Administrative Changes to USAFEI 32-1004, *Maintenance and Operational Support for Protective Aircraft Shelter (PAS) and Associated Equipment*

OPR: HQ USAFE/A7PO Operations Branch

References to USAFEI 21-101, *USAFE Aircraft and Equipment Maintenance Management,* should be changed to AFI 21-101, *Aircraft and Equipment Maintenance Management* throughout the publication.

References to HQ USAFE/CEC, Engineering Division should be changed to HQ USAFE/A7P, Engineering and Operations Division throughout the publication.

Reference to HQ USAFE/CEP, Programs Division is irrelevant, as this is encompassed in the preceding reference to HQ USAFE/A7P.

References to Directorate of Operations (HQ USAFE/DOT) should be changed to Directorate of Operations, Strategic Deterrence, and Nuclear Integration (HQ USAFE/A3/10) throughout the publication.

References to Maintenance Division (HQ USAFE/LGM) and Weapons Maintenance Division (HQ USAFE/LGW) should be changed to Aircraft Maintenance and Munitions Division (HQ USAFE/A4M) throughout the publication.

References in paragraph 3.2. to Weapons Maintenance Division (HQ USAFE/LGW) should be changed to (HQ USAFE/A4M) and (HQ USAFE/A3/10).

References to AFOSHSTD 91-46 should be changed to AFI 91-203, *Air Force Consolidated Occupational Safety Instruction*, Chapter 35, section 35.11.

References to AFOSHSTD 91-45 should be changed to AFI 91-203, *Air Force Consolidated Occupational Safety Instruction*, Chapter 21.

26 June 2013

BY ORDER OF THE COMMANDER
US AIR FORCES IN EUROPE (USAFE)

USAFE INSTRUCTION 32-1004

8 NOVEMBER 2002
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Civil Engineering

MAINTENANCE AND OPERATIONAL SUPPORT FOR PROTECTIVE AIRCRAFT SHELTER (PAS) AND ASSOCIATED EQUIPMENT

COMPLIANCE WITH THIS PUBLICATION IS MANDATORY

NOTICE: This publication is available digitally on the AFDPO WWW site at: **http://www.e-publishing.af.mil.**

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(MSgt Jeffrey A. Keeling)
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(Mr. Bassim D. Shebaro)
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This instruction implements Air Force Policy Directive (AFPD) 32-10, *Installations and Facilities.* It establishes United States Air Forces in Europe (USAFE) policy, procedures, and responsibilities for aircraft shelters and the associated equipment assignment, operation, repair, and maintenance. It applies to all shelters at main operating bases (MOB), collocated operating bases (COB), and forward operating locations (FOL) within USAFE area of responsibility (AOR). Use AF Manual (AFMAN) 91-201, *Explosives Safety Standards,* and USAFEI 21-101, *USAFE Aircraft and Equipment Maintenance Management,* as references for safety and aircraft use of protective aircraft shelters (PAS). Maintain and dispose of records created as a result of prescribed processes in accordance with AFMAN 37-139, *Records Disposition Schedule* (will become AFMAN 33-3222 Vol. 4). This instruction does not apply to US Air Force Reserve or Air National Guard.

SUMMARY OF REVISIONS

This revision changes the format to comply with most recent publications policy, and replaces all references to HQ USAFE/CEO, Operations Division to HQ USAFE/CEC, Engineering Division.

1. General. PAS are protective, dispersed facilities provided to enhance aircraft and associated equipment ground survivability. Units must maintain shelters and the associated equipment in constant readiness for assigned or augmentation aircraft.

2. Definitions:

2.1. **MOB.** A base with essential buildings and facilities provided for total organization and intermediate maintenance capability existing for assigned weapon systems. The intermediate maintenance capabilities may be expanded to support specific weapon systems deployed to the MOB.

2.2. **COB.** An allied base designated for joint or unilateral use for US wartime relocation of in-place US forces.

2.3. **FOL.** An airfield sanctioned by the host nation government and USAFE. Both the host nation and USAFE agree to the basing and support of limited USAFE aircraft.

2.4. **Operational PAS.** Shelters providing protective parking for tactical aircraft and accommodating organizational maintenance functions, with the capability of running aircraft engines and storing munitions supporting aircraft sorties.

2.5. **Maintenance PAS.** Shelters protecting aircraft and accommodating organizational or limited intermediate-level maintenance functions for both munitions and aircraft, without the capability of running aircraft engines in the shelter.

2.6. **North Atlantic Treaty Organization (NATO) PAS.** Shelters funded through NATO security investment program.

