*BY ORDER OF THE SECRETARY OF THE AIR FORCE*

*AIR FORCE INSTRUCTION 91-113*

*1 DECEMBER 1998*

*Safety*

# *SAFETY RULES FOR NON-US NATO STRIKE AIRCRAFT*

**COMPLIANCE WITH THIS PUBLICATION IS MANDATORY**

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This instruction implements AFPD 91-1, *Nuclear Weapons and Systems Surety*. It applies to all operations with Non-US North Atlantic Treaty Organization (NATO) F-16A/B and PA-200 aircraft and nuclear weapons dedicated for use with the aircraft. Section A assigns responsibilities and Section B contains the nuclear weapon system safety rules for the weapon systems. The safety rules in Section B can only be changed or supplemented using procedures in AFI 91-102, *Nuclear Weapon System Safety Studies, Operational Safety Reviews, and Safety Rules*. This instruction does not apply to the Air Force Reserve and Air National Guard.

## *SUMMARY OF REVISIONS*

**This document is substantially revised and must be completely reviewed.**

This revision adds a list of authorized weapons; clarifies Hardened Aircraft Shelter (HAS) and Weapon Storage Vault (WSV) procedures; provides specific guidance if the placement of the WSV, physical dimensions of a HAS, and the size of a single aircraft are such that the single aircraft cannot have bombs loaded to meet the 15-foot limit from the WSV; deletes references to B61-3 and B61-4 Signal Selector Switch; includes procedures for performing CJCS-directed Stockpile Emergency Verifications in a HAS containing a WSV; and establishes PAL procedures for flying operations involving carriage of nuclear weapons in a strike configuration.

## *Section A—Authority and Responsibilities*

**1. Joint Chiefs of Staff (JCS) Direction.** The JCS 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 Agency must ensure:

3.1.1. The safety rules provide maximum safety consistent with operational requirements.

3.1.2. Units follow the safety rules.

3.2. Using major commands (MAJCOM) must:

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. General Information.**

4.1. These Safety rules apply to the F-16A/B and PA-200 aircraft and nuclear weapons dedicated for use with the aircraft. Rules pertaining to Hardened Aircraft Shelters containing Weapons Storage and Security Systems apply regardless of the type aircraft parked in the Hardened Aircraft Shelter.

4.2. Safety rules always apply, even during war. A commander may deviate from a specific rule in an emergency, but must keep custody of US nuclear weapons until an emergency action message authorizes release. Department of Defense (DoD) Directive 3150.2, *DoD Nuclear Weapon System Safety Program*, December 23, 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.

4.3. Do not fly the weapon system until authorized. An authenticated SACEUR or USCINCEUR execution message authorizes release.

4.4. Training with nuclear weapons is prohibited.

4.5. These rules, weapon system features, operational controls, and technical procedures, ensure NATO Strike Aircraft meet the Nuclear Weapon System Safety Standards in DoD Directive 3150.2.

**5. Authorized Weapons.**

**5.1. B61-3.**

**5.2. B61-4.**

**5.3. B61-10.**

**6. Nuclear Identification.** Develop procedures to distinguish nuclear weapons from test or training shapes.

**7. Troubleshooting and Using Equipment, Procedures, and Checklists:**

7.1. Do not use nuclear weapons to troubleshoot faults. Use only equipment and procedures that are consistent with US Air Force-approved publications for nuclear weapons or nuclear weapon systems operations.

7.2. Do not modify aircraft monitoring and control (AMAC), stores management system (SMS), suspension and release systems, handling and test equipment, or any aircraft system that effects nuclear surety without US air Force approval.

7.3. Approved publications must conform with weapon system safety rules and meet the DoD Nuclear Weapon System Safety Standards.

**8. Security Criteria.** Allied Command Europe Directive 80-6, Volume 2; US European Command Directive 60-10, *Nuclear Surety Management*; Allied Command Europe Directive 80-6, Volume 2, Part II; US European Command Directive 60-12, *Nuclear Surety Management for the WS3;* AFI 31-101, Volume I, *The Air Force Physical Security Program;* AFI 31-101, Volume II, *The Air Force Nuclear Surety Program Standard;* and DoD C-5210.41M, *Nuclear Weapon Security Manual* (U), apply.

