

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



**AIR FORCE INSTRUCTION 91-112**

**22 SEPTEMBER 2022**

*Incorporating Change 1, 4 December 2024*

*Safety*

**SAFETY RULES FOR U.S./NATO DUAL  
CAPABLE AIRCRAFT**

**COMPLIANCE WITH THIS PUBLICATION IS MANDATORY**

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OPR: AFSEC/SEWN

Certified by: AF/SEI  
(Colonel Lawrence A. Nixon)

Supersedes: DAFI 91-112, 22 April 2022

Pages: 18

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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, 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 or the Air National Guard. 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 interim change revises AFI 91-112 to clarify and standardize the requirements and process for reporting Weapon System Safety Rules violations. A margin bar (|) indicates newly revised material.

### ***Section A—Authority and Responsibilities.***

**1. Additional Limitations.** United States Air Force (USAF) commanders may impose more restrictive guidance or policy than contained in safety rules but may not unilaterally change the safety rules. **(T-0)**

1.1. The F-35A weapon system deviations identified during the nuclear design certification process must be major command (MAJCOM) approved prior to achieving nuclear safety design certification and employing war-reserve B61-12 weapons. **(T-0)**

### **2. Roles and Responsibilities.**

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

2.1.1. Ensures safety rules are effective, providing 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 **Section 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 (PRAP) 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 individuals must be present during any operation with a nuclear weapon, except when authorized by a specific safety rule (e.g., alert fly.) **(T-0)** They must be able to detect incorrect or unauthorized procedures in the task being performed. **(T-0)** They must also have knowledge of and understand applicable safety and security requirements. **(T-0)**
- 3.9. Guidance to ensure adequate security of nuclear weapons 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 a 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 (DOE) before the conduct of an operational test. **(T-0)**
- 3.13. Deviations from safety rules are permitted in an emergency, except as follows:
- 3.13.1. U.S. custody must be maintained until receipt of a valid nuclear control order that permits transfer of U.S. 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*. **(T-0)**

### *Section C—Specific Safety Rules.*

#### **4. Specific Guidance.**

4.1. These safety rules, weapon system features, operational controls, and technical procedures ensure United States/North Atlantic Treaty Organization (NATO) F-15E, F-16A/B/C/D, F-35A, PA-200 DCA and nuclear weapons dedicated for use with these aircraft meet the nuclear weapon system surety standards and requirements in DoDD 3150.02, *DoD Nuclear Weapons Surety Program*, and DAFI 91-101, *Air Force Nuclear Weapons Surety Program*.

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

4.3. With the exception of actions outlined in **paragraph 3.13** above, a commander may deviate from a specific safety rule in an emergency and will report the deviation as soon as practical as directed by Air Force Manual (AFMAN) 91-221, *Weapons Safety Investigations and Reports*. **(T-0)**

4.4. A violation of referenced instructions does not constitute a weapon system safety rule violation unless specifically identified in this document.

4.5. USAF policy and requirements regarding changes impacting nuclear weapon system surety are provided in AFI 91-102.

4.6. Units will apply safety rules pertaining to protective aircraft shelters containing nuclear weapons-loaded weapons storage vaults regardless of the type of aircraft parked in the protective aircraft shelter. **(T-0)**

4.7. Only the following weapons are authorized:

4.7.1. For F-15E: B61-3, B61-4, and B61-12. **(T-0)**

4.7.2. For F-16A/B: B61-3, B61-4, and B61-12. **(T-0)**

4.7.3. For F-16C/D: B61-3 and B61-4. **(T-0)**

4.7.4. For F-35A: B61-12. **(T-0)**

4.7.5. For PA-200: B61-3, B61-4, and B61-12. **(T-0)**

**5. Modifications.** Units shall not modify aircraft monitoring and control, stores management system, suspension and release systems, handling and test equipment, or any aircraft system component, including software and procedures, which affects nuclear surety without USAF approval in accordance with AFI 63-125, *Nuclear Certification Program*, and Allied Command Operations Directive 80-76, *NATO Nuclear Certification*. **(T-0)**

#### **6. Security Criteria.**

6.1. Security of nuclear weapons provided by either the U.S. or non-U.S. military services must meet the criteria in the following documents:

