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**Safety**

**NUCLEAR WEAPONS AND SYSTEMS SURETY**

**COMPLIANCE WITH THIS PUBLICATION IS MANDATORY**

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This directive implements DoD Directive 3150.2, *DoD Nuclear Weapon System Safety Program*, 23 December 1996, and establishes the Air Force Nuclear Surety Program. The potential destructive power of nuclear weapons is well known, and all radioactive materials pose hazards if not properly controlled. Nuclear systems require special handling and other protective measures to prevent accidents, unauthorized use, or dangerous exposure. This directive provides policies for managing nuclear weapons and weapon systems, and for protecting personnel, property, and the environment from hazardous exposure to radioactive materials and is applicable to units and agencies as written in paragraph 7. Do not issue complementing instructions without approval from AF/SE. Ensure that all records created as a result of processes prescribed in this publication are maintained in accordance with AFMAN 37-123, Management of Records and disposed of in accordance with the Air Force Records Disposition Schedule (RDS) located at <https://afrims.amc.af.mil>.

**SUMMARY OF CHANGES**

Clarified applicability in paragraph 7.; added nuclear safety design certification to paragraph 5.2.; updates references to reflect current supporting material; updated the definition of "Nuclear Yield" under terms; added several new terms on page 4; terminology, as defined in attachment one, will be used as source definitions for implementing instructions, manuals and handbooks of this policy directive.

1. The Air Force will ensure nuclear weapons and weapon systems receive special attention and consideration because of their political and military importance, their destructive power, and the potential consequences of an accident or unauthorized act
2. The Air Force will ensure that personnel, the environment, and property are protected from undue risk of damage or harm by maintaining risks as low as reasonably achievable (ALARA) consistent with mission requirements. This policy applies to nuclear weapons and throughout the life cycle of all terrestrial reactors, nuclear energy power and propulsion systems, or radioactive sources intended for missile or space use.

3. The Air Force will keep personnel exposures to intrinsic ionizing radiation from nuclear weapons ALARA consistent with mission requirements.
4. The Air Force will establish and conduct programs to maintain the surety of nuclear weapons and weapon systems in Air Force custody; of terrestrial reactors the Air Force owns or operates; and of all nuclear energy power and propulsion systems, or radioactive sources intended for missile or space use.
5. The following responsibilities and authorities are to be derived from this policy:
  - 5.1. SAF/IE will, in accordance with the Secretary of the Air Force Order 103.1, provide guidance, direction, and oversight of all matters pertaining to the formulation, review, and execution of policies, plans, programs, and budgets relative to environment, safety, and occupational health (ESOH) matters. SAF/IE coordination is required before this document is changed, reissued, or rescinded.
  - 5.2. The Chief of Safety (AF/SE) will oversee nuclear safety design certification and nuclear surety of nuclear weapons and weapons systems throughout the Air Force.
  - 5.3. Headquarters Air Force Safety Center (HQ AFSC) will prepare instructions to implement and support this directive.
  - 5.4. Commanders at all levels with a mission related to nuclear weapons and weapon systems will:
    - 5.4.1. Implement and comply with these policies and implementing instructions in their planning, decisions, and operations.
    - 5.4.2. Incorporate maximum nuclear surety, consistent with operational requirements, in their planning, decisions, and operations.
6. Major commands, field operating agencies, and direct reporting units, if applicable, will not issue instructions that complement this policy directive without HQ USAF/SE approval.
7. These policies apply 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.

Michael W. Wynne  
Secretary of the Air Force

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

AFPD 21-2, *Munitions*, 20 September 2005

AFPD 31-1, *Physical Security*, 1 August, 1995

AFPD 32-70, *Environmental Quality*, 20 July 1994

AFPD 91-2, *Safety Programs*, 28 September 1993

AFPD 91-3, *Occupational Safety and Health*, 27 September 1993

AFPD 91-4, *Directed Energy Weapons Safety*, 11 July 2003

AFJI 11-204, *Operational Procedures for Aircraft Carrying Hazardous Material*, 11 Nov 94

