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Safety

**SAFETY RULES FOR NUCLEAR
LOGISTICS TRANSPORT BY THE
PRIME NUCLEAR AIRLIFT FORCE**

COMPLIANCE WITH THIS PUBLICATION IS MANDATORY

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This instruction implements AFD 91-1, *Nuclear Weapons and Systems Surety*. It applies to nuclear logistics transport by the Prime Nuclear Airlift Force (PNAF). **Section A** assigns responsibilities. **Section B** contains each nuclear weapon systems' safety rules. The safety rules in **Section B** may only be changed or supplemented using procedures in AFI 91-102, *Nuclear Weapon System Safety Studies, Operational Safety Reviews, and Safety Rules*. See **Attachment 1** for abbreviations and acronyms used in this instruction. Records Disposition. 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://afirms.amc.af.mil>.

SUMMARY OF REVISIONS

Included general safety rules from DoD 3150.2-M, *DoD Nuclear Weapon System Safety Program Manual*. Removed B53-1 from list of authorized weapons transported by PNAF aircraft. Removed requirement for SecDef approval for operations by Air National Guard and Air Force Reserve aircrews as a part of the safety rules. Limited repeat/recurring write up restriction to systems identified in the aircraft Mission Essential Subsystem Listing, Airland Air Refueling (MESL, ALA/AR).

Section A—Authority and Responsibilities

- 1. Secretary of Defense (SecDef) Direction.** The SecDef directs the Chief of Staff, US Air Force, to implement the rules.
- 2. Temporary Limitations.** The Air Force may impose restrictions on application of safety rules.
- 3. Functional Responsibilities:**
 - 3.1. The Commander, Air Force Safety Center, must ensure:

- 3.1.1. Safety rules work, providing maximum safety consistent with operational requirements.
- 3.1.2. Units follow the safety rules.
- 3.2. Using major commands:
 - 3.2.1. Ensure their units follow the safety rules.
 - 3.2.2. Ensure safety standards and procedures agree with the safety rules.
 - 3.2.3. Inspect for compliance.
- 3.3. Air Force Materiel Command ensures its manuals, checklists, and technical orders do not conflict with the safety rules.

Section B—Safety Rules

4. DoD General Nuclear Weapon System Safety Rules. General safety rules apply to all nuclear weapons and nuclear weapon systems. General safety rules primarily apply safety policy and shall be included as part of the Military Department's safety rules package. Safety rules always apply, even during war.

- 4.1. Nuclear weapons shall not be intentionally exposed to abnormal environments except in an emergency.
- 4.2. Nuclear weapons shall not be used for training or for troubleshooting (i.e., to confirm the existence of a fault, aid in fault isolation, or verify that a fault has been corrected except as explicitly allowed by a specific safety rule).
- 4.3. Nuclear weapons may be used for exercises except when explicitly prohibited by specific safety rules.
- 4.4. Only certified procedures, personnel, equipment, facilities, and organizations, authorized by the appropriate level of authority, shall be employed to conduct nuclear weapon system operations.
- 4.5. The total number of personnel performing nuclear weapon system operations shall be held to the minimum consistent with the operations performed.
- 4.6. At least two authorized persons must be present during any operation with a nuclear weapon, except when authorized by a specific safety rule; i.e., alert fly. They must be able to detect incorrect or unauthorized procedures in the task being performed. They must also have knowledge of and understand applicable safety and security requirements.
- 4.7. Personnel that have physical access to nuclear weapons must be qualified under the PRP, in accordance with DoD Directive 5210.42.
- 4.8. Physical security will be maintained, in accordance with DoD Directive 5210.41.
- 4.9. Nuclear weapons will be transported as determined by the Combatant Commander or the Military Department, in accordance with DoD Directive 4540.5. Additionally, the following safety guidance applies:
 - 4.9.1. Movement(s) will be kept to a minimum consistent with operational requirements.
 - 4.9.2. Custody and accountability transfers during logistic movements shall be by courier receipt system to ensure positive control.

4.10. Permissive Action Link (PAL) operations shall be, in accordance with plans and procedures prescribed by the applicable Combatant Command and TPs.