6.1.1. For security policy of nuclear weapons: DoDD 5210.41, *Security Policy for Protecting Nuclear Weapons*.

6.1.2. For security policy, objectives, concepts, and prescribed minimum security criteria for protection of nuclear weapons on alert, in storage, in maintenance facilities, in-transit,

and in regeneration situations: DoDM S-5210.41, (S) *Nuclear Weapon Security Manual: The DoD Nuclear Weapon Security Program*; DoD S-5210.41-M\_Air Force Manual (AFMAN) 31-108V1-S, (S) *The Air Force Nuclear Weapon Security Manual*; DoD S-5210.41-M\_AFMAN 31-108V2-S, (S) *General Nuclear Weapon Security Procedures*; DoD S-5210.41-M\_AFMAN 31-108V3-S, (S) *Nuclear Weapon Security Manual: Nuclear Weapon Specific Requirements*; DAFI 31-101, *Integrated Defense*; and 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)*.

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

6.2. In the United States European Command area of responsibility, security provided by U.S. and non-U.S. military services must meet the DoD and USAF standards as identified in [paragraph 6.1](#) and as spelled out in Allied Command Operation Directive 080-006, Volume 2, Part II/United States European Command Instruction 6801.01. **(T-0)**

6.3. Individuals performing nuclear weapon operations must:

6.3.1. Possess at least a SECRET clearance granted in accordance with USAF or NATO-nation security directives. **(T-0)** NATO clearance and investigative requirements must be at least equal to USAF requirements. **(T-0)**

6.3.2. Be specifically authorized to perform such operations. **(T-0)**

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

7.1. While weapons are under U.S. custody, all two-person concept teams must have at least one person who is a member of the United States Armed Forces. **(T-0)**

7.2. A two-person concept team shall verify seal integrity of the applicable controls/switches as identified in [paragraph 12](#), before and after any task or operation performed in the cockpit. **(T-0)**

7.3. Authorized user-nation personnel must apply seals to designated prearming and release controls. **(T-0)** The seals must:

7.3.1. Have a distinctive marking. **(T-0)**

7.3.2. Provide evidence of tampering or accidental activation. **(T-0)**

7.4. An aircraft with all preload functions complete and ready for weapons mating and loading (i.e., safety wired and sealed) is a critical component and controlled in accordance with AFI 91-101, *Air Force Nuclear Weapons Surety Program*. Units will ensure training seals can be easily distinguished from and are not used as operational seals. **(T-0)** **Note:** An aircraft with training seals installed is not a critical component.

7.5. Units will follow MAJCOM guidance when a seal is accidentally broken during authorized operations. **(T-0)**

7.6. The U.S. load crew or U.S. load monitor must verify the seals before loading and unloading weapons. **(T-0)**

7.7. When it is discovered that operational seals have been broken or tampered with, units will, at a minimum:

7.7.1. Maintain control of the system until the situation is resolved. **(T-0)**

7.7.2. Verify the aircraft monitoring and control system indicates the weapon is in the aircraft monitoring and control SAFE state prior to resealing the consent switch. **(T-0)**

7.7.3. Check the integrity of the weapon system and reseal if integrity is assured. **(T-0)**

7.8. The U.S. custodian will investigate the event and send a deficiency report in accordance with AFMAN 91-221, *Weapons Safety Investigations and Reports*. **(T-0)**

7.9. If seals are broken during flight operations, and the weapon is retained, the aircrew will verify the aircraft monitoring and control system indicates the weapon is in the aircraft monitoring and control SAFE state prior to resealing the consent switch. **(T-0)**

7.10. The user-nation controls receipt, storage, issue, and disposal of dies (or unique identifying devices) and seals.

## **8. Personnel Reliability Assurance Program.**

8.1. All U.S. 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)**

8.2. Personnel that have physical access to nuclear weapons must be qualified under a PRAP. **(T-0)**

8.3. Personnel responsible for controlling physical access to nuclear weapons must be certified in accordance with AFI 31-117. **(T-0)**

8.4. Host-nation personnel reliability programs must be equivalent to the U.S. personnel reliability programs.

**9. Nuclear Identification.** Units shall establish administrative controls and procedures to provide positive means of distinguishing between nuclear munitions and non-nuclear devices (e.g., joint test assemblies, bomb dummy units, and training shapes) intended to resemble nuclear weapons. **(T-0)**

**10. Weapons Custody.** U.S. custodial agents must maintain custody of nuclear weapons until custody is transferred to non-U.S. delivery forces as a result of an authenticated execution message. **(T-0)** U.S. custodial agents will reestablish U.S. custody if weapons are not employed. **(T-0)**

