

**BY ORDER OF THE
SECRETARY OF THE AIR FORCE**

AIR FORCE INSTRUCTION 91-115

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Safety

**SAFETY RULES FOR NUCLEAR
AIRLIFT OPERATIONS**

COMPLIANCE WITH THIS PUBLICATION IS MANDATORY

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This instruction implements Air Force Policy Directive (AFPD) 91-1, *Nuclear Weapons and Systems Surety*, and is consistent with AFPD 13-5, *Air Force Nuclear Mission*. This instruction applies to all civilian employees and uniformed members of the Regular Air Force, Air Force Reserve, Air National Guard, and nuclear certified equipment, facilities involved with nuclear weapons, nuclear weapon systems, and radioactive materials-related program. This publication does not apply to the United States Space Force. Ensure all records generated as a result of processes prescribed in the publication adhere to Air Force Instruction (AFI) 33-322, *Records Management and Information Governance Program*, and are disposed in accordance with the Air Force Records Disposition Schedule, which is located in the Air Force Records Information Management System. Refer recommended changes and questions about this publication to the office of primary responsibility (OPR) using DAF Form 847, *Recommendation for Change of Publication*; route DAF Forms 847 from the field through the appropriate functional chain of command. This publication may not be supplemented or further implemented/extended. The authorities to waive wing/unit level requirements in this publication are identified with a Tier (“T-0, T-1, T-2, T-3”) number following the compliance statement. See Department of the Air Force manual (DAFMAN) 90-161, *Publishing Process and Procedures*, for a description of the authorities associated with the Tier numbers. Submit requests for waivers through the chain of command to the appropriate Tier waiver approval authority, or alternately, to the requestor’s commander for non-tiered compliance items. Compliance with the attachment references in this publication is mandatory.

SUMMARY OF CHANGES

This document has been revised to remove interim weapon system safety rules (WSSRs) restrictions for C-17 airlift operations transporting B61-12 weapons.

Section A—Authority and Responsibilities

1. Additional Limitations. These safety rules apply to any nuclear airlift operations on cargo aircraft. The United States commanders may impose more restrictive guidance or policy than contained in safety rules but may not unilaterally change the safety rules. Major command, field operating agency and direct reporting unit approved publications must conform to the safety rules in the instruction and the Department of Defense (DoD) nuclear weapon system surety standards as described in DoD Directive (DoDD) 3150.02, *DoD Nuclear Weapons Surety Program*. **(T-0)**

2. Roles and Responsibilities.

2.1. The Air Force Chief of Safety (AF/SE):

2.1.1. Ensures safety rules provide maximum safety consistent with operational requirements.

2.1.2. Ensures major commands follow the safety rules.

2.1.3. Is responsible for interpretation and clarification of general and specific guidance in **Sections B** and **Section C** of this publication.

2.2. Major Commands:

2.2.1. Ensure their units follow the safety rules.

2.2.2. Ensure all supplemental guidance and procedures agree with the approved safety rules.

2.2.3. Inspect for compliance.

2.2.4. Ensure manuals, checklists, and technical orders do not conflict with the safety rules.

Section B—General Safety Rules

3. General Guidance.

3.1. General safety rules apply policy to all nuclear weapons and nuclear weapon systems in accordance with Department of Defense Manual (DoDM) 3150.02, *DoD Nuclear Weapon System Safety Program Manual*.

3.2. Units will not intentionally expose nuclear weapons to abnormal environments except in an emergency. **(T-0)**

3.3. Units will not use nuclear weapons for training or for troubleshooting (e.g., 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). **(T-0)**

3.4. Nuclear weapons may be used for exercises except when explicitly prohibited by specific safety rules listed in **Section C** of this publication.

3.5. Guidance for Personnel Reliability Assurance Program certification of personnel who have physical access to nuclear weapons is provided in DoD Instruction (DoDI) 5210.42, *DoD Nuclear Weapons Personnel Reliability Assurance*.