2.7. **US PAS.** Shelters exceeding NATO funding criteria, and are not eligible for NATO Security Investment Program funding. They are not included in the NATO joint final acceptance inspection.

3. Policy:

3.1. Current USAFE policy affirms sheltering 100 percent of wartime primary authorized aircraft (PAA) at MOBs and 70 percent at COBs and FOLs. PAS facility managers are assigned the same way as other real property facilities at MOBs, COBs, munitions storage site (MUNSS), and FOLs. AFI 32-9005, *Real Property Accountability and Reporting,* gives accounting instructions.

3.2. The base civil engineer (BCE) performs repairs, PAS modification maintenance in the same manner as other types of real property, real property installed equipment (RPIE), and real property similar equipment (RPSE) for all US-funded PAS. Do not accomplish permanent modifications without Civil Engineer, Engineering Division (HQ USAFE/CEC) approval. Coordinate modification requests with Programs Division (HQ USAFE/CEP), Directorate of Operations (HQ USAFE/DOT), Maintenance Division (HQ USAFE/LGM), and Mission System Division (HQ USAFE/SCN) prior to modification request approval. Temporary (not to exceed 12 months) modification request require only BCE approval with an info copy to HQ USAFE/CEC. However, coordinate any modification, temporary or permanent, to a PAS containing a Weapon Storage Security System (WS3) vault, through Weapons Maintenance Division (HQ USAFE/LGW). Ensure no work in WS3 equipped PAS involves structural contact with any part of the WS3 system. This includes drilling, wiring, or attachment of any item that is not part of the original equipment. Any work that will impact or contact the WS3 must be approved through HQ USAFE/LGW. Account, record, and report all operational PAS in the real property accountable records and inventory reports under category code 141-182. Assign maintenance TAB-V PAS 211-XXX series category code.

3.3. The only use for US-funded PAS, other than to shelter aircraft, is to temporarily accommodate peak warehousing and storage of war reserve material (WRM) or a function directly associated with assigned and augmented aircraft. Installed facility subsystems (doors, winches, exhaust ports, etc.) must remain in place and fully operational if the PAS are used for other than aircraft operations or storage. The base facilities board, appropriate major NATO command (e.g., Supreme Headquarters Allied Powers Europe (SHAPE), and the NATO International Staff must approve the use of NATO shelters for any purpose other than aircraft protection or WRM storage. Other uses must not detract from the PAS use or availability to shelter parked aircraft.

3.3.1. Close all doors and turn off lights when PAS is not in use. The PAS user may waive this requirement when necessary to meet mission operational requirements. If the mission calls for this requirement to be waived in excess of 24 hours, a written waiver from the assigned unit shall be issued and kept on file until the waiver has expired.

3.3.2. If any modification work is performed in conjunction with the temporary use, the user must provide the MOB BCE a removal plan to describe PAS restoration to ready status within 48 hours.

3.3.3. Facility subsystems will remain in serviceable condition and maintenance will be performed as if the PAS was in ready condition.

3.3.4. Protect all mechanical and electrical system components from foreign object damage (FOD).

3.3.5. When munitions are stored within the PAS, requirements for explosive siting and operations shall be in accordance with AFMAN 91-201 and AFMAN 91-201 USAFESUP 1. A license is required in the United Kingdom (UK).

3.4. **The MOB BCE:**

3.4.1. Assigns in writing, a single point of contact (POC), who maintains all US PAS and all related components.

3.4.2. Develops and ensures MOBs, COBs, and FOLs use PAS maintenance action sheets (AF Form 1841, **Maintenance Action Sheet (MAS***)*, approved for electronic form (EF) in Interim Work Information Management System (IWIMS) covering recurring maintenance actions and inspections. The MAS will include all mechanical, electrical, and structural components. Each MOB develops a MAS for the assigned PAS.

3.4.3. Gives the highest possible priority to repair and maintain work spares for RPIE and RPSE required to return a PAS from partial ready to ready.

3.4.4. Coordinates with the PAS manager before civilian contractor personnel are allowed to work in or around a PAS.

3.4.5. Ensures each winch system is inspected, tested, and maintained according to AFOSHSTD 91-46, chapters 5 and 9.

3.4.6. Performs layout, paints all striping specified in USAFEI 21-101, and maintains all striping and marking inside and outside PAS.

3.4.7. Power Production shop will provide training to PAS users according to EUCOM Directive (ED) 60-12, and AFI 32-1063.

3.5. The BCE ensures the emergency door opening kit is available to the MOB, COB, and FOL PAS user to manually open aircraft entry doors when the electrically powered door drive system is inoperable. During peacetime, keep emergency door openings to a minimum and open only in the presence of a MOB BCE representative. All emergency opening kit component parts must sustain a 6-ton pull. The BCE in conjunction with the Operations Group will determine the minimum number of kits that will be maintained.