**11. Airspace Restrictions.** In airspace controlled by the base, units will prohibit overflight of:

11.1. Weapons movements, nuclear loaded aircraft, and aircraft shelters with nuclear weapons inside and not secured in a locked weapons storage vault. **(T-0)**

11.2. Nuclear airlift operations. **(T-0)**

**12. Basic Aircraft Configurations.** Units will place aircraft in the following configurations once all preload functions are complete prior to loading nuclear weapons:

12.1. F-15E:

12.1.1. Nuclear consent switches in the SAFE position. **(T-0)**

12.1.2. Nuclear consent switch guards down, safety wired, and sealed. **(T-0)**

12.1.3. Master arm switch in the SAFE position. **(T-0)**

12.1.4. Ensure impulse cartridges are not installed in the wing or centerline pylon breaches when nuclear weapons will be loaded on those stations. **(T-0)**

12.2. F-16A/B/C/D (forward cockpit):

12.2.1. Nuclear consent switch in the OFF position. **(T-0)**

12.2.2. Nuclear consent switch guard down, safety wired, and sealed. **(T-0)**

12.2.3. Master arm switch in the OFF position. **(T-0)**

12.3. PA-200:

12.3.1. Control Arm of the Special Weapons Controller-2 Panel in the OFF-MONITOR-SAFE position, safety wired, and sealed. **(T-0)**

12.3.2. Bomb Release Safety Lock/Unlock switch in the LOCK position with switch guard down, safety wired, and sealed. **(T-0)**

12.3.3. Consent/Off switch in OFF position. **(T-0)**

12.3.4. Master arm safety switch in the LOCK/SAFE position. **(T-0)**

12.4. F-35A:

12.4.1. Nuclear consent switch in the OFF position.

12.4.2. Nuclear consent switch guard down and sealed.

12.4.3. Master arm switch in the OFF position.

12.4.4. Maintenance Interface Panel switches set to:

12.4.4.1. 28 V BATT switch.....OFF

12.4.4.2. COUNTERMEASURES switch .....SAFE

12.4.4.3. WEAPONS switch.....SAFE

12.4.4.4. WEAPONS BAY DOORS switch..... SAFE

12.4.5. BRU-68 Reversible In-Flight Lock (RIFL) handle in the SAFE-LOCKED position.

### **13. Storage, Maintenance, Testing, Loading, and Unloading.**

13.1. Units will store nuclear weapons in USAF-approved, locked, and secured facilities. **(T-0)**

13.2. Units will use applicable technical data to verify weapon configuration prior to handling. **(T-0)**

13.3. Units will load nuclear weapons only on aircraft certified mission capable for the mission to be performed. **(T-0)**

13.4. Only members of U.S. Armed Forces will conduct maintenance on nuclear weapons. **(T-0)**

13.5. Units will perform nuclear weapon maintenance only in an explosive-sited protective aircraft shelter. **(T-0)**

13.6. Units will ensure any operation that breaches the “minimum configuration” (as defined in the Safety Precautions section of Technical Order 11N-B61-1, *Assembly, Test, Maintenance, and Storage Procedures; B61-3, -4* and Technical Order 11N-B61D-1, *Assembly, Test, Maintenance, and Storage Procedures; B61-12*) will be performed in a protective aircraft shelter in the Secure Transportable Maintenance System (STMS). **(T-0)**

13.7. Prior to initiating unlock procedures to raise the weapons storage vault or otherwise introducing a nuclear weapon to the protective aircraft shelter for operations that breach the “minimum configuration,” units will remove all conventional munitions and aircraft from the protective aircraft shelter and comply with appropriate security measures. **(T-0)**

13.8. For operations in a STMS, use the guidelines in applicable technical data. Due to the Faraday shielding provided by the STMS, maintenance operations may be conducted irrespective of lightning occurrence or probability of occurrence.

**14. Logistics Movement of Nuclear Weapons by Cargo Aircraft.** Units will comply with AFI 91-115, *Safety Rules for Nuclear Airlift Operations*. **(T-0)**

**15. Operations in a Protective Aircraft Shelter with a Weapon Storage Vault.**

15.1. Maximize the use of the weapon storage vault surety features by keeping the nuclear weapon-loaded weapon storage vault down and locked unless the specific operation being performed requires vault access.