3.6. To conduct nuclear weapon system operations, commanders will only employ certified procedures, personnel, equipment, facilities, and organizations, authorized by the appropriate level of authority. **(T-0)**

3.7. Commanders will restrict the total number of personnel performing nuclear weapon system operations to the minimum consistent with the operations performed. **(T-0)**

3.8. At least two authorized persons must be present during any operation involving a nuclear weapon, except when authorized by a specific safety rule (e.g., alert fly). **(T-0)** Both authorized individuals must be able to detect incorrect or unauthorized procedures in the task being performed. **(T-0)** Both authorized individuals also must have knowledge of and understand applicable safety and security requirements. **(T-0)**

3.9. Guidance for physical security is provided in DoD Directive (DoDD) 5210.41, *Security Policy for Protecting Nuclear Weapons*.

3.10. Guidance to authorize nuclear weapons transportation is provided in DoDI 4540.05, *DoD Transportation of U.S. Nuclear Weapons*. Additionally, units performing custody and accountability transfers during logistic movements will utilize courier receipt system to ensure positive control. **(T-0)**

3.11. Units will perform Use Control operations in accordance with plans and procedures prescribed by the applicable combatant command and technical procedures. **(T-0)**

3.12. Units will verify that a nuclear warhead is not present in a test assembly using non-nuclear assurance procedures at the last practical opportunity agreed upon by the DoD and/or Department of Energy before conducting an operational test. **(T-0)**

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

3.13.1. United States custody must be maintained until receipt of a valid nuclear control order that permits transferring United States nuclear weapons to non-United States delivery forces. **(T-0)**

3.13.2. Nuclear weapons will not be expended unless a valid, properly authenticated nuclear control order conveying release or expenditure authority is received. **(T-0)**

3.13.3. Other permissible deviation from safety rules:

3.13.3.1. Jettisoning of nuclear weapons, for applicable systems, is permitted in the event of an emergency, and is to be accomplished according to plans and procedures prescribed for the area of operations. **(T-0)**

3.14. The safety rules may only be changed using procedures in AFI 91-102, *Nuclear Weapon System Safety Studies, Operational Safety Reviews and Safety Rules*.

Section C—Specific Safety Rules

4. Specific Guidance.

4.1. These safety rules, weapon system features, operational controls, and technical procedures ensure the Airlift Force meets the Nuclear Weapon System Surety Standards in DoDD 3150.02 and Department of the Air Force Instruction (DAFI) 91-101, *Air Force Nuclear Weapons Surety Program*.

4.2. Safety rules shall always apply, even during war. **(T-0)**

4.3. Violations of referenced instructions do not constitute weapon system safety rules violations unless specifically identified in this document.

5. Nuclear Weapons Movements and Configurations.

5.1. Units will use shipping configurations in the applicable weapon -1 Technical Order and the Technical Order 11N-45-51, *Transportation of Nuclear Weapons Material*, series. **(T-0)**

5.2. Units will move nuclear weapons by the safest, most secure means and routes consistent with operational requirements. **(T-0)**

5.3. Units must maintain custody of nuclear weapons and transfer them in accordance with Technical Order 11N-45-51 series guidance. **(T-0)**

5.4. The following weapons are authorized to be transported aboard the C-17A:

5.4.1. B61-3, B61-4, B61-7, B61-11, and B61-12

5.4.2. W78 (See limitation in [paragraph 5.5](#)).

5.4.3. W80-1.

5.4.4. B83-1.

5.4.5. W87-0 (See limitation in [paragraph 5.6](#)).

5.5. Units will not air transport designated conventional high explosives nuclear weapons (e.g., W78) unless ground transport is not feasible. **(T-0)** Refer to DoDI 4540.05 for approval authorities.

5.6. Units will not air transport the W87-0 without the H1545 horizontal transport fixture. **(T-0)**

6. Equipment, Procedures, and Checklists. Units will use only equipment, procedures, and checklists that are consistent with United States Air Force approved publications for any operation directly associated with nuclear weapons. **(T-0)**

7. Security Criteria.

7.1. Security guidance may be found in the following issuances:

7.1.1. For security policy nuclear weapons: DoDD 5210.41, *Security Policy for Protecting Nuclear Weapons*, 22 January 2015.

7.1.2. For security policy, objectives, concepts, and prescribed minimum security criteria for protecting nuclear weapons on alert, in storage, in maintenance facilities, in-transit, and in regeneration situations may be found in the following issuances: DoDM S-5210.41, (U)

Nuclear Weapon Security Manual; DoD S-5210.41-M_Air Force Manual (AFMAN) 31-108V1-S, (U) The Air Force Nuclear Weapon Security Manual; DoD S-5210.41-M_AFMAN 31-108V2-S, (U) General Nuclear Weapon Security Procedures; and DoD S-5210.41-M_AFMAN 31-108V3-S, (U) Nuclear Weapon Security Manual: Nuclear Weapon Specific Requirements.

