 2.3, USAFE:

2.5.1.1. Assists allied personnel in the USAFE area of responsibility with setting up nuclear surety programs for ally-operated systems.

2.5.1.2. Verifies allied personnel comply with the nuclear weapon system safety rules for ally-operated systems.

2.5.1.3. Verifies allied personnel accomplish time-compliance technical orders (TCTOs) that apply to their nuclear support equipment and notifies the TCTO-issuing agency and AFSC/SEW when TCTOs do not apply.



2.5.1.4. Verifies, through the Air Force custodial unit, that allied combat delivery vehicles meet approved standards for nuclear loading and delivery.

2.5.1.5. Verifies units report and investigate nuclear mishaps involving US owned ally-operated systems.

2.5.2. Due to the unique mission and geographic separation between Maintenance Squadrons (MXS)/Munitions Support Squadrons (MUNSS) and their parent wing(s), USAFE MXS/MUNSS and their parent wing(s) are permitted to assign responsibilities outlined in paragraphs 2.14 and 2.15 of this publication to wing managers or unit safety representatives as is necessary to best meet nuclear surety and safety requirements. Assignment of responsibilities will be outlined in writing ensuring all requirements are being performed, and procedures do not prevent commanders at any level from performing their program responsibilities.

**2.6. Air Education and Training Command (AETC).** AETC does not have a direct nuclear mission, but its training role is important to the Air Force Nuclear Weapons Surety Program's success. In addition to the applicable responsibilities listed in paragraph 2.3., AETC must:

2.6.1. Establish a nuclear surety program tailored to AETC's unique role.

2.6.2. Include nuclear surety as an integral part of all training involving nuclear weapons, nuclear weapon systems, or critical components and in courses in which a significant percentage of the students will perform PRP-related duties.

2.6.3. Develop inspection standards and inspect the nuclear surety training program, as appropriate, during NAF staff assistance visits (SAVs).

**2.7. MAJCOM Weapons Safety Office:**

2.7.1. Serves as the MAJCOM OPR for nuclear surety matters.

2.7.2. Develops criteria for wing nuclear surety councils.

2.7.3. Advises the MAJCOM staff on nuclear surety issues.

2.7.4. Publishes directives and supplements outlining MAJCOM-unique nuclear surety requirements.

2.7.5. Provides MAJCOM inspection teams with requested information related to nuclear surety matters.

2.7.6. Reviews plans submitted for storage of conventional and nuclear weapons within the same facility.

2.7.7. Ensures full-time weapon safety officers and weapon safety managers (WSMs) are trained on MAJCOM-unique items and nuclear surety program management within 90 days of assuming their positions.

2.7.8. Ensures host and tenant unit(s) relationships are established and reflected in a host-tenant agreement(s). The host-tenant agreement(s) will be developed in accordance with AFI 25-201, *Support Agreement Procedures*. Host-tenant agreements will specify the support required to implement an effective nuclear surety program. Submit in writing, those areas where mutual agreement cannot be reached to the appropriate MAJCOM(s) for resolution. As a minimum, the agreement must include the following areas:

- 2.7.8.1. Nuclear surety program management.
- 2.7.8.2. Inspections (e.g., nuclear surety, 12-month, spot, etc.).
- 2.7.8.3. PRP.
- 2.7.8.4. Review of local procedures in support of nuclear weapon system safety rules.
- 2.7.8.5. Mishap investigations, boards, and reporting responsibilities.
- 2.7.8.6. Major accident response procedures.

2.7.9. Distribute standardized nuclear surety training lesson plan to applicable units.

2.7.10. Approve unit's additional instructional material or augmented nuclear surety training lesson plans.

2.7.11. Request nuclear surety training testing material from AF/SEW when test has been compromised, become too familiar, or deemed necessary.

## **2.8. Numbered Air Force (NAF) Weapons Safety Managers (WSM):**

2.8.1. Advise the NAF Director of Safety and staff on nuclear surety issues.

2.8.2. If delegated by the MAJCOM, assume WSM training responsibilities and conduct it in conjunction with assistance visits.

2.8.3. Visit subordinate units as needed.

2.8.4. Assist NAF staff on PRP issues.

2.8.5. Check the adequacy and completeness of nuclear mishap reports and the corrective actions for nuclear surety problems found during higher headquarters inspections or assistance visits.

2.8.6. Review plans submitted for new or modified weapon storage sites and notify MAJCOM/SEW.

## **2.9. Installation Commanders:**

2.9.1. Ensure WSMs are trained, knowledgeable, and qualified.

2.9.2. Ensure senior leadership emphasis on mishap prevention.

2.9.3. Ensure nuclear surety deficiencies are identified, investigated, corrected, and reported.

2.9.4. Ensure plans and procedures support all tasked nuclear missions.

2.9.5. Ensure plans and procedures support Safe Haven requirements.

2.9.6. Ensure nuclear surety plans and procedures are reviewed by affected agencies before implementation.

2.9.7. Organize a nuclear surety council as outlined in paragraph 2.18 below.

2.9.8. Ensure full-time WSMs are not assigned additional tasks which detract from their primary safety duties.

2.9.9. Perform PRP responsibilities.

2.9.10. Establish a nuclear accident/incident response organization in accordance with AFI 10-2501.

2.9.11. Ensure the installation Chief of Security Forces, in conjunction with munitions and EOD personnel, reviews the plans for any movement of nuclear cargo, in accordance with AFI 21-203, *Nuclear Accountability Procedures*, and AFI 11-299, *Nuclear Airlift Operations*.

2.9.12. Joint Basing. Unless otherwise provided for in the Joint Basing Memorandum of Agreement, all applicable responsibilities prescribed in this Instruction will remain with the Joint Base (JB) Air Force Commander exercising command and control over mission functions.

## **2.10. Installation Staff Officers:**

2.10.1. Ensure Military Personnel Section (MPS) staff provides guidance and monitor the PRP.

2.10.2. Ensure Public Affairs office screens and releases mishap information to the public IAW AFI 91-204.

2.10.3. Ensure medical treatment facilities comply with all medical and dental PRP requirements in accordance with DOD 5210.42-R\_AFMAN 10-3902, *Nuclear Weapons Personnel Reliability Program*.

2.10.4. Civil Engineering staff:

2.10.4.1. Ensure fire protection personnel are trained to fight fires involving nuclear weapons.

2.10.4.2. Conduct timely inspections, maintenance, and repair of facilities and equipment used to secure and maintain nuclear weapons.