15.2. Simultaneous presence of conventional munitions and nuclear weapons (exposed or with the vault not fully down) is prohibited except during nuclear generations, command disablement operations, or Chairman of the Joint Chiefs of Staff-directed Stockpile Emergency Verifications. For nuclear generation, only self-defense munitions loaded on aircraft and one additional load of missiles, countermeasures, and an aircraft gun loading system, which may contain multiple loads, are permitted.

15.3. Authorized operations involving both nuclear weapons and conventional munitions in a protective aircraft shelter with a weapon storage vault (e.g., nuclear generation, command disablement operations, and Chairman of the Joint Chiefs of Staff-directed Stockpile Emergency Verifications) always require major command-approved plans. **(T-0)** The appropriate host unit/United States wing commander must authorize each operation prior to start. **(T-0)** Self-defense munitions as described above do not require a plan.

15.4. Aircraft not loaded with live munitions (except for captive missiles, countermeasures, and aircraft target practice gun ammunition) and associated ground support equipment can remain in the protective aircraft shelter while performing maintenance on the weapon storage vault, or authorized weapons maintenance in the weapon storage vault, provided all other activities within the protective aircraft shelter are terminated. **(T-0)**

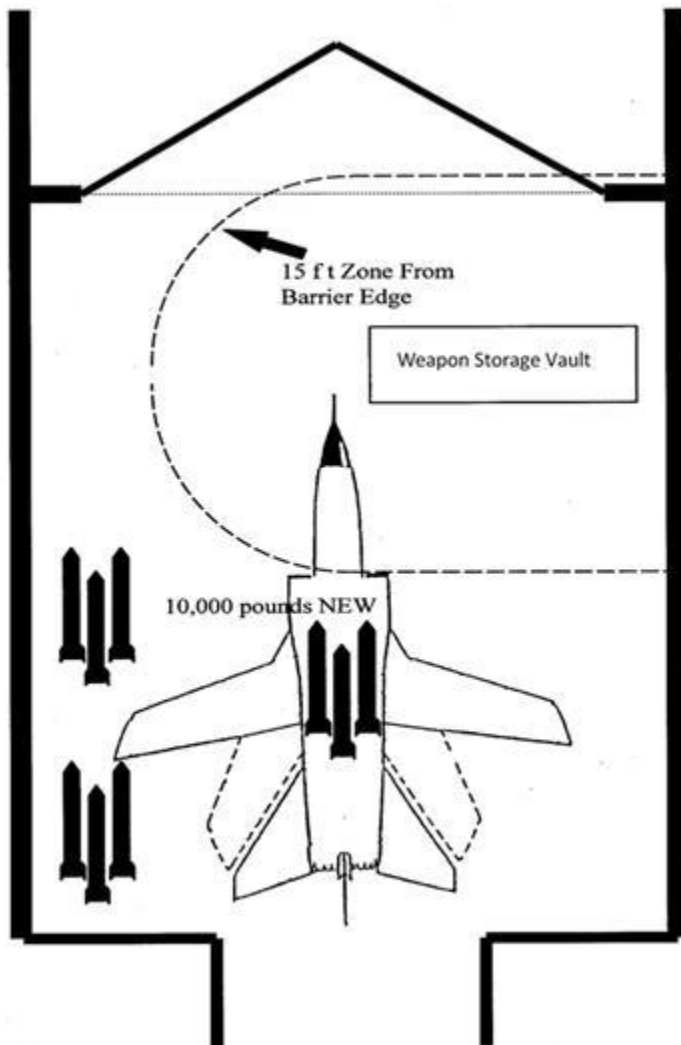
15.5. In a protective aircraft shelter with a nuclear weapon-loaded weapon storage vault, conventional munitions will not exceed 10,000 pounds net explosive weight. **(T-0)**

15.6. Conventional munitions (except for missiles) must be positioned no closer than 15 feet from the weapon storage vault (**Figure 1**). **(T-0)** Do not position forward firing munitions in storage with the nose or exhaust pointed directly at an opened nuclear weapon-loaded weapon