8.1. SACEUR or USCINCEUR sets security requirements for all nuclear weapon operations. They must be at least equal to US Air Force security directives.

8.2. Individuals performing nuclear weapon operations must:

8.2.1. Have at least a SECRET clearance granted IAW US Air Force or NATO-nation security directives. NATO clearance and investigative requirements must be at least equal to US Air Force requirements.

8.2.2. Be specifically authorized to perform such operations.

8.3. Set up boundaries for areas where nuclear weapons are located.

8.4. Develop procedures to detect and prevent unauthorized entry to restricted areas.

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

9.1. Tamper Control (Two-Person Concept). A two person team, one US and one NATO, must:

9.1.1. Verify the safe position of prearming and release controls and integrity of the seals.

9.1.2. Verify controls and seals before placing a system on alert.

9.1.3. Verify controls and seals before and after any person has entered the cockpit alone.

9.2. Tamper Detection (Sealing). Authorized user-nation personnel must apply lead seals to designated prearming and release controls. The seals must:

9.2.1. Have a distinctive marking.

9.2.2. Provide evidence of tampering or accidental activation.

9.3. The US technical monitor verifies the seals before loading and unloading weapons.

9.4. If seals have been broken or tampered with:

9.4.1. Authorized personnel immediately inspect the weapon, AMAC or SMS, and release systems.

9.4.2. The US Custodian conducts an investigation using AFI 91-204, *Safety Investigations and Reports.*

9.5. The user nation controls receipt, storage, issue, and disposal of dies and seals.

**10. Handling and Storage of Certified Software.** AFI 91-105, *Critical Components*, applies.

**11. Personnel Reliability.** Monitor NATO personnel reliability according to the user nation's personnel reliability program. AFI 36-2104, *Nuclear Weapons Personnel Reliability Program,* and DoD Directive 5210.42, *Nuclear Weapon Personnel Reliability Program (PRP),* May 25, 1993, apply to US personnel.

**12. Weapons Custody:**

12.1. The US custodian is accountable for the weapons.

12.2. US custodial agents keep nuclear weapons until the Munitions Support Squadron (MUNSS) receives and authenticates an execution message.

**13. Basic Weapon Configurations:** Use applicable technical orders to verify B61-3, -4, and -10 is configured correctly.

**14. Basic Aircraft Configurations.** Place aircraft in the following configurations prior to loading nuclear weapons.

14.1. PA-200:

14.1.1. Control Arm of the Special Weapons Controller (SWC-2) Panel in the OMS (OFF-MONITOR-SAFE) position, safety wired, and sealed.

14.1.2. Bomb Release Safety Lock/Unlock switch in the LOCK position with switch guard down, safety wired, and sealed.

14.1.3. Consent/Off switch in OFF position.

14.2. F-16A/B:

14.2.1. Nuclear Consent switch in OFF position with switch guard down, safety wired, and sealed.

14.2.2. Master Arm switch in OFF position.

**15. Storage, Maintenance, Testing, Ground Transportation, Loading, and Unloading:**

15.1. Store nuclear weapons in US Air Force-approved, locked, and secured facilities.

15.2. Use applicable technical data to verify weapon condition prior to handling..

15.3. Load nuclear weapons only on aircraft certified mission capable for the mission to be performed.

15.4. Allow only US Air Force personnel to maintain nuclear weapons.

15.5. Perform nuclear weapon maintenance only in a Maintenance and Inspection Facility or in a hardened aircraft shelter (HAS).

15.6. Major nuclear weapon maintenance in a HAS must be performed using a weapon maintenance truck (WMT). (Major maintenance is defined as any activity in which weapon major subassemblies are separated.)

15.6.1. Prior to initiating unlock procedures to raise the weapons storage vault (WSV) or otherwise introducing a nuclear weapon to the HAS for major maintenance:

15.6.1.1. Remove all conventional munitions and aircraft from the HAS.

15.6.1.2. Position the WMT at least seven feet from the HAS walls or attachments.

15.6.2. Do not begin any major maintenance if lightning potential is forecast to occur before task completion.

15.6.3. If lightning becomes a threat when major maintenance is in progress, isolate the WMT from the HAS by disconnecting electrical power, communications lines, and ground lines. Operations may continue on auxiliary power unit (APU) power to reach a safe stopping point in the procedure, provided the APU exhaust hose is equipped with an electrical isolation feature.