2.10.4.3. Coordinate plans for building or modifying nuclear weapon facilities in accordance with AFI 63-125 and AFMAN 91-118, *Safety Design and Evaluation Criteria for Nuclear Weapon Systems*, with the WSM, Chief of Security Forces, and the affected unit.

2.10.4.4. Develop fire fighting checklists for all areas and locations where nuclear weapons or nuclear weapon systems are present.

2.10.4.5. Ensure assigned or host base Emergency Operations Center personnel develop nuclear accident/incident response procedures and ensure Disaster Response Force members and/or Initial Response Element training is accomplished IAW AFI 10-2501.

2.10.4.6. Ensure EOD personnel develop nuclear accident/incident response procedures, maintain training on weapons in Air Force custody, and maintain task certification for supported weapons systems/platforms that are in the active inventory. Training and certification requirements are detailed in AFI 32-3001, *AF EOD Program Management*.

2.10.5. Chief of Security Forces:

2.10.5.1. Ensures applicable unit security policies, procedures, and directives comply with nuclear surety requirements, nuclear weapon system safety rules, support Safe Haven requirements, and diversions of nuclear-laden aircraft.

2.10.5.2. Evaluates, in conjunction with munitions personnel, logistical plans for the movement of nuclear cargo during the overall review of plans for nuclear weapon sites.

2.10.5.3. Supports PRP investigation requirements.

2.10.5.4. Ensures physical security and/or facility security software updates/upgrades are coordinated through WSM.

2.10.6. Transportation or contractor personnel will notify the unit WSM if a possible nuclear safety deficiency exists on nuclear certified equipment.

2.10.7. Airman and Family Readiness Center personnel perform PRP responsibilities.

### **2.11. Wing/Group Commanders:**

2.11.1. Enforce compliance with nuclear surety requirements.

2.11.2. Ensure the WSM reviews all plans, training, and programs that affect nuclear surety.

2.11.3. Perform PRP responsibilities.

2.11.4. Include applicable nuclear surety topics in training directives and programs for assigned personnel.

2.11.5. Ensure compliance of guidance and procedures for maintenance, personnel certification, the logistics movement of, and accountability procedures for nuclear weapons in accordance with AFI 21-203 and AFI 21-204, *Nuclear Weapon Maintenance Procedures*.

### **2.12. Unit/Squadron Commanders:**

2.12.1. Enforce nuclear surety program requirements.

2.12.2. Correct nuclear surety findings and deficiencies identified during NSIs and Program Management Evaluations (PMEs).

2.12.3. Perform PRP responsibilities in accordance with DOD 5210.42-R\_AFMAN 10-3902.

2.12.4. Appoint primary and alternate unit weapons safety representatives to serve as liaison to the wing weapons safety office.

### **2.13. Supervisors:**

2.13.1. Ensure personnel are properly trained and certified.

2.13.2. Include nuclear surety as part of each pretask briefing.

2.13.3. Emphasize reporting of all nuclear deficiencies.

2.13.4. Inform personnel of all changes to the nuclear surety program.

2.13.5. Perform PRP responsibilities IAW DOD 5210.42-R and AFMAN 10-3902.

### **2.14. Individuals:**

2.14.1. Inform supervisors if they are not qualified to perform a particular task.

2.14.2. Report nuclear safety hazards/deficiencies or security problems to supervisors and unit safety representatives.

- 2.14.3. Comply with the Two-Person concept.
- 2.14.4. Identify unreliable personnel to their supervisors.
- 2.14.5. Report information which could affect their own ability or reliability to perform a task due to medical or other problems.

## **2.15. Wing/Base Level Weapon Safety Managers:**

- 2.15.1. Perform 12-month nuclear surety inspections of each wing or base-level unit with nuclear surety responsibilities.
- 2.15.2. Ensure adequacy and completeness of corrective actions for nuclear surety findings and deficiencies found during WSM inspections, NSIs, and SAVs.
- 2.15.3. Conduct and/or assist in nuclear safety reporting as prescribed in AFI 91-204 and AFMAN 91-221, *Weapons Safety Investigations and Reports*, to include safety reporting of nuclear certified equipment located in both nuclear and non-nuclear units.
- 2.15.4. Review and disseminate information from nuclear mishap and deficiency reports.
- 2.15.5. Keep the commander, staff, and supervisors informed of issues and changes in the nuclear surety program.
- 2.15.6. Work with commanders, staff, supervisors, and support personnel to ensure the PRP is properly administered.
- 2.15.7. Check aircraft, munitions, and missile maintenance activities to ensure only authorized or certified equipment and Air Force-approved TOs, checklists, or procedures are being used with nuclear weapons.
- 2.15.8. Participate in the preparation of Safe Haven and PNAF mission support plans.
- 2.15.9. Perform spot inspections of areas involved with nuclear surety.
- 2.15.10. Develop localized specific training, as applicable, and incorporate into the standardized nuclear surety training lesson plan. Additional training should be inserted into appropriate section to ensure proper flow of lesson objective. Specific training above the mandatory requirements may be added at the end of the lesson plan.
  - 2.15.10.1. Periodically observe training sessions.
- 2.15.11. Review and coordinate site plans for new or modified nuclear facilities in accordance with AFMAN 91-201.
- 2.15.12. Review all locally developed checklists, instructions, operating procedures, and plans that impact nuclear surety. For locally developed workcards, checklists, job guides and page supplements for nuclear munitions follow guidance in T.O. 00-5-1, *AF Technical Order System*.
- 2.15.13. Conduct nuclear surety training, tailored to unit mission, for senior staff and unit safety representatives.
- 2.15.14. Ensure currency/completeness of Electromagnetic Radiation Surveys IAW AFMAN 91-201.

## **2.16. Unit Safety Representatives (USR):**

- 2.16.1. Perform nuclear surety spot inspections.
- 2.16.2. Ensure nuclear surety training is accomplished.
- 2.16.3. Coordinate with the WSM on all matters concerning nuclear surety.
- 2.16.4. Evaluate corrective actions for nuclear surety findings and deficiencies found during inspections, evaluations, and assistance visits.
- 2.16.5. Use nuclear surety cross-feed reports for unit mishap prevention.
- 2.16.6. Contact the WSM for training after being appointed a USR IAW AFI 91-202, *The US Air Force Mishap Prevention Program*.
- 2.16.7. Ensure unit developed checklists, instructions, operating procedures, and plans that impact nuclear surety are coordinated through the WSM.