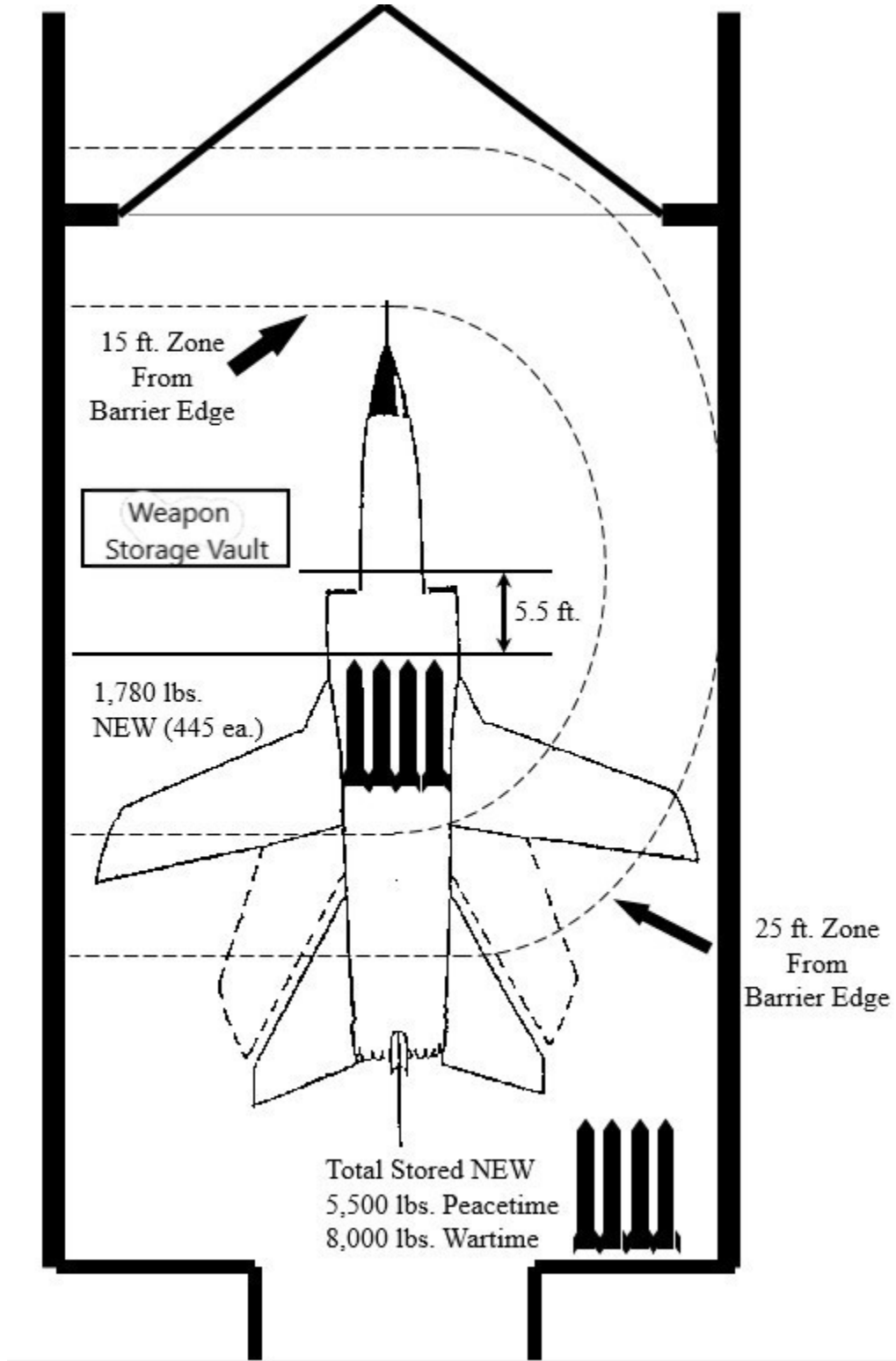
storage vault. (T-0) Missiles, countermeasures, and aircraft gun ammunition loaded in preparation for strike are authorized as long as they are electrically and/or mechanically safed, as directed by technical orders. In addition, hazard division 1.3 and 1.4 training munitions, countermeasures, loaded and safed, on aircraft may be stored within 15 feet of a closed and locked weapon storage vault to accommodate parking two aircraft in a third generation protective aircraft shelter.

**Figure 1. Placement of Munitions 15 Feet from Weapon Storage Vault.**



15.7. If the placement of the weapon storage vault, the physical dimensions of the protective aircraft shelter, and the size of a single aircraft are such that the single aircraft (e.g., PA-200 in 1st generation protective aircraft shelter) cannot have munitions loaded and meet the 15-foot restriction from the weapon storage vault, then the following additional restrictions apply when loading conventional munitions in the protective aircraft shelter ([Figure 2](#)).