15.6.4. If lightning actually occurs within five nautical miles, isolate the WMT as described above and cease operations as soon as the weapon can be brought to a safe configuration.

**16. Logistics Movement of Nuclear Weapons by Cargo Aircraft:** AFI 91-115, *Safety Rules for Nuclear Logistics Transport by Prime Nuclear Airlift Force*, applies.

16.1. Transport nuclear weapons in their basic configurations (paragraph 13).

16.2. The aircrew performs or controls all loading, tiedown, and unloading operations.

16.3. The aircrew performs or controls all maintenance activities on a nuclear cargo-loaded aircraft and en route maintenance on a nuclear logistics mission aircraft.

**17. Operations Involving Both Nuclear Weapons and Conventional Munitions in a HAS Without a Weapon Storage Vault (WSV).** (For operations with a WSV, see paragraph 18.) Simultaneous presence of conventional munitions (except for air-to-air missiles) and nuclear weapons is prohibited except during nuclear generations and subsequent alert operations. Do not position nuclear weapons directly in front of or behind forward firing ordnance.

17.1. Simultaneous presence of conventional munitions (except for air-to-air missiles) and nuclear weapons during practice generations, practice alerts, exercises, or evaluations is prohibited.

17.2. Authorized operations involving both nuclear and conventional munitions in a HAS (i.e. nuclear generations and subsequent alert operation) always require MAJCOM-approved plans. The appropriate host unit commander must authorize each operation prior to start.

17.3. Before introducing nuclear weapons into a HAS to load onto an aircraft for generation and subsequent alert operations:

17.3.1. Have qualified munitions personnel verify that conventional munitions, if present, are safed.

17.3.2. Fuel the mission capable aircraft and prepare it for loading, as required.

17.3.3. Cease aircraft maintenance operations.

17.3.4. Ensure the net explosive weight (NEW) of conventional munitions inside the HAS does not exceed 10,000 pounds.

17.4. When a nuclear weapon-loaded aircraft is in a HAS:

17.4.1. Conduct engine runs only when necessary to check aircraft status, perform maintenance, and prepare for authorized flying operations.

17.4.2. Conduct fueling operations only when necessary to maintain the aircraft for its mission requirements.

17.4.3. Conduct all other operations only as approved by the US Air Force MUNSS Commander in accordance with appropriate directives and technical data.

17.5. Remove all conventional munitions and aircraft from the HAS before performing any major maintenance on nuclear weapons inside a HAS.

**18. Operations Involving Both Nuclear Weapons and Conventional munitions in a Hardened Aircraft Shelter with a Weapons Storage Vault.** (For operations in a HAS without a WSV, see paragraph 17.) Simultaneous presence of conventional munitions (except for air-to-air missiles) and nuclear weapons (exposed or with the vault not down and locked) is prohibited except during nuclear generations, subsequent alert operations and CJCS-directed Stockpile Emergency Verifications (SEV).

18.1. Simultaneous presence of conventional munitions (except for air-to-air missiles) and nuclear weapons during practice generations, practice alerts, exercises, or evaluations is prohibited.

18.2. Authorized operations involving both nuclear and conventional munitions in a HAS (i.e. nuclear generations and subsequent alert operation) always require MAJCOM-approved plans. The appropriate host unit commander must authorize each operation prior to start.

18.3. Control the vault processor, authentication unit, and data authenticator under the Two-Person Concept when the WSV is unlocked.

18.4. Do not conduct fuel cell maintenance operations in a HAS containing a nuclear weapon-loaded WSV.

18.5. Remove aircraft from a HAS prior to performing maintenance requiring the unlocking of a nuclear weapon loaded WSV.

18.6. Remove all conventional munitions and aircraft from the HAS before performing any major maintenance on nuclear weapons inside a HAS.

18.7. In a HAS with a nuclear weapon-loaded WSV, conventional munitions may not exceed 10,000 pounds NEW.

18.8. Conventional munitions (except for wall-mounted air-to-air missiles) must be positioned at least 15 feet from the WSV. Do not position forward firing ordnance with the nose of exhaust pointed directly at an opened nuclear weapon-loaded WSV.