## **2.17. Training:**

2.17.1. Commanders and Supervisors at all levels must ensure individuals receive initial nuclear surety training and 15-month recurring nuclear surety refresher training before they work with nuclear weapons, nuclear weapons systems, certified critical components, perform nuclear-related duties, or control entry into no-lone zones. At a minimum, these individuals must receive initial nuclear surety training prior to performing duties and 15-month recurring training thereafter, not later than the end of the 15<sup>th</sup> month following initial nuclear surety training and every 15 months thereafter. Individuals must complete a closed-book test with a minimum passing score of 80 percent. A test score of less than 80 percent requires remedial training and retesting with a different test before that person may perform nuclear-related duties. Document initial and 15-month recurring nuclear surety training. Initial and 15-month recurring training will include the following mandatory topics:

- 2.17.1.1. Importance of, and need for, a US nuclear capability.
- 2.17.1.2. Nuclear mishap prevention responsibilities of those personnel who work with nuclear weapons and components.
- 2.17.1.3. Possible adverse impact on US nuclear capability in the event of a serious nuclear mishap.
- 2.17.1.4. Security requirements.
- 2.17.1.5. Two-Person Concept, Sole Vouching Authority (SVA), and associated requirements and procedures.
- 2.17.1.6. PRP requirements IAW DOD 5210.42-R/AFMAN 10-3902.
- 2.17.1.7. Mishap and hazard reporting.
- 2.17.1.8. Use of Master Nuclear Certification List (MNCL) as the sole source for verifying the certification status of nuclear certified weapon systems, hardware, support equipment, and facilities.
- 2.17.1.9. Additional Topics:
  - 2.17.1.9.1. INRAD/ALARA

2.17.2. Unique topics commensurate with the unit's nuclear duties will also be trained (i.e., Safe Haven procedures, sealing of nuclear components, local situations that increase the risk of nuclear mishaps, etc.).

2.17.3. Ensure nuclear surety training is provided to all PRP certifying officials.

2.17.4. Tests will be randomly built from an AFSC validated test bank using two test questions for each mandatory topic and each common additional topic for a minimum of 20 questions per test. MAJCOMs are authorized to add (not substitute) test questions for their unique topics.

### **2.18. Wing/Base Nuclear Surety Council:**

2.18.1. As a minimum, the council must:

2.18.1.1. Be chaired by the wing/group commander or the deputy wing/group commander.

2.18.1.2. Include all members who are PRP certifying officials or their alternate, and the Base PRP Monitor.

2.18.1.3. Include, as advisors, functional experts who support the nuclear surety program.

2.18.1.4. Monitor wing nuclear surety program.

2.18.2. As requested, the host or tenant units will provide attendees at unit nuclear surety councils.

2.18.3. Units without nuclear mission and nuclear council establish process to inform local commanders on nuclear surety issues, including nuclear certified equipment.

**2.19. Nuclear Surety Awards.** Use the awards program to recognize deserving individuals and provide incentive for integrating nuclear surety practices into daily activities. Nomination procedures and selection criteria for nuclear surety awards are found in AFI 36-2833, *Safety Awards*.

### **3. Adopted Form:**

AF Form 847, *Recommendation for Change of Publication*

GREGORY A. FEEST, Major General,  
Chief of Safety

**Attachment 1****GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION*****References***

- DODD 3150.2, *DOD Nuclear Weapon System Safety Program*, December 23, 1996
- DOD 3150.2-M, *Nuclear Weapon System Safety Program Manual*, December 23, 1996
- DOD S-5210.41-M\_AFMAN31-108V1, *The Air Force Nuclear Weapon Security Manual*, 1 Feb 2010
- DOD S-5210.41-M\_AFMAN31-108V2, *General Nuclear Weapon Security Procedures*, 1 Feb 2010
- DOD S-5210.41-M\_AFMAN31-108V3, *Nuclear Weapon Specific Requirements*, 1 Feb 2010
- DOD 5210.42-R\_AFMAN10-3902, *Nuclear Weapons Personnel Reliability Program*, 13 Nov 2006
- AFPD 91-1, *Nuclear Weapons and Systems Surety*, 13 Feb 2007
- AFMAN 33-363, *Management of Records*, 1 Mar 2008
- AFMAN 91-118, *Safety Design and Evaluation Criteria for Nuclear Weapons Systems*, 4 Aug 2010
- AFMAN 91-201, *Explosive Safety Standards*, 17 Nov 2008
- AFMAN 91-221, *Weapons Safety Investigations and Reports*, 18 Jun 2004
- AFI 10-206, *Operational Reporting*, 15 Oct 2008
- AFI 10-2501, *Air Force Emergency Management Program Planning and Operations*, 24 Jan 2007
- AFI 11-299, *Nuclear Airlift Operations*, 19 Mar 2008
- AFI 21-203, *Nuclear Accountability Procedures*, 23 Nov 2009
- AFI 21-204, *Nuclear Weapon Maintenance Procedures*, 30 Nov 2009
- AFI 25-201, *Support Agreement Procedures*, 01 May 2005
- AFI 32-3001, *AF Explosive Ordnance Disposal (EOD) Program*, 10 Oct 2007
- AFI 36-2833, *Safety Awards*, 20 Sep 2006
- AFI 63-103, *Joint Air Force-National Nuclear Security Administration (AF-NNSA) Nuclear Weapons Life Cycle Management*, 24 Sep 2008
- AFI 63-125 *Nuclear Certification Program*, 15 Mar 2004
- AFI 90-201, *Inspector General Activities*, 17 Jun 2009
- AFI 91-102, *Nuclear Weapon System Safety Studies, Operational Safety Reviews, and Safety Rules*, 24 Jun 2010
- AFI 91-103, *Air Force Nuclear Safety Design Certification Program*, 16 Sep 2005