AFI 10-206, *Operational Reporting*, 4 October 2004

AFI 36-2104, *Nuclear Weapons Personnel Reliability Program*, 05 Aug 2005

AFI 63-125, *Nuclear Certification Program*, 15 March 2004

AFI 90-201, *Inspector General Activities*, 22 November 2004

AFI 91-101, *Air Force Nuclear Weapons Surety Program*, 19 December 2005

AFI 91-103, *Air Force Nuclear Safety Design Certification Program*, 16 September 2005

AFI 91-104, *Nuclear Surety Tamper Control and Detection Programs*, 28 February 2006

AFI 91-108, *Air Force Nuclear Weapons Intrinsic Radiation Safety Program*, 29 November 1993

AFI 91-110, *Nuclear Safety Review and Launch Approval for Space or Missile Use of Radioactive Material and Nuclear Systems*, 28 June 2002

AFI 91-204, *Safety Investigations and Reports*, 14 February 2006

AFMAN 91-201, *Explosives Safety Standards*, 18 October 2001

AFMAN 91-221, *Weapons Safety Investigations and Reports*, 14 February 2004

AFMAN 91-222, *Space Safety Investigations and Reports*, 09 August 2004

***Terms***

**NOTE:** Terms defined herein are presented to establish a source reference for key terminology to support the US Air Force Nuclear Surety Program as well as terms used within the AFPD.

**As Low As Reasonably Achievable (ALARA)**—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.

**Beeline/Faded Giant**—A reporting flagword used to identify a nuclear reactor system or radiological incident that poses a hazard to life, health, or property.

**Bent Spear**—A reporting flagword that identifies a nuclear weapon significant incident.

**Broken Arrow**—A reporting flagword that identifies a nuclear weapon accident that could not create the risk of war, but meets the following criteria:

Accidental or unauthorized launching, firing, or use by U.S. forces or U.S. supported allied forces of a nuclear capable weapons system.

An accidental, unauthorized, or unexplained nuclear detonation.

Nonnuclear detonation (no nuclear yield) or burning of a nuclear weapon, nuclear warhead, or nuclear component.

Radioactive contamination from a nuclear weapon or nuclear component.

Jettison of a nuclear weapon or nuclear component.

Public hazard (actual or perceived) from a nuclear weapon, nuclear warhead, or nuclear component.

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

**Dull Sword**—A reporting flagword that identifies a safety deficiency not included in the accident or incident categories.

**Empty Quiver**—A reporting flagword that identifies a nuclear weapon is lost, stolen, seized, or destroyed.

**Flagwords**—Flagwords are used to identify nuclear accidents (BROKEN ARROW), incidents (BENT SPEAR), and deficiencies (DULL SWORD). Flagword definitions may be subjective and is up to the investigator to determine the best flagword to describe the mishap.

**Nucflash**—A reporting flagword that identifies a nuclear weapon system accident that could create the risk or war. This includes accidental, unauthorized, or unexplained events meeting any of the following criteria:

Accidental, unauthorized, or unexplained actual or possible nuclear detonation by US forces or US-supported allied forces.

Accidental or unauthorized launch of a nuclear-armed or nuclear capable missile by US forces or US-supported allied forces.

Unauthorized flight or deviation from an approved flight plan by a nuclear-armed or nuclear-capable aircraft of US forces or US-supported allied forces that could be perceived as a hostile act.

**Nuclear Surety**—All functions and activities accomplished to ensure Air Force nuclear systems are designed, developed, operated, maintained, transported, and controlled to provide maximum safety to the public and operating personnel while protecting the environment and maintaining reliability to support mission accomplishment.

**Nuclear System**—Nuclear weapons, nuclear weapon systems, terrestrial nuclear reactors, and radioactive sources or nuclear energy, power and propulsion systems for space and missile applications.

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

**Nuclear Yield**—The energy released in the detonation of a nuclear weapon, measured in terms of the kilotons or megatons of trinitrotoluene (TNT) required to produce the same energy release.

**Pinnacle/Faded Giant**—A reporting flagword that identifies a nuclear reactor system or radiological accident that poses a serious hazard to life, health, or property.