4.11. Verification that a nuclear warhead is not present in a test assembly must be made utilizing non-nuclear assurance procedures at the last practical opportunity agreed on by the Department of Defense and/or DOE before the conduct of an operational test.

4.12. Deviations from safety rules are permitted in an emergency, except as follows:

4.12.1. U.S. custody must be maintained until receipt of a valid nuclear control order that permits transferring U.S. nuclear weapons to non-U.S. delivery forces.

4.12.2. Nuclear weapons shall not be expended unless a valid, properly authenticated nuclear control order conveying release or expenditure authority is received.

4.12.3. Jettisoning of nuclear weapons is permitted in the event of an emergency, and is to be accomplished according to plans and procedures prescribed for the area of operations.

5. Specific Guidance: These rules apply to C-17A and C-130E/E*/H Prime Nuclear Airlift Operations. A commander may deviate from a specific rule in an emergency, but must maintain US custody of nuclear weapons. DoD Directive 3150.2, *DoD Nuclear Weapons System Safety Program*, 23 December 1996, defines an emergency as "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."

6. Nuclear Weapons Movements:

6.1. Keep the movement of nuclear weapons to a minimum consistent with operational requirements. Comply with DoD Directive 4540.5, *Movement of Nuclear Weapons by Noncombat Delivery Vehicles*.

6.2. Move nuclear weapons by the safest, most secure means and routes consistent with operational requirements.

6.3. Custody and transfer of nuclear weapons must be according to T.O. 11N-45-51C, *Transportation of Nuclear Weapons Material*.

6.4. The following weapons are authorized to be transported aboard the C-17A and C-130E/E*/H:

- B61-3, -4, -7, -10, -11
- W62
- W78
- W80-0, -1
- B83-0, -1
- W87

6.5. Do not air transport nuclear weapons containing conventional high explosives (CHE), (i.e. W62, W78) unless ground transport is not feasible. Air transport of CHE weapons requires approval by the Secretary of the Military Department or the Commander of the Unified or Specified Command or their designated representatives.

6.6. Do not transport the W80 mated to its missile.

7. Safety Standards Compliance. These rules, aircraft and weapon design safety and security features, operational and administrative controls, and technical procedures ensure nuclear logistics airlift by PNAF meets the Nuclear Weapon System Safety Standards in AFI 91-101, *Air Force Nuclear Weapons Surety Program*, and DoD Directive 3150.2.

8. Using Equipment, Procedures, and Checklists:

8.1. Use only equipment, procedures, and checklists that are consistent with US Air Force-approved publications for any operation directly associated with nuclear weapons.

8.2. Approved publications must conform to the safety rules in this instruction and the DoD Nuclear Weapon System Safety Standards as described in DoDD 3150.2.

9. Security Criteria. DoD Directive 5210.41, *Security Policy for Protecting Nuclear Weapons*, DoD C-5210.41-M-series, *Nuclear Weapons Security Manual (U)*, and Air Force Supplement; AFI 11-299, *Nuclear Airlift Operations*; and AFI 10-1101, *Operations Security (OPSEC) Instructions*, apply. Security provided by Non-US military services must meet the above DoD and US Air Force standards as spelled out in ACE Directive 80-6, Volume 2, Part II/US European Command Directive 60-12, *Nuclear Surety Management for the Weapons Survivability and Security System*.

10. Tamper Control Program. AFI 91-104, *Nuclear Surety Tamper Control and Detection Programs*, which defines the Two-Person Concept, applies.

11. Personnel Reliability. DoD Directive 5210.42, *Nuclear Weapon Personnel Reliability Program (PRP)*, and AFI 36-2104, *Nuclear Weapons Personnel Reliability Program*, apply.

12. Personnel Qualifications and Certification:

12.1. Use only airlift squadrons and aircrews designated for PNAF by Air Mobility Command or United States Air Forces in Europe.