Figure 2. Placement of Munitions When 15-Foot Restriction Cannot Be Met.



- 15.7.1. Park aircraft as far from the weapon storage vault as practical.
  - 15.7.2. No conventional weapon in the protective aircraft shelter (on- or off-aircraft) may exceed 445 pounds net explosive weight each. **(T-0)**
  - 15.7.3. Total net explosive weight in the protective aircraft shelter will not exceed 5,500 pounds. **(T-0)**
  - 15.7.4. During combat contingency operations, heightened tensions or wartime operations, the host unit commander may authorize an increase in the total net explosive weight, not to exceed 8,000 pounds.
- 15.8. All conventional munitions not loaded on the aircraft will be at least 25 feet from the weapon storage vault. **(T-0)**
- 15.9. Do not exceed 445 pounds net explosive weight per aircraft weapon station. **(T-0)**
- 15.10. Do not exceed four aircraft-loaded bombs within 15 feet of the weapon storage vault. No aircraft-loaded bomb may be closer to the weapon storage vault than 5.5 feet. **(T-0)**
- 15.11. The preceding restrictions do not limit towing or taxi operations of aircraft loaded with conventional munitions into or out of a protective aircraft shelter containing a weapon storage vault.
- 15.12. Units will not conduct open fuel cell maintenance operations in a protective aircraft shelter containing a nuclear weapon-loaded weapon storage vault. **(T-0)**
- 15.13. Units will perform normal day-to-day aircraft maintenance operations only when the weapon storage vault is down and locked. **(T-0)**
- 15.14. Units will unlock the weapon storage vault only after complying with the appropriate security measures. **(T-0)** Before raising a nuclear weapon-loaded weapon storage vault to perform nuclear generation actions, qualified personnel will:
- 15.14.1. Verify that all conventional munitions are electrically and/or mechanically safed, as directed by technical orders. **(T-0)**
  - 15.14.2. Fuel the mission-capable aircraft and prepare it for loading, as required. **(T-0)**
  - 15.14.3. Cease aircraft maintenance operations. **(T-0)**
- 15.15. When performing Chairman of the Joint Chiefs of Staff-directed Stockpile Emergency Verifications in a protective aircraft shelter where conventional munitions are present, the weapon storage vault will be unlocked and opened by authorized personnel only long enough to record the required nuclear weapon data. **(T-0)**
- 15.15.1. Prior to initiating unlock procedures to raise the weapon storage vault, qualified personnel will:
- 15.15.1.1. Verify that all conventional munitions are electrically and/or mechanically safed, as directed by technical orders. **(T-0)**
  - 15.15.1.2. Ensure aircraft is properly grounded. **(T-0)**
  - 15.15.1.3. Ensure the nose or exhaust of forward firing munitions in storage will not point directly at an opened nuclear weapon-loaded weapon storage vault. **(T-0)**

- 15.15.1.4. Cease all other operations within the protective aircraft shelter. **(T-0)**
- 15.15.2. Allow only personnel required to perform the Stockpile Emergency Verifications to remain in the protective aircraft shelter. **(T-0)**
- 15.16. When a nuclear weapon-loaded weapon storage vault is not down, the following restrictions apply:
  - 15.16.1. Do not taxi aircraft into or out of the protective aircraft shelter. **(T-0)** Aircraft, without engine(s) running, may be moved with U.S. and Host Nation commander approval.
  - 15.16.2. Move only mission essential equipment into or out of the protective aircraft shelter. **(T-0)**
  - 15.16.3. Do not perform engine runs, fueling, or liquid oxygen servicing operations. **(T-0)**
  - 15.16.4. Do not perform integrated combat turnaround procedures. **(T-0)**
  - 15.16.5. Perform only those operations approved by the applicable USAF commander in accordance with appropriate directives and technical data. **(T-0)**
- 15.17. If fuel, liquid oxygen, hydrazine, or similar hazardous substance released within the protective aircraft shelter is deemed an emergency and poses a threat to the nuclear weapons, qualified personnel will return the nuclear weapon-loaded weapon storage vault to a fully down position, if possible, until the emergency is terminated by proper authority. **(T-0)**
- 15.18. The weapon storage vault need not be locked when it is placed in the down position between phases of an operation (e.g., maintenance, generation exercises).

