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Safety



NUCLEAR WEAPONS AND SYSTEMS SURETY

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1. 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 systems and for protecting personnel, property, and the environment from hazardous exposure to radioactive materials.
2. The Air Force will ensure nuclear weapons and weapon systems receive special consideration because of their policy implications and military importance, their destructive power, and the potential consequences of an accident or unauthorized act.
3. The Air Force will ensure protection of people, the environment, and property from undue risk of damage or harm by maintaining risks as low as reasonably achievable (ALARA) consistent with mission requirements. This policy applies throughout the life cycle of all terrestrial reactors and nuclear energy, power, and propulsion systems or radioactive sources intended for missile or space use.
4. The Air Force will keep personnel exposures to intrinsic ionizing radiation from nuclear weapons ALARA consistent with mission requirements.
5. 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.
6. The following responsibilities and authorities are established:
 - 6.1. The Assistant Secretary of the Air Force for Manpower, Reserve Affairs, Installations and Environment (SAF/MI) is responsible for occupational safety and health policy matters as described in Air Force Policy Directive 90-1, *Strategic Planning and Policy Formulation*, paragraph 1.5.2. SAF/MI approval is required before this document is changed, reissued, or rescinded.

- 6.2. The Chief of Safety (HQ USAF/SE) will oversee nuclear weapons and systems surety throughout the Air Force.
- 6.3. The Air Force Safety Agency (AFSA) will prepare instructions to implement and support policy.
- 6.4. Commanders of organizations with a mission related to nuclear weapons and systems will comply with these policies and with implementing instructions, and will incorporate maximum nuclear surety consistent with operational requirements.
7. Major commands, field operating agencies, and direct reporting units, if applicable, will not issue instructions that complement this policy directive without the concurrence of the AFSA/CC and HQ USAF/SE approval.
8. These policies apply to all Air Force personnel, equipment, and facilities involved in the nuclear weapons and radioactive materials-related programs except for Air Force Reserve or Air National Guard units or members, unless they are specified in implementing instructions. Personnel involved with nuclear weapons and systems are responsible for compliance.
9. These policies, requirements, and guidelines are taken from Presidential Directive/National Security Council Memorandum-25; Title 10, Code of Federal Regulations; Atomic Energy Act of 1954 (as amended); Nuclear Regulatory Commission Regulatory Guide 1.70, Standard Format and Content of Safety Analysis Safety Analysis Reports for Nuclear Power Plants, November 1978; JP 1-03.6, *Joint Reporting Structure, Event/Incident Reports*, November 1980; and JP 6-04.22, *USMTF Message Preparation Instructions*, October 1992.
10. See **Attachment 1** for the measures used to comply with this policy.
11. See **Attachment 2** for the terms used in this policy.
12. **Attachment 3** is a list of implementing DoD publications and instructions that interface with this policy.

JAMES L. COLE, JR., Brig General, USAF
Chief of Safety

Attachment 1

MEASURING AND DISPLAYING COMPLIANCE WITH POLICY

A1.1. HQ USAF/SE will measure compliance with nuclear weapons and systems surety policy by examining deviations from a zero baseline in the following areas: Nuclear weapon accidents (NUCFLASH or BROKEN ARROWS), nuclear weapon incidents (BENT SPEAR) **Figure A1.1.** nuclear reactor and radiological accidents (PINNACLE/FADED GIANT) **Figure A1.2.**, nuclear reactor and radiological incidents (BEELINE/FADED GIANT), and nuclear weapon system safety rules violations **Figure A1.3.** Data used in the assessments will be taken from the Air Force Nuclear Mishap Reporting System. AFSA, in October of each year, will chart deviations from a zero baseline and provide the charts to HQ USAF/SE. Because the occurrences of such incidents are infrequent, trends are unlikely. Deviations, however, will serve to highlight an area that should be assessed for possible management attention as to the cause of the deviation.

Figure A1.1. Sample Metric of Nuclear Weapon Incidents (BENT SPEAR).

