

**BY ORDER OF THE COMMANDER
354TH FIGHTER WING (PACAF)**

**354TH FIGHTER WING INSTRUCTION
21-125**



12 MAY 2020

Maintenance

**HYDRAZINE (H-70)
FAMILIARIZATION TRAINING, LEAK
DETECTION, SPILLS, AND RECOVERY
OF AIRCRAFT WITH FIRED
EMERGENCY POWER UNITS (EPU)**

COMPLIANCE WITH THIS PUBLICATION IS MANDATORY

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This instruction implements Air Force Instruction (AFI) 21-101, *Aircraft and Equipment Maintenance Management*, and applies to all personnel and units assigned, attached, or tenant to the 354th Fighter Wing. This instruction establishes policy and procedures to support H-70 familiarization training, leak detection, spills, and recovery of F-16 aircraft after operation of the EPU. In situations where the Hydrazine Response Team (HRT) leader determines this instruction does not adequately cover procedures for the particular situation, authority is granted to add to or deviate from the procedures when safety of personnel or damage to equipment is involved. This publication does not apply to the Air National Guard or US Air Force Reserve. Ensure that all records created as a result of processes prescribed in this publication are maintained in accordance with (IAW) Air Force Manual (AFMAN) 33-363, *Management of Records*, and disposed of IAW Air Force Records Information Management System (AFRIMS) Records Disposition Schedule (RDS) located at <https://www.my.af.mil/gcss-af61a/afirms/afirms>. Refer recommended changes and questions regarding this publication to the office of primary responsibility (OPR) using AF Form 847, *Recommendation for Change of Publication* route AF Forms 847 through the base publications and forms manager.

SUMMARY OF CHANGES

The MOC, 354 OG Supervisor of Flying, Fire Department, MXG/CC, EOD, BE, Security Forces, Wing Safety, HRT and AMU Superintendent responsibilities were updated. This revision is a complete rewrite and supersedes all previously published revisions.

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Chapter 1

RESPONSIBILITIES

1.1. Any individual who discovers leakage of a clear liquid: Coming from the aircraft or detects the presence of an ammonia odor will immediately evacuate the area, notify Maintenance Operation Center (MOC) through the most expeditious means possible, and seek immediate medical attention. Personnel will remain a minimum of 100 ft upwind and 300 ft downwind from the suspected leak and direct response personnel upon arrival. The HRT will modify the cordon as required. If no leak is noted then the cordon will be reduced or rescinded.

1.2. The Supervisor of Flying (SOF) when notified by the Air Crew will:

1.2.1. Initiate the SOF Quick Reaction Checklist.

1.3. The 354 Fire Department will:

1.3.1. Safe the F-16 aircraft by:

1.3.1.1. Chalking the left main tire.

1.3.1.2. Pinning the main gear.

1.3.1.3. Pinning the gun.

1.3.1.4. Pinning the EPU only after the pilot has turned it off and placed all weapons switches to the off/safe/norm position.

1.3.1.5. Notify Environmental Element/Spills Manager if leak detected.

1.3.1.6. Provide a water source for personnel gross decontamination/emergency decontamination of the HRT members.

1.3.2. Maintain contact with the HRT and provide condition updates to the command post as required.

1.3.3. Maintain portable oxygen systems to egress pilot from cockpit. In the event of an EPU activation be prepared to egress the pilot using the portable oxygen unit.

1.3.4. Determine wind direction, coordinate with the HRT and 354 Security Forces (SFS) to establish position of entry control point, and will appoint an entry control point guard.

1.3.5. If the pilot is disabled in the aircraft, extract the pilot with a portable oxygen bottle and treat the incident as a H-70 leak until confirmed otherwise by the HRT.

1.4. The 354 Explosive Ordnance Disposal (EOD) will:

1.4.1. If ordnance is on board the aircraft and a leak is detected, provide a team qualified on the self-contained breathing apparatus and level A or B first responder suit to render safe any ordnance at the direction of the Fire Department.

1.5. The 354 Maintenance Squadron Commander (MXS/CC) will:

1.5.1. Ensure the HRT performs inspections and conducts containment, dilution, and neutralization actions as required in applicable directives.

1.5.2. Ensure the HRT members are provided with the proper personal protective equipment and chemicals/materials for inspection, identification, and neutralization of H- 70.

1.6. The 354 MXG/CC designated representative will:

1.6.1. Ensure local checklist for H-70 leak/spill clean-up meets TO 1F-16C-2-49GS-00-1 procedures and is developed in coordination with base Bioenvironmental Engineering (BE).

1.7. The 354 BE will:

1.7.1. Respond when notified by the HRT of an actual H-70 leak.

1.7.2. Provide technical guidance and advice to the HRT on issues related to health consequences from exposure and testing/disposal of neutralized waste.

1.7.3. Provide assistance in the selection of appropriate personal protective equipment.

1.7.4. Upon completion of containment and neutralization, test the aircraft or spill areas to detect any residual presence of H-70 vapors and liquids.