## **16. Operations in a Protective Aircraft Shelter without a Weapon Storage Vault.**

- 16.1. Simultaneous presence of conventional munitions and nuclear weapons is prohibited except for self-defense munitions during nuclear generations. **(T-0)** Self-defense munitions loaded on aircraft and one additional load of missiles, countermeasures, and an aircraft gun loading system, which may contain multiple loads, are permitted.
- 16.2. Authorized operations involving both nuclear weapons and conventional munitions in a protective aircraft shelter without a weapon storage vault (e.g., nuclear generation, command disablement operations, or Chairman of the Joint Chiefs of Staff-directed Stockpile Emergency Verifications) always require major command-approved plans. **(T-0)** The appropriate host unit/United States wing commander must authorize each operation prior to start. **(T-0)** Self-defense munitions as described above do not require a plan.
- 16.3. Before introducing nuclear weapons into a protective aircraft shelter to load onto an aircraft for generation, and after complying with applicable security directives, qualified personnel will:
  - 16.3.1. Verify that all conventional munitions are electrically and/or mechanically safed, as directed by technical orders. **(T-0)**
  - 16.3.2. Fuel the mission-capable aircraft and prepare it for loading, as required. **(T-0)**
  - 16.3.3. Cease aircraft maintenance operations. **(T-0)**
  - 16.3.4. Ensure the net explosive weight of conventional munitions inside the protective aircraft shelter is minimized. **(T-0)**

**17. Operations Outside a Protective Aircraft Shelter.**

17.1. Units will limit operations to the exercising or execution of approved operational plans. **(T-0)**

17.2. Simultaneous presence of conventional munitions and nuclear weapons is prohibited except for self-defense munitions during nuclear generations. **(T-0)** Additional stores not loaded on the aircraft are prohibited except in cases of active conventional weapons servicing operations (e.g., missile swap-out). **(T-0)**

17.3. The aircraft location must support unbarricaded inter-magazine criteria (K-11) or barricaded inter-magazine criteria (K-6) from any potential explosive site, for aircraft to be nuclear loaded. **(T-0)**

17.4. Before conducting nuclear weapons loading operations for generation, qualified personnel will:

17.4.1. Verify all conventional munitions are electrically and/or mechanically safe, as directed by technical orders. **(T-0)**

17.4.2. Fuel the mission-capable aircraft and prepare it for loading, as required. **(T-0)**

17.4.3. Cease any other aircraft maintenance operations on that aircraft. **(T-0)**

**18. Ground Operations Involving Nuclear Weapon-Loaded Aircraft.**

18.1. Apply power to a loaded nuclear weapon only for authorized permissive action link operations or to monitor the weapon. **(T-0)** **Note:** Keep power applications to a minimum.

18.2. Qualified personnel will apply power to a nuclear weapon-loaded aircraft only to:

18.2.1. Perform authorized maintenance. **(T-0)**

18.2.2. Perform authorized preflight operations. **(T-0)**

18.2.3. Start the engine or engines. **(T-0)**

18.2.4. Warm up equipment. **(T-0)**

18.2.5. Monitor the radio. **(T-0)**

18.2.6. Perform authorized permissive action link operations. **(T-0)**

18.3. Units will keep aircraft towing to a minimum (i.e., least amount necessary to attain operational requirements). **(T-0)**

18.3.1. A qualified and authorized individual must be in the cockpit during towing. **(T-0)**

18.3.2. Have a two-person concept team verify the integrity of seals of applicable sealed controls/switches following towing operation. **(T-0)**

18.4. Engine Run up.

18.4.1. Allow only authorized aircrews to perform engine run up. **(T-0)**

18.4.2. Use a physical barrier to prevent an unauthorized takeoff during engine run up. **(T-0)**

18.4.3. Have a two-person concept team verify the integrity of seals of applicable sealed controls/switches following engine run up. **(T-0)**

18.5. Qualified personnel will run the engine or engines only if necessary to:

18.5.1. Check aircraft status. **(T-0)**

18.5.2. Perform authorized maintenance. **(T-0)**

18.5.3. Prepare for authorized flying operations. **(T-0)**

18.5.4. Conduct exercises, evaluations or inspections (except as restricted when conventional munitions other than missiles, countermeasures, and aircraft gun ammunition, are in a protective aircraft shelter with nuclear weapons or when a nuclear weapon-loaded weapon storage vault is not fully down). **(T-0)**