AFI 91-106, *Unauthorized Launch and Launch Action Studies*, 13 Aug 2010  
AFI 91-107, *Design, Evaluation, Troubleshooting, and Maintenance Criteria for Nuclear Weapon Systems*, 06 Apr 1994  
AFI 91-108, *Air Force Nuclear Weapons Intrinsic Radiation Safety Program*, 29 Nov 1993  
AFI 91-202, *The US Air Force Mishap Prevention Program*, 1 Aug 1998  
AFI 91-204, *Safety Investigations and Reports*, 24 Sep 2008  
T.O. 00-5-1, *AF Technical Order System*, 1 Oct 2008  
T.O. 11N-5-1, *Unsatisfactory Reports*, 26 Aug 2008  
T.O. 11N-20-7, *Nuclear Safety Criteria*, 2 Jan 2008  
T.O. 11N-25-1, *Department of Defense Nuclear Weapons Technical Inspection*, 19 Feb 2008  
AFRIMS RDS, [https://afrims.amc.af.mil/rds\\_series.cfm](https://afrims.amc.af.mil/rds_series.cfm)

***Abbreviations and Acronyms***

**AETC**— Air Education and Training Command  
**AFMC**— Air Force Materiel Command  
**AFNWC**— Air Force Nuclear Weapons Center  
**AFRIMS**— Air Force Records Information System  
**AFSC**— Air Force Safety Center  
**AS&I**— Assembly, surveillance, and inspection  
**DRU**— direct reporting unit  
**EOD**— Explosive Ordnance Disposal  
**FOA**— field operating agency  
**M&I**— Maintenance and inspection  
**MAJCOM**— Major Command  
**MPS**— Military Personnel Section  
**NAF**— Numbered Air Force  
**NSI**— Nuclear Surety Inspection  
**MUNSS**— Munitions Support Squadron  
**MXS**— Maintenance Squadron  
**NWSSG**— Nuclear Weapon System Safety Group  
**OPDD**— Operational Plan Data Document  
**OPR**— Office of Primary Responsibility  
**PNAF**— Prime Nuclear Airlift Force

**RDS**— Records Disposition Schedule  
**PME**— Program Management Evaluations  
**PRP**— Personnel Reliability Program  
**RSO**— Radiation Safety Officer  
**SAV**— Staff assistance visit  
**SVA**— Sole Vouching Authority  
**TCTO**— Time Compliance Technical Order  
**TNSA**— Technical Nuclear Safety Analysis  
**TO**— Technical order  
**UL**— Unauthorized launch  
**USAFE**— US Air Forces in Europe  
**USR**— Unit Safety Representatives  
**WSA**— Weapons storage area  
**WSSR**— Weapons System Safety Rules  
**WSM**— Weapons safety manager  
**WS3**— Weapons storage and security system

### *Terms*

**Abnormal Environment**—An environment outside the levels specified for the normal environment described in the stockpile-to-target document. In an abnormal environment the nuclear weapon or nuclear weapon system is not expected to retain full operational reliability. (USAF)

**Accident**—An unexpected event involving destruction of, or serious damage to, nuclear weapons, nuclear weapon systems, or nuclear components that result in an actual or potential threat to national security or to life and property. (USAF)

**Accidental Motor Ignition**—The unplanned initiation of propulsive burning of a missile stage motor, including the post-boost vehicle, from causes other than the propagation of a launch sequence. (USAF)

**Air Force Nuclear Weapons Surety Program**—Air Force policies, procedures, and safeguards used to comply with DOD Nuclear Weapon System Safety Standards. (USAF)

**Aircraft Monitoring and Control**—Equipment installed in aircraft to permit monitoring and control of safing, arming, and fuzing functions of nuclear weapon systems. (JP 1-02)

**Ally—Operated Nuclear Weapon System**—A nuclear weapon system used by an allied nation with US nuclear weapons that are in US Air Force custody. (USAF)

**Arm/Disarm Device**—A mechanical or electromechanical device that provides a positive interruption of the firing circuit to prevent initiation of an explosive or pyrotechnic train before the device's commanded closure. (USAF)

**Arming**—Operations that configure a nuclear weapon or nuclear weapon system so application of a single signal will start the action required for obtaining a nuclear detonation. (DOD).

**As applied to explosives, weapons, and ammunition, the changing from a safe condition to a state of readiness for initiation.** (JP 1—02)

**As Low As Reasonably Achievable**—A major philosophy of current radiation protection practice which requires that every reasonable effort be made to keep radiation exposures as far below the dose limits as practical when technical, economic, and social factors are taken into account. (USAF)

**Authorization**—The critical function that prevents unauthorized use of a nuclear weapon system. This function is executed by the weapon system operator's transmission of secure codes (released by National Command Authority direction) to the nuclear weapon system's authorization device or devices to allow prearming, arming, or launching of a nuclear weapon. (USAF)

**Automata**—Electronic machines, control devices, etc., capable of performing logical, computational, or repetitive routines designed to operate automatically in response to a predetermined set of instructions. (USAF)

**Certification**—A determination by appropriate government agencies that a nuclear weapon system is safe for use with nuclear weapons; that the nuclear weapons are compatible with the nuclear weapon system, and whether any operational restrictions will be placed on the nuclear weapon system to ensure safety and compatibility. This determination is required before the nuclear weapon system achieves operational status. (USAF).

**The process through which all nuclear weapon**—related requirements pertaining to the broad areas of safety, compatibility, and unit readiness are accomplished. (DOD).

**Certification Effort (Software and Firmware)**—The means for verifying that a component (hardware or software) complies with AFI 91-107. (USAF)

**Certified Critical Component**—A critical component that has successfully completed operational certification according to approved technical order procedures. (USAF)

**Code Component**—Any device, assembly material, software, or information so designated by the National Security Agency. (USAF)

**Cognizant Agent**—A clandestine agent, with authorized access to a classified system, who conducts or supports an attack against the system. Also, a person whose normal duties afford the knowledge and opportunity to tamper with certified critical components, codes, or the nuclear command and control system of a nuclear weapon system. (USAF)

**Combat Delivery Vehicle**—A vehicle, with its installed equipment and components, used to deliver a nuclear weapon to a target. (USAF)

**Command Disable**—A feature which allows manual activation of the nonviolent disablement of critical weapon components. The command disable system may be internal or external to the weapon. (USAF)

**Contribute To**—This term is applied when an unauthorized launch (UL) study team determines a component would play an important part in an UL scenario but could not alone cause a launch. (USAF)

**Credible Abnormal Environment**—An abnormal environment that has a plausible and reasonable probability of occurrence under a given set of circumstances. (USAF)