18.8.1. If the placement of the WSV, the physical dimensions of the HAS, and the size of a single aircraft are such that the single aircraft (for example, PA-200 or A-7 in 1st generation HAS) cannot have bombs loaded to meet the 15-foot limit from the WSV, then the following restrictions apply when loading conventional bombs in the HAS:

18.8.1.1. Park aircraft as far from the WSV as practical.

18.8.1.2. No conventional weapon in the HAS (on or off the aircraft) may exceed 445 pounds NEW each.

18.8.1.3. Total NEW in the HAS will not exceed 5,500 pounds.

18.8.1.3.1. During combat contingency operations, increased hostilities or wartime operations, the host unit commander may authorize an increase in the total NEW not to exceed 8,000 pounds.

18.8.1.4. All conventional munitions not loaded on the aircraft will be at least 25 feet from the WSV.

18.8.1.5. Do not exceed 445 pounds NEW per aircraft weapon station.

18.8.1.6. Do not exceed 4 aircraft-loaded bombs within 15 feet of the WSV.

18.8.1.7. No aircraft-loaded bomb may be closer to the WSV than 5.5 feet.

18.8.2. The preceding restrictions do not limit towing or taxi operations of aircraft loaded with conventional munitions into or out of a HAS containing a WSV.

18.9. Perform normal day-to-day aircraft maintenance operations only when the WSV is down and locked.

18.10. Unlock the WSV only after complying with the appropriate security measures.

18.11. Before raising the nuclear weapon-loaded WSV to perform nuclear generation actions:

18.11.1. Have qualified munitions personnel verify all conventional munitions are safed.

18.11.2. Fuel the mission capable aircraft and prepare it for loading, as required.

18.11.3. Cease aircraft maintenance operations.

18.12. Performing a CJCS-directed Stockpile Emergency Verification (SEV) is the only occasion authorized, other than nuclear generation and subsequent alert, when the WSV may be opened with conventional munitions present in the HAS. When performing a SEV in a HAS where conventional munitions are present the WSV will be unlocked and opened only long enough to record the required nuclear weapon data.

18.12.1. Prior to initiating unlock procedures to raise the WSV:

18.12.1.1. Have qualified munitions personnel verify all conventional munitions are safed.

18.12.1.2. Ensure the aircraft is properly grounded.

18.12.1.3. Ensure all aircraft munitions are electrically and mechanically safed.

18.12.1.4. Ensure the nose or exhaust of forward firing ordnance will not point directly at an opened nuclear weapon-loaded WSV.

18.12.2. Only personnel required to perform the SEV will remain in the HAS.

18.13. When a nuclear weapon-loaded WSV is not down and locked the following restrictions apply:

18.13.1. Do not move aircraft into or out of the HAS.

18.13.2. Move only mission essential equipment into or out of the HAS.

18.13.3. Do not perform engine runs, fueling, or liquid oxygen servicing operations.

18.13.4. Do not perform conventional integrated combat turnaround procedures.

18.13.5. Perform only those operations approved by the US Air Force MUNSS Commander in accordance with appropriate directives and technical data.

18.14. If a fuel, liquid oxygen, hydrazine, or similar hazardous substance release within the HAS is deemed an emergency, return the nuclear weapon-loaded WSV to a fully down position until the emergency is terminated by proper authority.

18.15. Maximize the use of the WSV safety features by keeping the nuclear weapon-loaded WSV down and locked unless the specific operation being performed requires vault access.

18.16. When a nuclear weapon-loaded aircraft is in a HAS:

18.16.1. Conduct engine runs only when necessary to check aircraft status, perform maintenance, or prepare for authorized flying operations.

18.16.2. Conduct fueling operations only to maintain the aircraft for its mission requirements.

18.16.3. Conduct all other operations only as approved by the US Air Force MUNSS Commander in accordance with appropriate directives and technical data.

**19. Onbase Dispersal of Nuclear Weapons.** This paragraph applies to units without the WSV:

19.1. Disperse nuclear weapons from weapons storage areas when directed by appropriate authority and according to MAJCOM-approved plans.