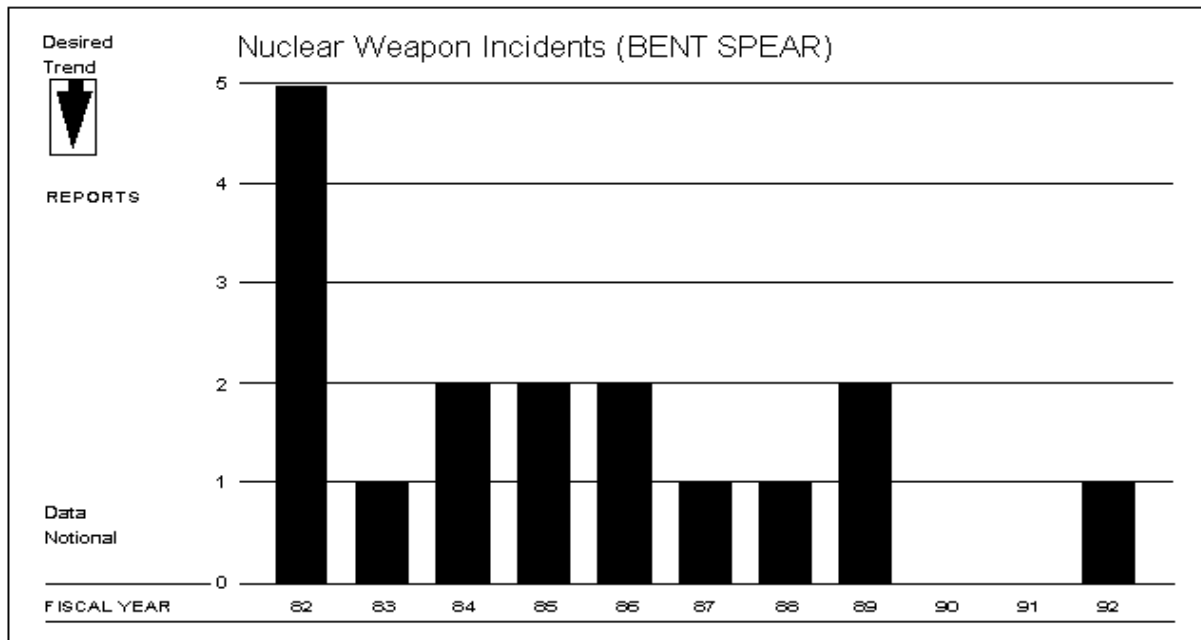


Figure A1.2. Sample Metric of Nuclear Weapon System Safety Rule Violations.