12.2. Crewmembers who occupy a primary crew position when any nuclear weapon is aboard must be qualified and current in:

12.2.1. The mission aircraft.

12.2.2. Recurring PNAF training.

12.3. "Qualified" means that the crewmember:

12.3.1. Is PNAF and PRP certified.

12.3.2. Has a minimum final SECRET security clearance.

12.4. The courier must be a commissioned officer.

13. Passengers and Additional Crewmembers:

13.1. Commanders at all levels must rigidly control the number of people on nuclear weapon airlift missions.

13.2. Only allow the following individuals when any nuclear weapon is aboard:

13.2.1. Couriers, shipper escorts, and permissive action link teams authorized in the mission directive.

13.2.2. Authorized inspectors, observers, crew chiefs, and security forces.

13.3. Additional crewmembers must have a specific in-flight duty to perform.

13.4. Authorize mission-essential ground personnel status only for specific individuals who:

13.4.1. Are on a specific mission.

13.4.2. Have a valid requirement to observe, inspect, or participate in the nuclear weapon airlift mission.

14. Weapon Configurations. Use shipment configurations in the applicable weapon -1 TO.

15. Plutonium Limits. TO 11N-20-7, *Nuclear Safety Criteria*, applies.

16. Maintenance and Servicing Procedures:

16.1. Select the safest, most reliable aircraft available for PNAF missions.

16.2. Consider all available safety and structural enhancements when selecting an aircraft.

16.3. Do not select aircraft that have a history of uncorrected repeat or recurring system malfunctions on any system identified in the aircraft Mission Essential Subsystem Listing, Airland/Air Refueling (MESL, ALA/AR).

16.4. Do not select C-130 aircraft with in-tank maintenance deferred due to suspected or actual foam fire.

16.5. The aircrew performs or controls all maintenance activities on aircraft with any nuclear weapon aboard.

16.5.1. Do not load external flares or chaff unless required for the PNAF mission.

16.5.2. Do not transport replenishment chaff or flares.

16.6. Do not service aircraft during weapon loading or unloading.

16.7. With any nuclear weapon aboard, do not:

16.7.1. Refuel C-130 aircraft.

16.7.2. Park aircraft in hangars.

16.7.3. Jack aircraft, except for temporary lifting of one set of landing gear for minor maintenance.

17. Fuel Requirements:

17.1. When possible, fuel PNAF aircraft with low-volatility fuel, compatible with aircraft engine operation.

17.2. Use the best available fuel in this order of preference:

- JP-8.
- JP-5.
- Commercial Jet A-1 with appropriate anti-ice additive.
- JP-4.

18. Firefighting Support Requirements. Ensure that the required firefighting support is available for:

- 18.1. Weapon loading and offloading.
- 18.2. Aircraft engine starts, taxi, takeoff, and landing.
- 18.3. Fuel and oxygen servicing of nuclear weapon-laden aircraft.
- 18.4. Any replenishment of external chaff or flare dispensers on nuclear weapon-laden aircraft.

19. Airfield and Airspace Requirements. Prohibit direct overflight of PNAF aircraft during ground operations within that airspace controlled by the base.

20. Aircraft Configurations:

- 20.1. Do not load any nuclear weapon on an aircraft unless it is mission capable and has been serviced and prepared for loading.
- 20.2. Before an aircraft is loaded with nuclear weapons:
 - 20.2.1. Remove all nonessential personnel and nonmission-related hazardous materials.
 - 20.2.2. Search and sanitize the aircraft.
 - 20.2.3. Establish Type I security.

21. Loading, Tie down, and Unloading:

- 21.1. The aircrew members are responsible for the safety and security of each nuclear weapon in their physical possession. Weapon possession begins at the start of loading aboard the aircraft and continues until weapons are offloaded.
- 21.2. Do not load nuclear weapons on PNAF aircraft unless a loading procedure is published in the aircraft -16 series TO.
- 21.3. Do not load materials that are incompatible with nuclear weapons.
- 21.4. Load aircraft in a way that permits the aircrew to offload, or jettison in flight, any opportune cargo without moving any nuclear weapon.
- 21.5. Unused space on nuclear weapon airlift missions may be used for other cargo only if the cargo is searched and security is maintained before loading it on the aircraft and the cargo will not cause:
 - 21.5.1. Mission delay
 - 21.5.2. Mission rerouting
 - 21.5.3. Extra landings

21.5.4. Additional handling or movement of nuclear weapons

21.5.5. Security problems due to aerial port unloading or offloading.

22. Flight Restrictions:

22.1. The US Air Force Special Weapons Overflight Guide (SWOG) applies.

22.2. Aircraft transporting any nuclear weapon must not fly within an unsafe distance of unfriendly borders as defined in the SWOG.