1.7.5. Provide technical assistance in the neutralization and disposal of neutralized H-70.

1.7.6. Ensure the HRT members are included in the medical surveillance program.

1.8. The 354 SFS will:

1.8.1. If first on the scene, evacuate the area to a distance of a 300-foot radius. If spills are inside a hangar, evacuate hangar and any adjoining offices.

1.8.2. Allow only those personnel into the area that are approved by the HRT.

1.8.3. As directed by the HRT, establish a cordon at least 100 feet upwind, and initially 300 feet downwind of the suspected leak/spill area.

1.9. The 354 Fighter Wing Safety (FW/SE) will:

1.9.1. Monitor operations from outside the designated perimeter until the scene is deemed safe for investigation.

1.9.2. Assist commanders in investigating and reporting all incidents or mishaps involving H-70 IAW AFI91-204.

1.10. The 354 CES/CEIE will:

1.10.1. Report H-70 spill to necessary agencies (ADEC, NRC, etc.) if leak detected.

Chapter 2

H-70 TRAINING

- 2.1. All aircraft maintenance and aircraft fuel systems personnel will:** Receive familiarization training in the hazards of H-70.
- 2.2. All unit commanders will:** Ensure that personnel with duties in the proximity of F-16 aircraft or H-70 receive proper training.
- 2.3. The 354 Maintenance Group Training (MXG/MXOT).** Will provide initial H-70 familiarization training for all personnel, including fire protection personnel.
- 2.4. The 354 Fuel Shop, 354 EOD, 354 BE, and 354 Fire Department:** Will provide in-shop specialized training as required. The 354 Fuel Shop will setup and coordinate with units for annual training.

Chapter 3

DESIGNATED AREAS

3.1. Recovering aircraft with a fired EPU: If the aircraft is landing on runway 32, it will be parked on the primary hot cargo pad, the secondary location will be the arming spot close to the runway with the aircraft pointing into the wind on taxiway Alpha. If the aircraft is landing on runway 14, it will be parked on taxiway Echo or it's alternate, the hot brake/arming area. After the HRT has positively identified that there is no evidence of H-70 leakage, the aircraft will be directed to taxi or be towed to the nearest routine EPU maintenance area.

3.2. EPU Maintenance: The F-16 H-70 maintenance areas are located on Alpha row spot 1, North Bay 7, building 1344 fuel shop, Trim pad (Fox hardstand), or Charlie row. Spot 1 will be used as de-arm and/or emergency H-70 bottle depressurization area only. The aircraft will then be towed to the primary maintenance location building 1344. In the event that 1344 is unavailable the alternates; North Bay 7, Trim pad (Fox Hardstand), or Charlie row will be utilized in that order. Aircraft must be located away from mass parking areas and aircraft loaded with live munitions. EPU maintenance will be restricted to concrete pads in alternate locations. These areas will be utilized to perform maintenance including: H-70 tank emergency depressurization and replacement, purge and coupling disconnects, and mono- propellant checks. North Bays 1 thru 12 can be utilized for EPU mono checks H-70 fuel line hook up, and nitrogen line hook up.

3.3. Authorized Storage Area: Building 1344 is the only facility on Eielson Air Force Base (AFB) authorized for the storage of H-70.

Chapter 4

INITIAL ACTIONS

4.1. Ensure aircraft has been cleared safe by the Fire Department.

4.1.1. Once cleared, the HRT enters the area and visually/mechanically checks all areas for traces of H-70 (visual, litmus paper, Draeger tester).

4.2. Fired EPU with no H-70 leak detected.

4.2.1. When notified by the HRT supervisor, the Fire Department will announce over the crash net there is no H-70 leak and terminate the ground emergency.

4.2.2. The aircraft will remain running.

4.2.3. The Aircraft Maintenance Unit (AMU) Superintendent will direct the pilot to taxi to the nearest H-70 servicing area. The Fire Department and the HRT will follow the aircraft to that location.

4.2.4. If the aircraft is unable to be taxied due to the nature of the emergency the Fire Department will instruct the pilot to shut down the aircraft and egress the pilot normally from the cockpit. Crash Recovery or qualified tow team will be required to tow the aircraft to the nearest H-70 servicing area.

4.2.5. Upon arrival, the Fire Department will:

4.2.5.1. Chalk the left main gear, the HRT will recheck the aircraft for evidence of leakage.

4.2.5.2. If no leak is detected the aircraft will be shutdown normally by the AMU. After the pilot has cleared the area, the HRT will perform the H-70 bottle depressurization.

4.2.5.3. Once the HRT declares all clear, the Fire Department can return to station.

4.3. Fired EPU with H-70 leak visually detected.

4.3.1. The pilot will shut down the engine when the Fire Department is prepared to egress the pilot using a portable oxygen bottle.

4.3.2. Egress the pilot

4.3.3. Once shutdown, the Fire Department will ensure EOD personnel safe all ordnance as required.

4.3.4. The HRT will perform emergency depressurization the H-70 tank, contain any leaks, and perform cleanup/neutralization procedures as required.

4.3.5. Once spill has been contained and neutralized, BE will test aircraft and surrounding area for residual presence of H-70 to verify neutralization has been accomplished.