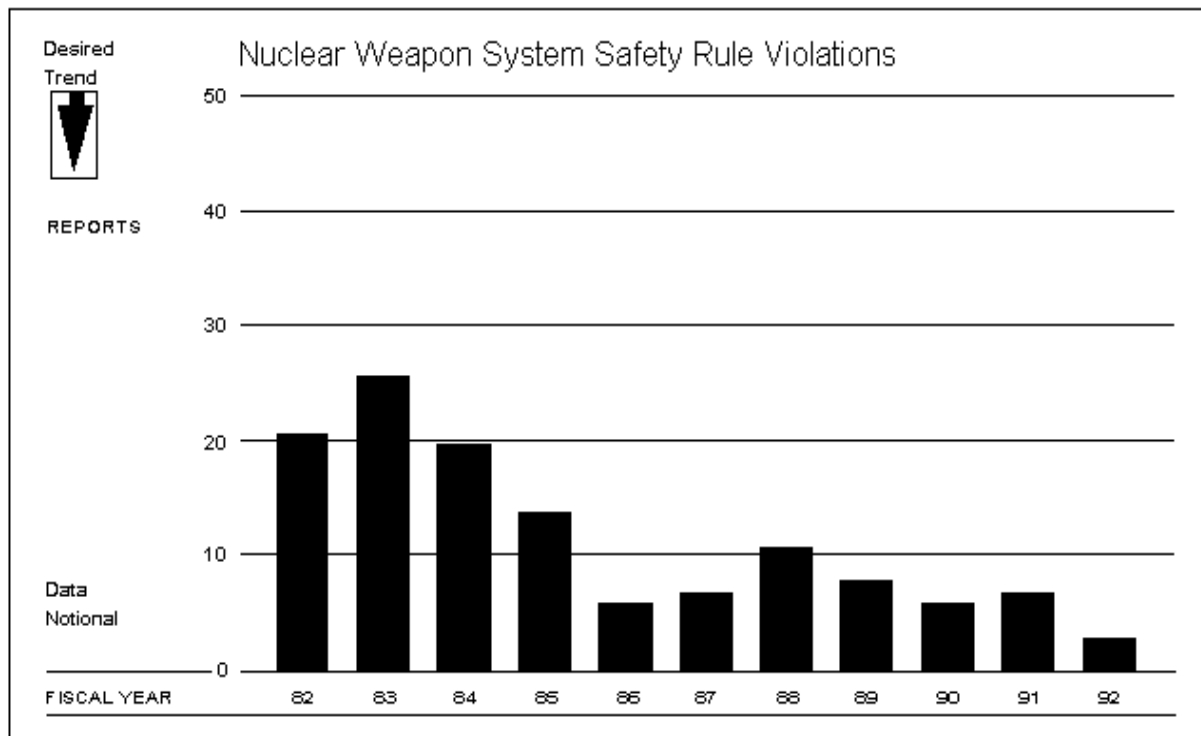
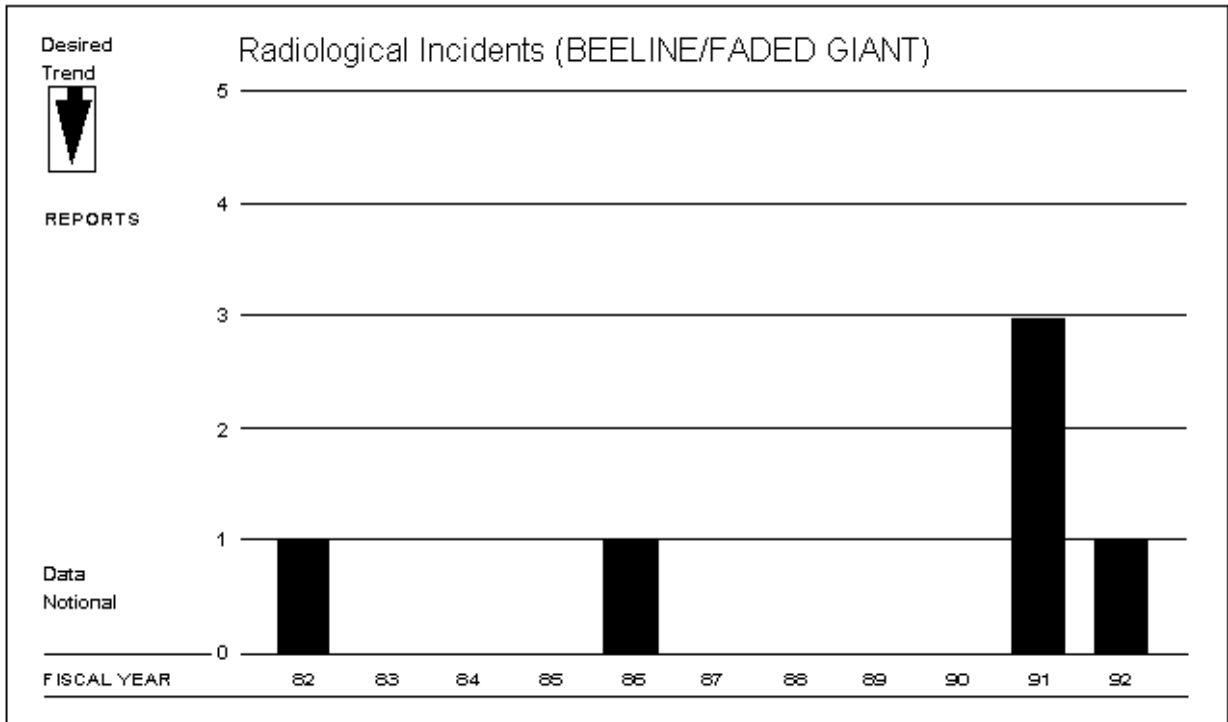


Figure A1.3. Sample Metric of Radiological Incidents (BEELINE/FADED GIANT).