**Credible Threat or Scenario**—A threat or scenario, fitting the assumptions and ground rules in AFI 91-106, *Unauthorized Launch and Launch Action Studies*, that a federal agency responsible for establishing policy with regard to the type vulnerability identified in the threat or scenario (i.e., National Security Agency when addressing code components) has determined to be credible. (USAF)

**Critical**—A term describing a function, circuit, or activity that directly controls the authorizing, prearming, arming, or launching or releasing of a nuclear weapon, or the targeting of a ground-launched nuclear weapon system. (USAF)

**Critical Component**—A component of a nuclear weapon system that if bypassed, activated, or tampered with could result in or contribute to deliberate or inadvertent authorizing, prearming, arming, or launch of a combat delivery vehicle carrying a nuclear weapon, or the targeting of a nuclear weapon to other than its planned target. AFSC/SEW designates critical components. (USAF)

**Critical Fault**—Any nuclear weapon system malfunction that results in inadvertent application of control signals or power to the bomb, warhead, or missile propulsion system; degradation in the integrity of prearm, launch, or release primary safety features; unintentional issuance of critical function command signals; or inability to determine weapon system safe status. (USAF)

**Current Limited**—Monitor or test currents limited so that the maximum current which can be delivered to a nuclear weapon for monitoring or testing purposes will be less than required to operate the most sensitive component in the arming and fuzing sequence. (USAF)

**Custody**—The responsibility for the control of, transfer and movement of, and access to nuclear weapons and components. Custody also includes the maintenance of accountability for nuclear weapons and components. (DOD)

**Design Decertification**—Action by proper authority to remove a system or component from design certification. (USAF)

**Dynamic Load**—An external force or combination of forces (i.e., g-loads, vibration loads, shock loads, and centrifugal loads) that result in acceleration of an object. (USAF)

**Electrical Isolation**—Separation of electrical circuits, signals, or data by physical isolation or the use of any property (i.e., time, phase, amplitude, or frequency) that distinguishes one electrical signal from all others to preclude ambiguity, interference, or altered information. (USAF)

**Electro—explosive Device**—An explosive or pyrotechnic component that initiates an explosive, burning, electrical, or mechanical train and is activated by the application of electrical energy. (JP 1-02)

**Electromagnetic Compatibility**—The ability of systems, equipment, and devices that utilize the electromagnetic spectrum to operate in their intended operational environments without suffering unacceptable degradation or causing unintentional degradation because of electromagnetic radiation or response. It involves the application of sound electromagnetic spectrum management; system, equipment, and device design configuration that ensures interference-free operation, and clear concepts and doctrines that maximize operational effectiveness. (JP 1-02)

**Electromagnetic Interference**—Any electromagnetic disturbance that interrupts, obstructs, or otherwise degrades or limits the effective performance of electronics and electrical equipment. It can be induced intentionally, as in some forms of electronic warfare, or unintentionally, as a result of spurious emissions and responses, intermodulation products, and the like. (JP 1-02)

**Electromagnetic Pulse**—The electromagnetic radiation from a nuclear explosion caused by Compton-recoil electrons and photoelectrons from photons scattered in the materials of the nuclear device or in the surrounding medium. The resulting electric and magnetic fields may couple with electrical and electronic systems to produce damaging current and voltage surges. May also be caused by nonnuclear means. (JP 1-02)

**Electromagnetic Radiation**—Radiation made up of oscillating electric and magnetic fields and propagated with the speed of light. Includes gamma radiation, X-rays, ultraviolet, visible, and infrared radiation, and radar and radio waves. (JP 1-02)

**Emergency**—An unexpected occurrence or set of unexpected circumstances in which personnel or equipment unavailability due to accident, natural event, or combat, may demand immediate action that may require extraordinary measures to protect, handle, service, transport, or employ a nuclear weapon. (DOD)

**Engineering Review**—A review of the nuclear safety engineering evaluation and program documentation by an Air Force engineering agency independent of the organization performing the engineering evaluation. (USAF)

**Explosive Ordnance Disposal Procedures**—Those particular courses or modes of action taken by EOD personnel for access to, diagnosis, rendering safe, recovery, and final disposal of explosive ordnance or any hazardous material associated with an EOD incident. (JP 1-02)

**Access Procedures**—Those actions taken to locate exactly and to gain access to unexploded explosive ordnance. (DOD)

**Diagnostic Procedures**—Those actions taken to identify and evaluate unexploded explosive ordnance. (DOD)

**Render—Safe Procedures**—The portion of the EOD procedures involving the application of special EOD methods and tools to provide for the interruption of functions or separation of essential components of unexploded explosive ordnance to prevent an unacceptable detonation. (DOD)

**Recovery Procedures**—Those actions taken to recover unexploded explosive ordnance. (DOD)

**Final Disposal Procedures**—The final disposal of explosive ordnance that may include demolition or burning in place, removal to a disposal area, or other appropriate means. (DOD)

**Facility Lifting and Suspension Systems**—Equipment (i.e., a hoist, crane, or suspended load frame) installed in a facility and used to lift or support nuclear weapons. (USAF)

**Fail—Safe**—A characteristic of a fuze system, or part thereof, designed to result in a dud round when one or more safety features malfunction. A design feature of a nuclear weapon system or component that ensures a critical function or weapon damage will not occur because of a failure in the system or component. (USAF)

**Firmware**—Combination or executable computer programs and data (software) stored in any form of read-only memory that will be unalterable during program execution. (USAF)

**First—Level Interface Software**—Software that controls the critical functions of a nuclear weapon system. (USAF)

**Functional Expert Visit**—A technical visit by AFSC subject matter experts to review areas for compliance with directives and policies rated during Nuclear Surety Inspections (NSIs). T.O. 11N-25-1 identifies areas to be reviewed. Visits are at the request of unit commanders and the results will only be provided to the requesting commander. (USAF)

**Hardware**—Generic term dealing with physical items as distinguished from its capability or function such as tools, implements, instruments, devices, sets, fittings, trimmings, assemblies, subassemblies, components, and parts. The term is often used in regard to the stage of development, as in the passage of a device or component from the design stage into the hardware stage as the finished object. (JP 1-02)

**In data automation, the physical equipment or devices forming computer and peripheral components.** See also “Software”. (JP 1—02)

**Hardwire**—A dedicated discrete electrical circuit. (USAF)

**Inadvertent Programmed Launch**—The inadvertent entry into terminal countdown or launch countdown and the resultant launch of a missile to a predetermined target. (USAF)