22.3. Positive measures are required to prevent overflight or landing in unfriendly territories or countries where such actions are prohibited.

22.4. Aircraft transporting any nuclear weapon must avoid flying over heavily populated areas when possible.

22.5. Aircraft with any nuclear weapon aboard must not take off until all destinations and planned divert stations acknowledge that they are capable of meeting security requirements.

23. Air Refueling:

23.1. Conduct air refueling only to reduce ground exposure of nuclear weapons.

23.2. Do not delay missions for air-refueling considerations. If the mission is delayed, manage the mission in the most effective manner possible without degrading nuclear surety.

23.3. Air refuel over open ocean at least 12 nautical miles offshore.

23.3.1. Maneuver the aircraft only as needed to transfer fuel.

23.3.2. Do not conduct air-refueling training when any nuclear weapon is aboard.

24. Contingency Transfer:

24.1. PNAF crews are authorized to perform PNAF aircraft crossloads.

24.2. Park the two aircraft as close together as possible in a single protection level I restricted area.

25. Disable/Destruct:

25.1. When applicable, use the command disable system (CDS), if available, before crash landing or jettisoning a nuclear weapon. (Refer to the US Air Force SWOG for jettison restrictions.)

25.2. CDS codes and at least one individual knowledgeable in CDS procedures must remain on the aircraft:

25.2.1. Until Type I security is established after arrival.

25.2.2. When ropes and stanchions are removed for taxi and departure.

25.3. Use the CDS, or other authorized alternate procedures, if capture of any nuclear weapon is imminent.

25.4. Aircrews must not use emergency destruct procedures on nuclear weapons.

26. Emergency Nuclear Airlift Force (ENAF). MAJCOM-approved ENAF plans will be written to comply with these weapon system safety rules to the maximum extent possible.

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Chief of Safety

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

DoD Directive 3150.2, *DoD Nuclear Weapon Systems Safety Program*

DoD 3150.2-M, *DoD Nuclear Weapon System Safety Program Manual*

DoD Directive 4540.5, *Logistic Transportation of Nuclear Weapons*

DoDD 5210.41, *Security Policy for Protecting Nuclear Weapons*

DoD C-5210.41-M, *Nuclear Weapon Security Manual (U)*, and Air Force Supplement

DoDD 5210.42, *Nuclear Weapon Personnel Reliability Program*

ACE Directive 80-6, Volume 2, Part II/US European Command Directive 60-12, *Nuclear Surety Management for the Weapons Survivability and Security System*

AFPD 91-1, *Nuclear Weapons and Systems Surety*

AFI 10-1101, *Operations Security Instructions*

AFI 11-299, *Nuclear Airlift Operations*

AFI 36-2104, *Nuclear Weapons Personnel Reliability Program*

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

AFI 91-102, *Nuclear Weapon System Safety Studies, Operational Safety Reviews, and Safety Rules*

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

AFMAN 37-123, *Management of Records*

T.O. 11N-20-7, *Nuclear Safety Criteria*

T.O. 11N-45-51C, *Transportation of Nuclear Weapons Material*

Abbreviations and Acronyms

AFMC—Air Force Materiel Command

ALCC—Airborne Launch Control Center

ALCS—Airborne Launch Control System

CD—Command Disable

CSRL—Common Strategic Rotary Launcher

D-BOX—Distribution Box

DoD—Department of Defense

EAP—Emergency Action Procedures

ECC—Emergency Combat Capability

EP—Enable Panel

EWO—Emergency War Orders

ICBM—Intercontinental Ballistic Missile

IMF—Integrated Maintenance Facility

JCS—Joint Chiefs of Staff

JS—Joint Staff

MAJCOM—Major Command

MF—Medium Frequency

PAL—Permissive Action Link

PNAF—Prime Nuclear Airlift Force

RDS—Records Disposition Schedule

RLA—Rotary Launcher Assembly

RV—Reentry Vehicle

SecDef—Secretary of Defense

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