18.6. Do not move a nuclear weapon-loaded aircraft under its own power unless:

18.6.1. Authorized by an authenticated message. **(T-0)**

18.6.2. Necessary to preserve the safety of the weapon system. **(T-0)**

18.7. On nuclear weapon-loaded aircraft, conduct:

18.7.1. Engine runs only when necessary to check aircraft status, perform authorized maintenance, or prepare for authorized flying operations. **(T-0)**

18.7.2. Refueling/top-off operations only when necessary to maintain the aircraft for its mission requirements. **(T-0)** Defueling operations are not authorized. **(T-0)**

18.7.3. All other operations only as approved by the applicable USAF commander in accordance with appropriate directives and technical data.

## **19. Flying Operations Involving Carriage of Nuclear Weapons in a Non-strike Configuration.**

19.1. U.S. nuclear weapons will not be loaded in a non-strike configuration unless authorized by the President or the Secretary of Defense. **(T-0)**

19.2. Qualified personnel will verify Permissive Action Link (PAL) is disabled prior to loading the nuclear weapon. **(T-0)**

19.3. Qualified personnel will ensure the aircraft is in its basic configuration ([paragraph 12](#)). **(T-0)**

19.4. Do not make mechanical and electrical pullout connections between the weapon and the aircraft. **(T-0)**

19.5. Units will plan flight routes to avoid populated areas to the maximum extent possible. **(T-0)**

## **20. Flying Operations Involving Carriage of Nuclear Weapons in a Strike Configuration.**

20.1. F-35A aircrew will delay Reversible In-Flight Lock UNLOCK as long as practical, consistent with operational requirements. **(T-0)**

20.2. If loss of aircraft is anticipated or jettison of weapon(s) is required, safe the weapon(s), if time and conditions permit. **(T-0)** If the aircraft is capable and time and conditions permit, PAL disable and Command Disable the weapon(s). **(T-0)**

**21. Permissive Action Link Procedures.**

21.1. PAL codes and equipment will only be used as directed by appropriate authority. **(T-0)**

21.2. PAL disable as soon as practical if a strike mission is aborted or terminated. **(T-0)**

**22. Ground Command Disable Procedures.**

22.1. Command Disable codes and equipment will only be used as directed by appropriate authority. **(T-0)**

22.2. If it is necessary to perform a Command Disable operation on a weapon in a weapons storage vault, the vault will be unlocked and opened by authorized personnel only long enough to perform the Command Disable operation. **(T-0)**

JEANNIE M. LEAVITT  
Major General, USAF  
Chief of Safety

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

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- AFI 31-117, *Arming and Use of Force by Air Force Personnel*, 6 August 2020
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DoD S-5210.41-M\_AFMAN 31-108V3-S, (U) *Nuclear Weapon Security Manual: Nuclear Weapon Specific Requirements*, 20 May 2019

Technical Order 11N-B61-1, *Assembly, Test, Maintenance, and Storage Procedures; B61 - 3, -4*, 14 December 2020

Technical Order 11N-B61D-1 *Assembly, Test, Maintenance, and Storage Procedures; B61-12*, 01 July 2021

### ***Adopted Forms***

DAF Form 847, *Recommendation for Change of Publication*

### ***Abbreviations and Acronyms***

**AFI**—Air Force Instruction

**AFMAN**—Air Force Manual

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

**AFSEC**—Department of the Air Force Safety Center

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

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

**DAFI**—Department of the Air Force Instruction

**DAFPD**—Department of the Air Force Policy Directive

**DCA**—Dual Capable Aircraft

**DoD**—Department of Defense

**DoDI**—Department of Defense Instruction

**DoDD**—Department of Defense Directive

**DoDM**—Department of Defense Manual

**NATO**—North Atlantic Treaty Organization

**OPR**—Office of Primary Responsibility

**OPSEC**—Operational Security

**PAL**—Permissive Action Link

**PRAP**—Personnel Reliability Assurance Program

**PRP**—Personnel Reliability Program

**WSV**—Weapons Storage Vault

**WSSR**—Weapon System Safety Rules

### *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 measure 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.

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

**Safe State**—A condition where the current operational state and the process taken to get to the current operational state can be proven.

**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.