**Incident**—An unexpected event, not constituting an accident that involves a nuclear weapon, nuclear weapon system, or nuclear component and results in:

**An increase in the risk of nuclear or high**—explosion or radioactive contamination. (USAF)

Errors committed in the assembly, testing, loading, or transporting of equipment, or the malfunctioning of equipment and material that may lead to unintentional operation of any part of the weapon arming and firing sequence. (USAF)

Significant damage to nuclear weapons or nuclear components caused by any natural occurrence, unfavorable environment, or other conditions. (USAF)

**Independent Verification and Validation**—The analysis and test of computer software by an organization that is separate from the development contractor or organization. (USAF)

**Informational Storage Media**—Documents, tapes, disks, cards, plugs, memories, and other devices used to store information. (USAF)

**Intrinsic Radiation**—Ionizing radiation emitted through the weapon surface or directly from exposed components of nuclear weapons. (USAF)

**Ionizing Radiation**—Electromagnetic or particulate radiation capable of causing ionization in its passage through matter. Alpha, beta, gamma, X-rays, and neutrons are examples of ionizing radiation. (USAF)

**Jettison**—The selective release of stores from an aircraft other than for normal attack. (JP 1-02)

**Launch**—The transition from static repose to dynamic flight of a missile. (JP 1-02)

**Launch Action Study**—An analysis of a specific weapon system component to determine the actions necessary to cause the component to contribute to an unauthorized launch. (USAF)

**Launch Action Threat**—A description of how an individual component can be tampered with to achieve a specific unauthorized result. (USAF)

**Launch Activation Path**—The path by which information and energy flow to effect a missile launch. (USAF)

**Launch Control Point**—The control center from which system operators control, monitor, and launch a ground-launched missile. (USAF)

**Launch Point**—The geographical area or facility from which a ground-launched missile is launched. (USAF)

**Military Characteristics**—Those characteristics of equipment upon which depends its ability to perform desired military functions. Military characteristics include physical and operational characteristics but not technical characteristics. (JP 1-02)

**Modifications**—Physical or functional configuration changes to equipment or software. (USAF)

**Monitor Current**—A limited current introduced into a nuclear weapon to determine the functional state of selected components. (USAF)

**Multiplexed System**—A signal transmission system in which two or more signals share one transmission path. (USAF)

**No—Lone Zone**—An area where the Two-Person Concept must be enforced because it contains a nuclear weapon, nuclear weapon system, or certified critical component. (USAF)

**Noncombat Delivery Vehicle**—Any vehicle, other than combat vehicles, used to move nuclear weapons. (USAF)

**Nonsensitive Task**—Any Nuclear Safety Cross-Check Analysis (NSCCA) activity in which no opportunity exists for an individual to affect the outcome of the NSCCA, or where a subsequent review or analysis exists that would reveal any act of omission or commission affecting the NSCCA outcome. (USAF)

**Nonspecialized Equipment**—Equipment used with nuclear weapons but not specifically designed for that purpose. (USAF)

**Normal Environment**—The expected logistical and operational environments defined in the stockpile-to-target sequence document that the nuclear weapon system is required to survive without degrading operational reliability. (USAF)

**Nuclear Cargo**—A nuclear weapon or nuclear component (except limited life components) prepared for nuclear logistics movement. (USAF)

**Nuclear Certification Impact Statement**—A description and evaluation of the potential nuclear surety impact a proposed modification or test program may have on an assembled weapon system or its subsystems. (USAF)

**Nuclear Certified Equipment**—Peculiar (i.e., system specific) and common specialized or non-specialized support equipment whose design meets applicable design criteria and is nuclear certified IAW AFI 63-125, *Nuclear Certification Program* and identified in the MNCL.

**Nuclear Certified Item**—Procedures, equipment, software, facilities, systems, subsystems or components which are nuclear certified IAW AFI 63-125, *Nuclear Certification Program*.

**Nuclear Command and Control System**—Hardware, software, and firmware components required for proper authorization-to-launch sequence. (USAF)

**Nuclear Component**—Weapon component composed of fissionable or fusionable materials that contribute substantially to nuclear energy released during detonation. (USAF)

**Nuclear Consent Function**—A function implemented by a deliberate act that provides two-person control over the release system unlock and nuclear weapon prearm functions. (USAF)

**Nuclear Cross—Check Identified Software**—Includes all first-level interface software and certain second-level interface software identified by AFSC/SEW (the Nuclear Weapon System Safety Group may recommend software) as cross-check identified software. (USAF)

**Nuclear Logistic Movement**—The transport of nuclear weapons in connection with supply or maintenance operations. Under certain specified conditions, combat aircraft may be used for such movements. (JP 1-02)

**Nuclear Operating Command**—The major command responsible for operating, maintaining, and providing security for the nuclear weapon system. (USAF)

**Nuclear Safety—Certified Procedures**—Procedures approved for use with nuclear weapons, nuclear safety-certified equipment, or nuclear weapon systems and published in Air Force technical orders or technical publications. (USAF)

**Nuclear Safety Certified Software**—Software that has received nuclear safety design certification by AFSC/SEW. (USAF)

**Nuclear Safety Criteria**—Design and evaluation criteria for ensuring nuclear safety is a basic system engineering and procedural requirement in nuclear weapon and logistics systems. (USAF)

**Nuclear Safety Cross—Check Analysis**—An analysis by an organization that is independent of the software developer to ensure critical software does not contain improper design, programming, fabrication, or application that could contribute to:

Unauthorized or inadvertent authorization, prearming, arming, or launching or releasing of a nuclear weapon or nuclear weapon system. (USAF)

Premature or unsafe operation of a nuclear weapon system. (USAF)

Delivery of a nuclear weapon outside the specified boundary of the planned target. (USAF)  
Unauthorized, improper, or erroneous display of status or classified information that could degrade nuclear surety. (USAF)

Improper handling of classified cryptographic codes, invalid verification, or the retrieval of such codes by unauthorized persons in a manner that could degrade nuclear surety. (USAF)

**Nuclear Safety Design Certification**—A determination by AFSC/SEW that all applicable nuclear safety criteria for a given hardware or software design have been met and the design is



authorized for use with nuclear weapons upon nuclear certification. Also referred to as "nuclear safety certification" or "design certification." (USAF)