19.2. Disperse weapons only to:

19.2.1. An empty HAS.

19.2.2. A HAS containing support equipment or war readiness support kits not posing a hazard to the weapons.

19.2.3. A HAS containing no more than one aircraft (with or without weapons) parked nose out. (Only minor maintenance, of the type authorized on nuclear weapon-loaded aircraft, is permitted in the HAS).

19.2.4. An empty bay of a semihardened fuel truck shelter (FTS). For a double-bay FTS, a fuel truck may be housed in the adjacent bay. Do not store nuclear weapons and fuel trucks in the same bay.

19.3. Do not use nuclear weapons for training, practice alerts, exercises, inspections, or evaluations involving onbase dispersal.

**20. Ground Operations Involving Nuclear Weapon-Loaded Aircraft:**

20.1. Apply power to a loaded nuclear weapon only for authorized permissive action link (PAL) operations or to monitor the weapon. Keep weapon monitoring to a minimum.

20.2. Apply power to a nuclear weapon-loaded aircraft only to:

20.2.1. Perform authorized maintenance.

20.2.2. Perform authorized preflight operations.

20.2.3. Start the engine or engines.

20.2.4. Warm up equipment.

20.2.5. Monitor the radio.

20.2.6. Perform authorized PAL operations.

20.3. Keep aircraft towing to a minimum.

20.3.1. PA-200. Two qualified and authorized individuals must be in the cockpit during towing.

20.3.2. F-16A/B. A qualified and authorized individual must be in the cockpit.

20.3.3. Have a Two-Person Concept team verify the basic aircraft configuration when towing is complete.

20.4. Engine Runup.

20.4.1. Allow only an authorized pilot to perform engine runup.

20.4.2. Use a physical barrier to prevent an unauthorized takeoff during engine runup.

20.4.3. Have a Two-Person Concept team verify the basic aircraft configuration following engine runup.

20.5. Run the engine or engines only if necessary to:

20.5.1. Check aircraft status.

20.5.2. Perform authorized maintenance.

20.5.3. Prepare for authorized flying operations.

20.5.4. Conduct practice alerts, exercises, evaluations, or inspections (except as restricted when conventional munitions are in a HAS with nuclear weapons or when a nuclear weapon-loaded WSV is not down and locked).).

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

20.6.1. An execution message from SACEUR or USCINCEUR has been received and authenticated.

20.6.2. Necessary to preserve the safety of the weapon system.

20.7. Fuel the aircraft only to maintain its mission requirements.

**21. Flying Operations Involving Carriage of Nuclear Weapons in a Nonstrike Configuration.**

21.1. Conduct only when directed by a SACEUR or USCINCEUR execution message that is received and authenticated.

21.2. Put nuclear weapons in their basic configurations (paragraph 13).

21.3. Do not make mechanical and electrical pullout connections between the weapons and the aircraft.

21.4. PA-200. Break safety wires and operate locking and release system controls using approved checklists when weapon jettison is authorized.

21.5. F-16A/B. Break safety wires on the Nuclear Consent Switch and operate locking and release system controls when weapon jettison is authorized.

21.6. Plan flight routes to avoid populated areas to the maximum extent possible.

**22. Flying Operations Involving Carriage of Nuclear Weapons in a Strike Configuration:**

22.1. Conduct only when directed by an authenticated SACEUR or USCINCEUR execution message.

22.2. Lift the Nuclear Consent switch guards and operate the using approved checklists only when:

22.2.1. Weapon jettison is authorized.

22.2.2. Prearming and release of nuclear weapons are authorized.

22.3. Plan flight routes to avoid populated areas to the maximum extent possible.

22.4. If loss of the aircraft is anticipated or weapon jettison becomes necessary, relock (Disenable) PAL if time and conditions permit.

**23. Operations Involving the Lateral Dispersal of Nuclear Weapons for Survival.** Lateral dispersal is a wartime contingency movement of nuclear weapons by US transportation from the main operating base (MOB) to a dispersed operating location (DOL) and subsequent alert operations.