3.5.1. The emergency door opening kit for the second- and third-generation shelters consists of the following items:

3.5.1.1. Snatch block incorporating hook with a spring loaded safety-latch and a pulley.

3.5.1.2. Minimum one-inch in diameter steel rod.

3.5.1.3. Minimum 5/8 inches in diameter by 140 feet long wire rope configured with fittings at each end (Procedures do not apply to PAS having a chain drive system.).

3.5.1.4. Open and close PAS equipped with a chain drive system using a hand or motorized crank fitted to the end of the drive motor exposed shaft.

3.5.2. Ensure each emergency door opening kit is inspected, tested, and maintained according to AFOSHSTD 91-46, Chapter 9.

3.5.3. Use the following opening and closing procedures for modified TAB-Vs and second- and third-generation PAS used to house alert aircraft emergency:

3.5.3.1. Closing.

3.5.3.1.1. Disengage the door motor brake.

3.5.3.1.2. Close aircraft entry door by pushing door with a vehicle capable of 6-ton push. After the door is closed, engage the brake.

3.5.3.1.3. Pin the exhaust doors and padlock the personnel entrance door.

3.5.3.2. Opening.

3.5.3.2.1. Disengage the door motor brake.

3.5.3.2.2. Connect the door opening kit to the door with the disengaged brake and a vehicle capable of opening the door.

3.5.3.2.3. If electrical power or portable generator is available, open the doors electronically (with the brake disengaged).

3.5.3.2.4. If the power is not available, pull the door to the full open position. When the door is open, engage the brake.

3.6. Lock the emergency generator room door at all times and develop local procedures to allow access for PAS users and maintenance personnel. Do not operate emergency generators except when:

3.6.1. In alert status.

3.6.2. There is a scheduled power outage.

3.6.3. Testing components require power or when performing generator operation.

4. Maintenance Responsibilities for All US-Funded PAS:

4.1. **The MOB BCE:**

4.1.1. Assigns a real property facility number, which must be painted on the PAS. Coordinate the MOBs local number assignment with airfield management, wing safety, medical group, force protection, communications, fire department, and the PAS management functions. Coordinate facility numbers with the host nation at COBs and FOLs.

4.1.2. Inspects and replaces lubricants for all mechanical system components except chain rollers and winch cables. Inspects gearbox and fluid coupling fluid levels. The BCE provides lubricants

with instructions and a checklist of frequency and type of lubricants required for chain rollers and winches in a PAS.

4.1.3. Adjusts first-generation entry doors to reduce drag and to remain in an intermediate position using the bogey wheel to relieve door hinge pressure, if necessary.

4.1.4. Installs RPIE, RPSE, and enhancements when requested. HQ USAFE/CEC/CEP/LGW/LGM/SCN and Directorate Operations Training Division (DOT) jointly approve the request for PAS enhancements before work commences. Provide the electrical panels, distribution breakers, and generator control panel with BCE controlled locks and keys. Weapons storage vaults and communications systems serving the ASM are not RPIE or RPSE and are not BCE maintained.

4.1.5. Provides and installs emergency exit lights, which comply with the National Fire Protection Agency (NFPA) 101 Section 5, "Marking Means of Egress," near the personnel door in PAS where not installed during original PAS construction. Do not install these lights on the PAS arch walls due to accelerations experienced during wall blast displacement.

4.1.6. Coordinates all changes affecting shelters' power and cabling with communications. Additionally, coordinates work in the immediate vicinity of ASM control boxes or other communications equipment with communications.

4.1.7. For WS3-equipped PAS, work request called in for roof leaks or flooding in which water is, or has the potential to come in contact with the WS3 system components, shall be classified as an emergency.

4.2. **The Assigned Unit:**

4.2.1. Coordinates scheduling of recurring maintenance with CE and ensures positive control of rescheduling overdue maintenance items.