**Nuclear Safety Discrepancy Report**—A discrepancy report that references the program material or output in which the discrepancy was detected and provides a detailed description of the problem with reference to the nuclear safety objective violated. (USAF)

**Nuclear Surety Program Visit**—A review by AFSC subject matter experts of all or portions of a unit's Nuclear Surety Program. Includes, but not limited to, nuclear surety awareness briefings, review of training programs, and town hall type meetings to answer questions regarding nuclear surety. Visits are at the request of unit commanders and the results will only be provided to the requesting commander. (USAF)

**Nuclear Weapon**—A complete assembly (i.e., implosion type, gun type, or thermonuclear type) in its intended ultimate configuration which, upon completion of the prescribed arming, fusing, and firing sequence, is capable of producing the intended nuclear reaction and release of energy. (JP 1-02)

**Nuclear Weapon System**—A combat delivery vehicle with its nuclear weapon or weapons and associated support equipment, noncombat delivery vehicles, facilities, and services. (USAF)

**Nuclear Weapon System Safety Group**—The NWSSG is composed of representatives from applicable Air Force major commands, Combatant Commands, Air Force Security Forces Center, Department of Energy, and Defense Threat Reduction Agency and is chaired by an appointee from AFSC/SEW. It conducts all nuclear weapon system safety studies and operational safety reviews to evaluate Air Force nuclear weapon systems and ensure the DOD Nuclear Weapon System Safety Standards are met in weapon system design and operations. (USAF)

**Nuclear Weapon System Safety Rules**—Secretary of Defense-approved procedural safeguards governing all operations with nuclear weapons or nuclear weapon systems. (USAF)

**Nuclear Weapons Surety**—Materiel, personnel, and procedures which contribute to the safety, security, and reliability of nuclear weapons and to the assurance that there will be no nuclear weapon accidents, incidents, unauthorized weapon detonations, or degradation in performance at the target. (DOD)

**Operational Certification**—The process of verifying a system or critical component is functioning as design certified and all credible threats and scenarios are mitigated. (USAF)

**Operational Decertification**—Action by proper authority to remove a system or component from operational use. (USAF)

**Operational Plan Data Document**—A document that describes normal nuclear weapon system operations in the stockpile-to-target sequence during peacetime and periods of increased tension. The OPDD serves as a source document for the nuclear weapon system safety rules. (USAF)

**Opportunity**—The time and physical proximity needed to tamper with or damage a nuclear weapon, nuclear weapon system, or certified critical component. (USAF)

**Permissive Action Link**—A family of devices and subsystems designed to reduce the possibility of obtaining nuclear detonation from a nuclear warhead without the use (insertion) of a controlled numerical code. (DOD)

**Personal Dosimeter**—A device used to monitor the ionizing radiation exposure of an individual. (USAF)

**Physical Isolation**—The physical separation of wiring, parts, modules, assemblies, and similar items to preclude physical contact or interaction so as to prevent common malfunctions and activation of critical functions in all environments. (USAF)

**Positive Measure**—A design feature, procedure, safety rule, accident prevention or mitigation measure that works to reduce the likelihood, severity, or consequence of an accidental or deliberate threat involving a nuclear weapon or nuclear weapon system. An example of a specific positive measure would be a permissive action link designed to prohibit the arming of the weapon, except when properly authorized. An example of a general positive measure would be the presence of a certified firefighting capability at an operational air base. (USAF)

**Prearm Command Signal**—A signal to the weapon that the personnel controlling the weapon want it to function and produce a nuclear detonation. (USAF)

**Prearming**—Operations that configure a nuclear weapon system so that arming, firing, launching, or releasing will start the sequence necessary to produce a nuclear detonation. (DOD)

**Prime Nuclear Airlift Force**—Those aircrews, aircraft, and other functions provided for peacetime support of logistical airlift of nuclear weapons and nuclear components. (USAF)

**Radiation Safety Officer**—The functional title assigned to an individual designated by the commander to manage a radiation safety program and provide advice on the hazards associated with radiation and the effectiveness of measures to control these hazards. The following functional titles are not intended to denote either a commissioned status or a job classification within the Air Force:

**Base RSO**—A person designated by the installation commander to conduct the base-wide radiation safety program and assist the unit RSO in maintaining a comprehensive radiation safety program. This individual will usually be the base bioenvironmental engineer or health physicist, if assigned, but may be a senior bioenvironmental engineering technician. (USAF)

**Unit RSO**—A person designated by the unit commander to act as the single focal point for unit radiation safety matters and coordinate radiation protection activities with the base RSO. Each operational unit that maintains or stores nuclear weapons must have a unit RSO. (USAF)

**Radioactive Material**—Any material or combination of materials that spontaneously emit alpha, beta, gamma, X-ray, or neutron radiation. (USAF)

**Release**—In air armament, release is the intentional separation of a free-fall aircraft store from its suspension equipment for purposes of employment of the store. (JP 1-02)

Separation of a missile from a carrier aircraft with the intended result being programmed flight to target. (USAF)

**Reliability**—The ability of a system and system parts to perform their mission without failure, degradation, or demand on the support system. (USAF)

**Reversion**—The process or event of returning to the original state, phase, or condition. (USAF)

**Safe and Arm Device**—A device that provides electrical and mechanical interruption of the firing circuits or mechanical interruption between the initiator and the subsequent explosive or pyrotechnic train. (USAF)

**Safe Haven**—Designated areas to which noncombatants of the US Government's responsibility, and commercial vehicles and materiel, may be evacuated during a domestic or other valid emergency. (JP 1-02)

**Temporary storage provided Department of Energy classified shipment transporters at Department of Defense facilities in order to ensure safety and security of nuclear material and nonnuclear classified material. Also includes parking for commercial vehicles containing Class A or Class B explosives.** (JP 1—02)

**Scrolling**—In a multifunction control and display system, the replacement of the active nuclear weapon system function with a nonnuclear function. (USAF)

**Second—Level Interface Software**—Software that may interact with first-level interface software but does not control any critical functions of a nuclear weapon system. (USAF)

**Security (Internal)**—Design features internal to the nuclear weapon system or nuclear weapon that prevent unauthorized use (i.e., use control). (USAF)

**Security (Physical)**—The part of security concerned with physical measures designed to safeguard personnel, to prevent unauthorized access to equipment, installations, material and documents; and to safeguard them against espionage, sabotage, damage, and theft. (DOD)