7.1.3. For operations security: AFI 10-701, *Operations Security (OPSEC)*.

7.1.4. For transporting nuclear weapons: AFMAN 13-526, *Nuclear Airlift Operations*.

7.2. In the United States European Command area of responsibility, security provided by United States and non-United States military services must meet the above DoD and United States Air Force standards as spelled out in Allied Command Operations Directive 080-006, Volume 2, Part II/United States European Command Instruction 6801.01, *Nuclear Surety Management for the Weapon Storage and Security System (WS3)*. **(T-0)**

8. Tamper Control Program. Major commands, field operating agencies, and direct reporting units will comply with DAFI 91-101. **(T-0)**

9. Personnel Reliability Assurance Program. All personnel having access to nuclear weapons will comply with DoDM 5210.42_AFMAN 13-501, *Nuclear Weapons Personnel Reliability Program (PRP)*, and AFI 31-117, *Arming and Use of Force by Air Force Personnel*. **(T-0)**

10. Passengers and Additional Crewmembers.

10.1. Commanders at all levels must rigidly control the number of people on nuclear weapon airlift missions. **(T-0)**

10.2. When a nuclear weapon is aboard, the following individuals may be carried as necessary to accomplish the mission: couriers and shipper escorts, authorized inspectors, flying crew chiefs, and security forces personnel authorized in the Mission Setup Message.

10.3. Additional crewmembers must have a specific in-flight duty to perform. **(T-1)**

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

10.4.1. Are on a specific mission. **(T-0)**

10.4.2. Have a valid requirement to observe, inspect, or participate in the nuclear weapon airlift mission. **(T-0)**

11. Aircraft Preparation, Generation, and Servicing.

11.1. Units will select the safest, most reliable aircraft available for nuclear airlift operational missions. **(T-0)**

11.1.1. Units will consider all available safety and structural enhancements when selecting an aircraft. **(T-0)**

11.1.2. Units will 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 and or Air Refueling. **(T-0)**

11.2. Units will complete ground fueling, oxygen servicing, and any loading of external flares before loading nuclear weapons. **(T-0)** Units will perform replenishment of external flare dispensers and subsequent fuel and oxygen servicing of nuclear-laden aircraft only as

necessary to support mission requirements. **(T-0)** Units will not transport replenishment flares. **(T-0)**

11.3. The aircrew must control all maintenance activities on aircraft with any nuclear weapon aboard. **(T-0)**

11.4. Units will not perform any maintenance that increases the probability of fire on an aircraft with any nuclear weapon aboard. **(T-0)**

11.5. Units will not perform concurrent servicing of aircraft during weapon loading or unloading. **(T-0)**

11.6. With any nuclear weapon aboard, units will not:

11.6.1. Park aircraft in hangars. **(T-0)**

11.6.2. Jack aircraft, except for lifting of one set of landing gear (for example, integral jacking) for minor maintenance. **(T-0)**

12. Fuel Requirements. Units will fuel Prime Nuclear Airlift Force operational aircraft with the best low-volatility fuel available that is compatible with aircraft engine operation. **(T-0)**

13. Firefighting Support Requirements. Units will ensure that the required firefighting support is available for:

13.1. Weapon loading and offloading. **(T-0)**

13.2. Aircraft engine starts, taxi, takeoff, and landing. **(T-0)**

13.3. Fuel and oxygen servicing of nuclear weapon-laden aircraft. **(T-0)**

13.4. Any replenishment of external flare dispensers on nuclear weapon-laden aircraft. **(T-0)**

14. Airfield and Airspace Requirements. Do not allow aircraft with forward firing ordnance to sweep potential line of fire across nuclear airlift ground operation. **(T-0)** Prohibit direct overflight of nuclear airlift ground operations within airspace controlled by the installation. **(T-0)**

15. Pre-Load Requirements.

15.1. Units will not load any nuclear weapon on an aircraft unless the aircraft is mission capable, serviced, and prepared for loading. **(T-0)** Additionally, before loading a nuclear weapon on an aircraft, units will:

15.1.1. Remove all nonessential personnel and non-mission-related hazardous materials. **(T-0)**

15.1.2. Search and sanitize the aircraft. **(T-0)**

15.1.3. Establish Type 1 security. **(T-0)**

16. Loading, Tie Down, and Unloading.

16.1. The aircrew members are responsible for the safety and security of each nuclear weapon in their physical possession. Aircrew possession begins after the courier and loadmaster have inspected, accepted, and taken physical control of the weapon. Possession continues until the weapon is offloaded from the aircraft and the loadmaster transfers physical control to munitions personnel.