Attachment 2

TERMS EXPLAINED

A2.1. 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.

A2.2. 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.

A2.3. BENT SPEAR. A reporting flagword that identifies a nuclear weapon significant incident.

A2.4. BROKEN ARROW. A reporting flagword that identifies a nuclear weapon accident that could not create the risk of war, but meets any of the following criteria:

A2.4.1. Nuclear detonation of a nuclear weapon.

A2.4.2. Nonnuclear detonation (no nuclear yield) or burning of a nuclear weapon, nuclear warhead, or nuclear component.

A2.4.3. Radioactive contamination from a nuclear weapon or nuclear component.

A2.4.4. Jettison of a nuclear weapon or nuclear component.

A2.4.5. Public hazard (actual or perceived) from a nuclear weapon, nuclear warhead, or nuclear component.

A2.5. 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.

A2.6. NUCFLASH. A reporting flagword that identifies a nuclear weapon system accident that could create the risk of war. This includes accidental, unauthorized, or unexplained events meeting any of the following criteria:

A2.6.1. Accidental, unauthorized, or unexplained actual or possible nuclear detonation by US forces or US-supported allied forces.

A2.6.2. Accidental or unauthorized launch of a nuclear-armed or nuclear-capable missile by US forces or US-supported allied forces.

A2.6.3. 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.

A2.7. 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.

A2.8. 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.

A2.9. Nuclear Weapon System Safety Rules. Secretary of Defense-approved procedural safeguards governing all operations with nuclear weapons or nuclear weapon systems.

A2.10. Nuclear Yield. A nuclear explosion with the equivalent force of 4 pounds of TNT or greater.

A2.11. PINNACLE/FADED GIANT. A nuclear reactor system or radiological accident that poses a serious hazard to life, health, or property.

Attachment 3

IMPLEMENTED DOD PUBLICATIONS AND RELATED INSTRUCTIONS

DoD Implemented Publications

DoD Directive 3150.2, *Safety Studies and Reviews of Nuclear Weapon Systems* February 8, 1984

DoD Directive 3200.11, *Major Range and Test Facility Base* September 29, 1980

DoD Directive 4540.5, *Movement of Nuclear Weapons by Noncombat Delivery Vehicles* June 14, 1978

DoD Directive 5100.52, *DoD Response to an Accident or Significant Incident Involving Radioactive Materials* December 21, 1989

DoD Directive 5210.41, *Security Policy for Protecting Nuclear Weapons* September 23, 1988

DoD Directive 5210.42, *Nuclear Weapons Personnel Reliability Program* December 6, 1985

DoD Instruction 6055.7, *Mishap Investigation, Reporting, and Recordkeeping* April 10, 1989

DoD Instruction 6055.8, *Occupational Radiation Protection Program* March 31, 1989

Interfaced Publications

AFPD 21-2, *Nonnuclear and Nuclear Munitions*

AFPD 31-1, *Physical Security*

AFPD 32-71, *Environmental Compliance and Pollution Prevention*

AFPD 91-2, *Safety Programs*

AFPD 91-3, *Occupational Safety and Health*

AFI 10-206, *US Air Force Reporting In* AFI 11-204, *Operational Procedures for Aircraft Carrying Hazardous Material (formerly AFR 55-14)* instructions (formerly AFR 55-55)

AFI 11-204, *Operational Procedures for Aircraft Carrying Hazardous Material* (formerly AFR 55-14)

AFI 21-205, *Logistic Movement and Handling of Nuclear Cargo* (formerly AFR 136-2)

AFI 36-2105, *Nuclear Weapons Personnel Reliability* (formerly AFR 35-99)

AFI 36-2833, *Safety Awards* (formerly AFR 900-26)

AFI 40-111, *Control of Radiological Health Hazards* (formerly AFR 160-132)

AFI 40-207, *Personnel Dosimetry Program* (formerly AFR 161-28)

AFI 48-108, *Control and Reporting Procedures - Occupational Exposure to Ionizing Radiation* (formerly AFR 161-8)

AFI 90-203, *Nuclear Surety Inspections* (formerly AFR 123-1)

AFI 91-204, *Investigating and Reporting US Air Force Mishaps* (formerly AFR 127-4)