**Sensitive Task**—Nuclear Safety Cross-Check Analysis activity in which an individual could cause or allow unauthorized programming to be introduced into a nuclear weapon system. (USAF)

**Significant Nuclear Yield**—The energy released through nuclear fission or fusion that is equivalent to or greater than the energy released by detonation of four pounds of TNT. (USAF)

**Simultaneous Presence**—The storage of nuclear weapons and conventional munitions in the same facility. (USAF)

**Software**—A set of computer programs, procedures, and associated documentation concerned with the operation of a data processing system; e.g., compilers, library routines, manuals, and circuit diagrams. (JP 1-02)

**Software Advisory Group**—A forum of interested parties to discuss the software nuclear safety design certification effort and provide a consensus of resolutions on nuclear safety concerns. (USAF)

**Sole Vouching Authority**—The Sole Vouching Authority (SVA) identifies individuals wishing to gain entry to a no-lone zone, verifies authorization, and validates need for entry into the no-lone zone. Note: SVA is the representative identified as having responsibility for deciding who will enter the no-lone zone.

**Specialized Equipment**—Equipment designed specifically for use with nuclear weapons. (USAF)

**Split—Handling**—A stringent procedure used to maintain a launch function separation that was intentionally designed into two or more different critical components. This procedure prevents a

single individual or Two-Person Concept team from having access to the entire launch function. (USAF)

**Split—Knowledge**—The separation of information contained in the complete certified critical component so an individual or Two-Person Concept team is denied knowledge of the total information. (USAF)

**Static Load**—A load imposed during normal operations (in normal environments) in a static state. (USAF)

**Stockpile—to-Target Sequence**—The order of events involved in removing a nuclear weapon from storage and assembling, testing, transporting, and delivering it on the target. (JP 1-02)

**A document that defines the logistical and employment concepts and related physical environments involved in the delivery of a nuclear weapon from the stockpile to the target. It may also define the logistical flow involved in moving nuclear weapons to and from the stockpile for quality assurance testing, modification and retrofit, and the recycling of limited life components. (JP 1—02)**

**Stores Management System**—The portion of the aircraft system that provides weapon control, release, and monitor functions. (USAF)

**Support Equipment**—Includes all equipment required to perform the support function, except that which is an integral part of the mission equipment. It does not include any of the equipment required to perform mission operation functions. Support equipment should be interpreted as tools, test equipment, automatic test equipment (when used in a support function), organizational, field, and depot support equipment, and related computer programs and software. (USAF)

**Tamper**—To knowingly perform an incorrect act or unauthorized procedure involving a nuclear weapon, nuclear weapon system, or certified critical component. (USAF)

**Tamper Detection Indicators**—A sealing method that provides evidence in the event a critical component has been tampered with or inadvertently activated. (USAF)

**Targeting**—Operations that involve identifying specific target sets, transferring target data to a guidance computer, and following the programmed flight path to the specified target. (USAF)

**Technical Nuclear Safety Analysis**—An independent technical analysis of a nuclear weapon system and its associated operational procedures. The TNSA provides the Nuclear Weapon System Safety Group with an independent opinion as to whether the weapon system's design safety and security features, in conjunction with its operational procedures, satisfy the DOD Nuclear Weapon System Safety Standards. (USAF)

**Third—Party Agent**—Any individual who does not meet the criteria of a cognizant agent. (USAF)

**Time—Division Multiplexing**—The transmission of information from several signal channels through one communication system with different channel samples staggered in time to form a composite pulse train. (USAF)

**Two—Person Concept**—Designed to ensure that a lone individual is denied access to nuclear weapons, nuclear weapon systems or critical components, never allowing the opportunity for tampering, damage, or an unauthorized act to go undetected. The Two-Person concept requires

the presence at all times of at least two authorized persons, each certified under the Personnel Reliability Program (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 with respect to the task to be performed. Both members must have completed required nuclear surety and PRP training. **NOTE:** Also known as Two-Person Rule. (JP 1-02)

**Unauthorized Launch**—A deliberate unauthorized act that causes any movement (resulting from the direct impulse of a propulsion subsystem) of a nuclear weapon mated to a ground-launched missile. The UL categories are:

**Type 0 Launch**—Ignition of a propulsive stage or engine that results in missile movement but without the missile exiting the launch platform due to physical restraints. (USAF)

**Type 1 Launch**—Ignition of a propulsive stage or engine that results in missile launch from the launch platform but with an inactive guidance system. (USAF)

**Type 2 Launch**—Missile launch with an active guidance system that results in powered flight to a preprogrammed target but without a nuclear yield. (USAF)

**Type 3 Launch**—Missile launch with an active guidance system that results in powered flight to a preprogrammed target with a nuclear yield. (USAF)

**Unauthorized Launch Report**—A documented analysis of a nuclear weapon system's susceptibility to unauthorized launch. (USAF)

**Unauthorized Launch Scenario**—A complete account of how an unauthorized launch can be achieved by using specific launch action threats. The scenario may include one or more launch action threats. It will describe the procedures the agent needs to follow, the tools needed for each step of the procedure, and the normal operating conditions that must be overcome. (USAF)

**Unique Signal**—A digital or analog signal that operates only one specific and corresponding critical function by allowing the receiver to discriminate this signal from all other signals in the nuclear weapon system and from those signals that may be generated accidentally or applied from outside the nuclear weapon system. (USAF)

**Use Control**—The control of unauthorized use or detonation of a nuclear weapon. Includes passive and active protection, and disablement systems.

**Volatile Memory**—A storage medium that loses information when power is removed from the system. (USAF)

**Weapons Safety Manager**—An individual who manages a base, wing, or equivalent safety program consisting of explosives safety, missile safety, nuclear surety, or any combination of these. (USAF).

**Attachment 2****NUCLEAR SURETY AUGMENTATION PROGRAM**

**A2.1. Purpose and Scope.** AFSC/SEW provides assistance to the MAJCOM/SE on request. AFSC personnel may augment MAJCOM inspections, staff assistance efforts, or special interest evaluations relating to nuclear surety at any level within the command.

**A2.2. Coordination.** The MAJCOM safety office will forward requests to AFSC/SEW. Include a proposed schedule and locations to be visited. AFSC/SEW will respond with the level of support that can be provided and proposed team composition. The MAJCOM is responsible for making any other required notifications.