16.2. Unused space on nuclear weapon airlift missions may be used for other cargo only if the cargo is searched, security is maintained before loading it on the aircraft, and the cargo will not cause:

16.2.1. Mission delay. (T-0)

16.2.2. Mission rerouting. (T-0)

16.2.3. Extra landings. (T-0)

16.2.4. Additional handling or movement of nuclear weapons. (T-0)

16.2.5. Security problems due to aerial port on-loading or off-loading. (T-0)

16.3. Units will not load materials that are incompatible with nuclear weapons. (T-0)

16.4. Units will load aircraft in a way that permits the aircrew to offload, or jettison in flight, any opportune cargo without moving any nuclear weapon. (T-0)

17. Flight Restrictions.

17.1. The DoD Foreign Clearance Guide Special Weapons Overflight Guide Supplement applies to all nuclear weapon airlift missions. (T-0)

17.2. Aircrew transporting any nuclear weapon must not fly within an unsafe distance of unfriendly borders as defined in the DoD Foreign Clearance Guide Special Weapons Overflight Guide Supplement. (T-0)

17.3. Positive measures will be required to prevent overflight or landing in unfriendly territories or countries where such actions are prohibited. (T-0)

17.4. Aircrew with any nuclear weapon aboard must not take off until all destinations and planned divert stations acknowledge they are capable of meeting security requirements. (T-0)

18. Air Refueling. Aircrew will:

18.1. Minimize air refueling; however, air refueling can be planned when feasible to reduce ground exposure to the nuclear weapons. (T-0)

18.2. Air refuel over open ocean at least 12 nautical miles offshore. (T-0)

18.3. Not conduct air refueling training when any nuclear weapon is aboard. (T-0)

19. Contingency Transfer. Nuclear airlift crews are authorized to perform nuclear airlift aircraft cross-loads. (T-0)

20. Command Disable or Jettison.

20.1. Aircrew will perform command disable operations in accordance with plans and procedures prescribed by the applicable combatant command and technical publications. (T-0)

20.2. When possible, the aircrew will activate the Command Disable System before crash landing, jettisoning a nuclear weapon, or if capture of the weapon is imminent. (T-0) **Note:** Refer to the DoD Foreign Clearance Guide Special Weapons Overflight Guide Supplement for jettison restrictions.

20.3. Aircrew will ensure the Command Disable System codes and at least one individual qualified in Command Disable System procedures remains on nuclear loaded aircraft:

20.3.1. Until Type I security is established after arrival. **(T-0)**

20.3.2. When ropes and stanchions are removed for taxi and departure. **(T-0)**

20.4. Aircrews must not use alternate emergency destruct procedures on nuclear weapons. **(T-0)**

21. Emergency Nuclear Airlift Operations. Commanders must ensure Emergency Nuclear Airlift Operations will comply with these weapon system safety rules to the maximum extent possible. **(T-0)**

JEANNIE M. LEAVITT
Major General, USAF
Chief of Safety

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

AFI 10-701, *Operations Security (OPSEC)*, 24 July 2019

AFI 31-117, *Arming and Use of Force by Air Force Personnel*, 6 August 2020

AFI 33-322, *Records Management and Information Governance Program*, 23 March 2020

AFI 91-102, *Nuclear Weapon System Safety Studies, Operational Safety Reviews and Safety Rules*, 22 May 2019

AFMAN 13-526, *Nuclear Airlift Operations*, 3 October 2018

AFPD 13-5, *Air Force Nuclear Mission*, 17 July 2018

AFPD 91-1, *Nuclear Weapons and Systems Surety*, 24 October 2019

Allied Command Operation Directive 080-006, Volume 2, Part II/United States European Command Instruction 6801.01, *Nuclear Surety Management for the Weapon Storage and Security System (WS3)*, 2 February 2016