23.1. Disperse nuclear weapons when directed by appropriate authority and according to MAJCOM-approved plans.

23.2. Use appropriate technical orders to prepare for subsequent alert operations when aircraft and nuclear weapons arrive at the DOL

23.3. Position nuclear weapon-loaded aircraft in a HAS or alternative shelter according to MAJCOM-approved plans.

23.4. Do not use nuclear weapons for lateral dispersal training, exercises, inspections, or evaluations.

23.5. Configure nuclear weapons for carriage on tactical fighter aircraft using the following safety priorities:

23.5.1. Nonstrike configuration.

23.5.2. Strike configuration.

**24. PAL Procedures.** Use PAL codes and PAL devices only as directed by appropriate authority.

**25. Command Disable (CD) Procedures.** Use CD codes and equipment only as directed by appropriate authority.

**Figure 1. Placement of Munitions 15 Feet from WSV.**

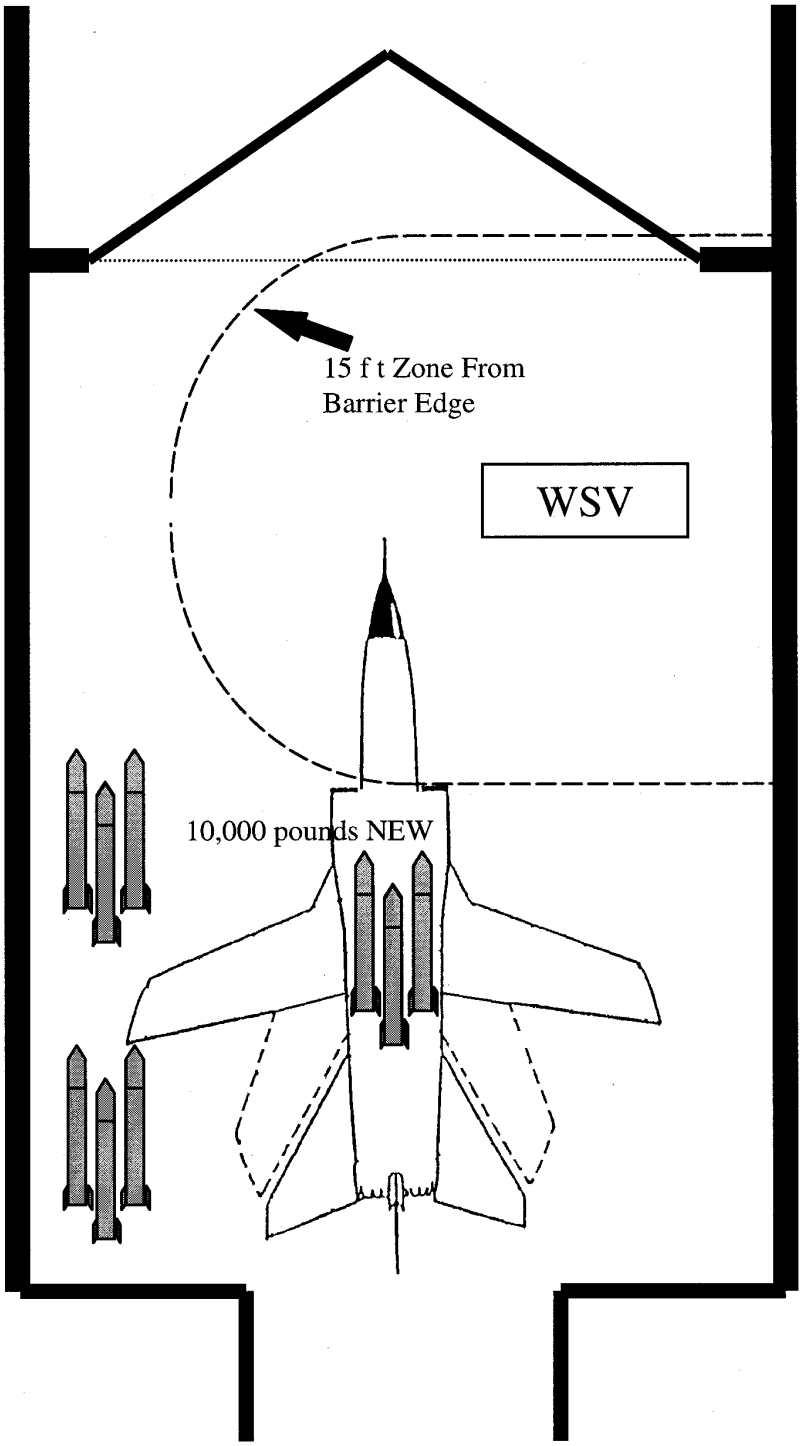
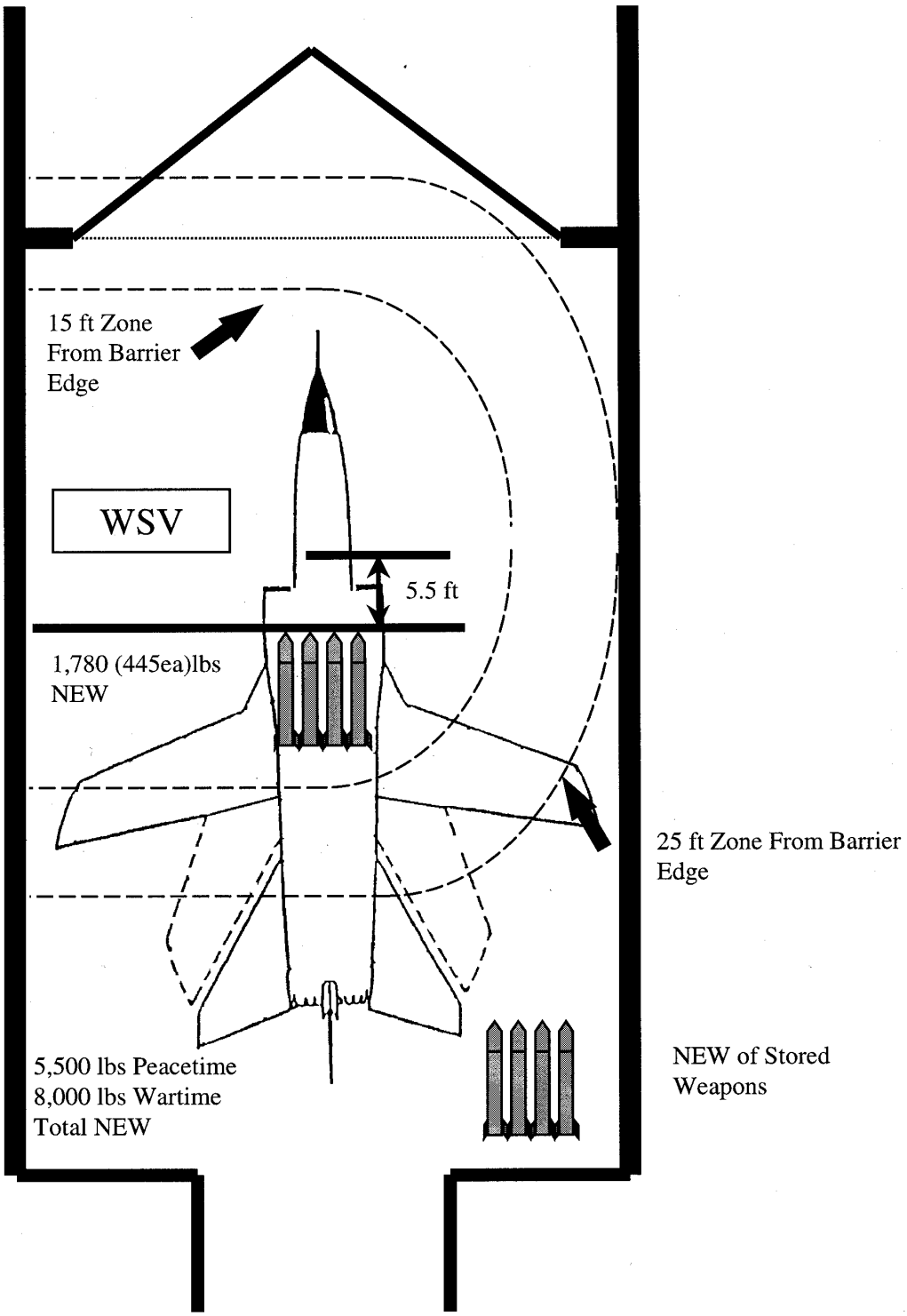


**Figure 2. Placement of Munitions When 15-Foot Restriction Cannot Be Met.**

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