4.2.2. Develops training plans and provides training to PAS managers and custodians as required on the following:

4.2.2.1. Lock-Out Tag-out procedures for required items according to AFOSH Standard 91-45.

4.2.2.2. Using electrically operated aircraft entry and manually operated exhaust doors.

4.2.2.3. Cleaning the blast plate trough on the aircraft entrance and exhaust doors.

4.2.2.4. Operating brakes and emergency opening.

4.2.2.5. Using bogey wheels and personnel entry doors in TAB-V-PAS.

4.2.2.6. Inspecting winch system cable for broken and or frayed wires.

4.2.2.7. Cable operations, unwinding techniques, and winch lubrication.

4.2.2.8. Using all controls and operation sequences.

4.2.2.9. Operating oil traps.

4.2.2.10. Inspecting and cleaning the main shelter drain.

4.2.2.11. Positioning assigned aircraft using the winch at semi-permanent chocks to set proper exhaust ventilation.

4.2.2.12. Operating and cleaning the main wheel guidance system on the modified TAB-V PAS.

4.2.2.13. For WS3-equipped PAS, instruction on circuit breakers, and switches that if tripped would interrupt power to the WS3 and prompt a security force response.

4.2.2.14. For WS3-equipped PAS, instruction on proper procedures to follow for preventing compromise of existing systems.

4.2.2.15. For WS3-equipped PAS, instruction on the basic requirements of lightning protection systems (LPS), surge protection, and static grounding.

4.2.2.16. For WS3-equipped PAS, familiarization training on WS3 equipment. Instructions apply to logistics (LG) or communications and information (SC) maintenance personnel authorized to operate and maintain any WS3 components.

4.2.2.17. For WS3-equipped PAS, familiarization with EUCOM Directive 60-12 requirements.

4.3. **The PAS Custodian:**

4.3.1. Inspects and cleans debris from aircraft entry or travel tracks, guide rollers, blast plate channels, floor drains, drive systems, and exhaust port door channels and troughs.

4.3.2. Inspects and operates winch system and lubricates winch cable as required. If the winch fails to operate properly, notify the BCE POC. Do not operate winches with “kinked” or frayed cable.

4.3.3. Inspects and provides generator maintenance monthly in accordance with BCE MAS.

4.3.4. Lubricates the chain for PAS chain rollers and chain drives as necessary to prevent chain rust and binding.

4.3.5. For WS3-equipped PAS, in the event of a roof leak or flooding that is coming in contact with, or potentially may come in contact with WS3 system components, use whatever practical means available to prevent or divert water from coming in contact. Immediately call in an emergency job order with the Civil Engineer Service Call desk.

5. PAS Enhancements:

5.1. PAS managers shall coordinate post construction enhancements with the MOB BCE to ensure future maintenance and operations can continue. The BCE must evaluate all enhancements to ensure their blast survivability prior to submitting request for approval. HQ USAFE/CEC/CEP/DOT/LGW/LGM/SCN jointly approve request for PAS enhancement before work begins.

5.2. PAS enhancements include:

5.2.1. Aircraft winches.

5.2.2. Fuel pantographs.

5.2.3. Personnel cubicles.

5.2.4. Fuel tank and missile racks.

5.2.5. Chain-drive systems for second- and third-generation PAS.

5.2.6. Security control and alarm systems.

5.2.7. Off-floor general storage.

5.2.8. System safety engineering analysis recommended improvements.

5.2.9. FOD prevention screens for ventilation ducts.

5.2.10. Anti-static or conductive floor coating

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The USAFE Civil Engineer

Attachment 1

GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION

References

AFPD 32-10, *Installations and Facilities*

AFI 32-1063, *Electric Power Systems*

AFI 32-9005, *Real Property Accountability and Reporting*

AFMAN 91-201, *Explosives Safety Standards*

AFOSHSTD 91-45, *Hazardous Energy Control and Mishap Prevention Signs and Tags*

AFOSHSTD 91-46, *Materials Handling and Storage Equipment*

ED 60-12, *Nuclear Surety Management for WS3*

NFPA 101, *Life Safety Code*

USAFEI 21-101, *USAFE Aircraft and Equipment Maintenance Management*

Abbreviations and Acronyms

ASM—air base survivability measures

BCE—base civil engineer

BISS—base installation security system

COB—collocated operating base

IWIMS—interim work information management system

EF—electronic form

FOD—foreign object damage

FOL—forward operating location

LPS—lightning protection system

MAS—maintenance action sheets

MOB—main operating base

MUNSS—munitions storage site

NATO—North Atlantic Treaty Organization

NFPA—National Fire Protection Agency

O&M—operations and maintenance

PAS—protective aircraft shelter

PAA—primary authorized aircraft

RPIE—real property installed equipment

RPSE—real property similar equipment

SAPS—sheltered aircraft protection system

SHAPE—Supreme Headquarters Allied Powers Europe

TAB-V—first generation protective aircraft shelter

UK—United Kingdom

WRM—war reserve material

WS3—weapon storage and security system

Attachment 2

EXAMPLE USAFE SHELTER TYPES

A2.1. First-Generation PAS:

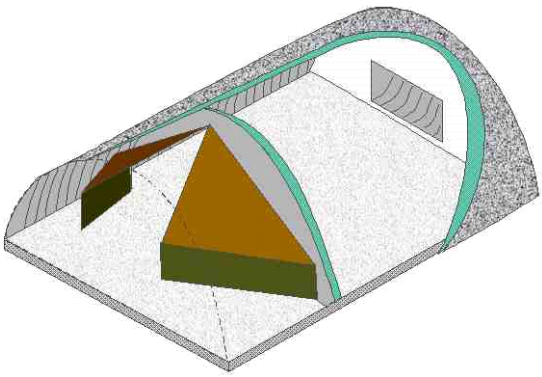
A2.1.1. Also known as TAB VEE or TAB-V

A2.1.2. Dimensions - 100 feet (33.3 meters) x 48 feet (14.54 meters)

A2.1.3. Front closure – Metal, recessed, prow-shaped, vertically-hinged, manually- operated

A2.1.4. Rear closure – Metal, externally- mounted, manually-operated

Figure A2.1. First-Generation PAS



A2.2. Modified First-Generation PAS:

A2.2.1. Also known as Modified TAB V or Modified for F-15 Aircraft

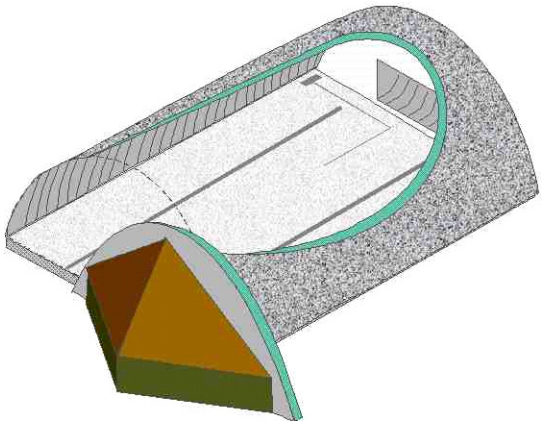
A2.2.2. Dimensions--100 feet (33.3 meters) x 48 feet (14.54 meters)

A2.2.3. Front closure--Metal, recessed, prow- shaped, vertically-hinged, manually- operated

A2.2.4. -Rear closure--Metal, externally-mounted, manually-operated

A2.2.5. Floor--main landing gear guide rails for F-15 aircraft.

Figure A2.2. Modified First-Generation PAS.



A2.3. Second-Generation PAS:

A2.3.1. Dimensions--124 feet (37.5 meters) x 82 feet (24.84 meters)

A2.3.2. Front closures--Externally-mounted, vertical - reinforced concrete panels backed with a spall plate, roller-mounted, laterally-opening, electrically-operated

A2.3.3. Electric winch for inserting aircraft

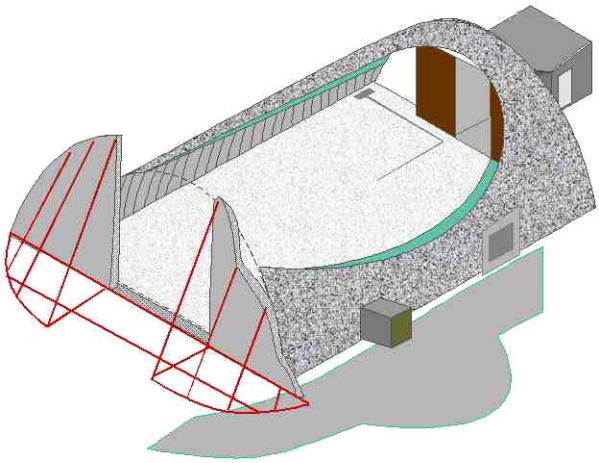
A2.3.4. Mechanical ventilation

A2.3.5. Emergency generator (semi-hardened)

A2.3.6. Personnel entry

A2.3.7. Rear exhaust port closure--same as third generation

Figure A2.3. Second-Generation PAS.



A2.4. Third-Generation PAS

A2.4.1. Dimensions--120 feet (36.36 meters) by 71 feet (21.51 meters)

A2.4.2. Front closure--externally-mounted, vertical- reinforced concrete panels backed with a spall plate, roller-mounted, laterally-opening and electrically-operated

A2.4.3. Electric winch for inserting aircraft

A2.4.4. Mechanical ventilation

A2.4.5. Emergency generator (semi-hardened)

A2.4.6. Personnel entry

A2.4.7. Rear exhaust port closure

Figure A2.4. Third-Generation PAS (visually identical to Second-Generation PAS--smaller dimensions).