DAFI 91-101, *Air Force Nuclear Weapons Surety Program*, 26 March 2020

DAFMAN 90-161, *Publishing Processes and Procedures*, 15 April 2022

DoD Foreign Clearance Guide, *Special Weapons Overflight Guide Supplement*

DoDD 3150.02, *DoD Nuclear Weapons Surety Program*, 24 April 2013

DoDD 5210.41, *Security Policy for Protecting Nuclear Weapons*, 22 January 2015

DoDI 4540.05, *DoD Transportation of U.S. Nuclear Weapons*, 23 June 2011

DoDI 5210.42, *DoD Nuclear Weapons Personnel Reliability Assurance*, 27 April 2016

DoDM 3150.02, *DoD Nuclear Weapon System Safety Program Manual*, 31 January 2014

DoDM 5210.42_AFMAN 13-501, *Nuclear Weapons Personnel Reliability Program (PRP)*, 19 September 2018

DoDM S-5210.41, (U) *Nuclear Weapon Security Manual*, 4 May 2022

DoD S-5210.41-M_AFMAN 31-108V1-S, (U) *The Air Force Nuclear Weapon Security Manual*, 2 May 2019

DoD S-5210.41-M_AFMAN 31-108V2-S, (U) *General Nuclear Weapon Security Procedures*, 20 May 2019

DoD S-5210.41-M_AFMAN 31-108V3-S, (U) *Nuclear Weapon Security Manual: Nuclear Weapon Specific Requirements*, 20 May 2019

Technical Order 11N-45-51, *Transportation of Nuclear Weapons Material*, 22 March 2006

Prescribed Forms

None

Adopted Forms

DAF Form 847, *Recommendation for Change of Publication*

Abbreviations and Acronyms

AFI—Air Force Instruction

AFMAN—Air Force Manual

AFPD—Air Force Policy Directive

AFSEC—Department of the Air Force Safety Center

AF/SE—Department of the Air Force Chief of Safety

AF/SEI—Department of the Air Force Safety Center, Safety Issues Division

AFSEC/SEWN—Department of the Air Force Safety Center, Weapons Safety Division-Nuclear

DAFI—Department of the Air Force Instruction

DAFMAN—Department of the Air Force Manual

DoD—Department of Defense

DoDI—Department of Defense Instruction

DoDD—Department of Defense Directive

DoDM—Department of Defense Manual

OPR—Office of Primary Responsibility

OPSEC—Operational Security

PRP—Personnel Reliability Program

U.S.—United States

WSSR—Weapon System Safety Rule

Terms

Access—Close physical proximity to a nuclear weapon in such a manner as to allow the opportunity to tamper with or damage a nuclear weapon.

Abnormal Environment—Environments as defined in a weapon's stockpile-to-target sequence and military characteristics in which a nuclear weapon or a nuclear weapon system is not expected to retain full operational reliability.

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.

Custody—Responsibility for the control of, transfer and movement of, and access to nuclear weapons and components. Custody may include accountability.

Emergency—An unexpected occurrence or set of circumstances in which personnel or equipment unavailability, due to accident, natural event, hostile act, or combat, may demand immediate

actions that may require extraordinary measures to protect, handle, service, secure, transport, jettison, or to employ nuclear weapons.

Jettison—The intentional separation of an unarmed weapon from its delivery system or transport carrier in response to an emergency.

Maintenance—Work and oversight necessary to ensure a system is in proper working order and will operate, act, or protect in accordance with its intended purpose.

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.

Nuclear Weapon System—A nuclear weapon and a means of delivering it to the target, with associated support equipment, facilities, procedures, personnel, and any vehicles peculiar to the system used for weapon transport.

Positive Measures—The combination of procedural and administrative actions, physical safeguards, and design features expressly for the purpose of ensuring security, safety, and control of nuclear weapons and systems, including associated personnel.

Prevent—To minimize the possibility of occurrence of an undesired event. It does not imply absolute assurance that the event will not occur.

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

Security—Protect against loss of custody, theft, or diversion of a nuclear weapon system; protection against unauthorized access; or protection against unauthorized actions, vandalism, sabotage, and malevolent damage.

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. A document that defines the logistic 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 logical 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.

Use Control—The positive measures that allow the authorized use and prevent or delay unauthorized use of nuclear weapons and is accomplished through a combination of weapon system design features, operational procedures, security, and system safety rules.