Chapter 5

DEPLOYMENT REQUIREMENTS

5.1. A three-member team with an approved H-70 detection unit, spill kit and personnel protective equipment: Will accompany all F-16 deployments consisting of four or more aircraft, lasting more than a week, if the deployed location has no H-70 support capability.

5.2. Immediately upon arrival at a non-F-16 base: The senior HRT member will coordinate with the host base representative for a briefing on the dangers of H-70 and procedures for spills and leak responses.

5.3. The Fuel System Repair Section will: Develop and maintain at least one kit for H-70 leaks in coordination with base BE. The H-70 kit will be mobile and readily available for dispatch.

Chapter 6

EPU MONO TESTER MAINTENANCE

6.1. To reduce the possibility of personnel becoming exposed to H-70 vapors: The following precautions must be adhered to:

6.1.1. The EPU Mono test set must be tested for H-70 vapors after every use. If H-70 is present, the equipment must be purged by qualified 2A6X4 personnel.

6.1.2. Calibration of the EPU test set will not be accomplished until the tester has been purged by qualified personnel.

6.1.3. Purged testers will have an Air Force Technical Order (AFTO) Form 244 and 350 tag that will be annotated to reflect the date used and date purged.

Chapter 7

PERSONNEL BEING EXPOSED TO H-70

7.1. Exposed personnel will be: Isolated in an area upwind and away from the contaminated area and will undergo medical evaluation.

7.2. Personnel who are exposed to H-70 on their skin or clothing: Will proceed to the nearest source of water.

7.2.1. Clothing: Immediately remove all clothing and flush affected skin area with water for a minimum of 15 minutes. Contaminated clothing will be neutralized by the HRT team and disposal will be coordinated with BE and the Civil Engineering Environmental Flight.

7.2.2. Eyes: Immediately flush with large amounts of water for a minimum of 15 minutes and transport personnel to hospital emergency room.

7.2.3. Inhalation: Seek medical evaluation from the medical response team and transport to hospital emergency room.

7.3. The HRT will: Properly neutralize and/or dispose of all contaminated clothing and equipment.

Chapter 8

H-70 STORAGE FACILITY

8.1. Location of operation: Building 1344 (588).

8.2. Safety precautions:

8.2.1. The storage facility will be identified by the appropriate chemical agents, signs, and placards mounted to all four sides of the building and easily visible from all directions.

8.2.2. The three-person concept will be used during any H-70 handling operations.

8.2.3. Full protective clothing and respiratory protection (level A or modified level B) for each person present will be readily available any time the door is open.

8.3. Emergency procedures:

8.3.1. H-70 spill: In the event of a H-70 spill at bldg 1344, the MOC will be notified and the area evacuated to a minimum distance of 100 feet to include buildings 1340 and 1346.

8.3.2. Fire: In the event of a fire at bldg 1344, the MOC will be notified and personnel evacuated upwind. The area will be cordoned off a minimum of 500 feet.

8.4. H-70 storage limits:

8.4.1. 225 gallons.

8.4.2. Ten full H-70 tanks.

Chapter 9

TRANSPORTATION OF H-70 FUEL TANKS ON BASE

9.1. Safety procedures:

- 9.1.1. All tanks, whether empty or containing any amount of H-70, will be transported in a Department of Transportation (DOT) approved shipping container only.
- 9.1.2. The two-person concept will be used during all phases of transport.
- 9.1.3. Neutralized H-70 waste will be transported by Haz-Waste.
- 9.1.4. If H-70 waste is being transported off base an ATT must be submitted and approved by ADEC prior to transportation.

9.2. The fuel shop supervisor will: Inform the MOC prior to and upon completion of transport of H-70 tanks to and from the storage facility.

9.3. The HRT will: Ensure each transport vehicle will carry no more than three full H-70 tanks at any given time.

9.4. Emergency procedures: In the event a shipping container develops a leak in transit, the MOC will be immediately notified and personnel will evacuate to a minimum distance of 100 feet upwind and 300 feet downwind of the site.

9.5. The MOC will:

- 9.5.1. Maintain status of the transport operation, including advance knowledge of route to be used.
- 9.5.2. Initiate emergency notification procedures if a spill or leak occurs during transportation.

9.6. Personnel limits:

- 9.6.1. Maximum: One supervisor, four workers.
- 9.6.2. Minimum: One supervisor, one worker.

9.7. Equipment requirements:

- 9.7.1. Military vehicle.
- 9.7.2. Fuel tank shipping/handling/storage container (DOT approved).
- 9.7.3. Personal protective clothing (three sets):
 - 9.7.3.1. Boots.
 - 9.7.3.2. Apron and level A or modified B H-70 suit.
 - 9.7.3.3. Gloves.
 - 9.7.3.4. Face shield.
 - 9.7.3.5. Self-contained breathing apparatus.

9.7.4. Maintenance net radio.

9.7.5. DOT poison, corrosive material, and flammable liquid placards.

BENJAMIN W. BISHOP, Colonel, USAF
Commander

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

AFI 48-137, *Respiratory Protection Program*, 15 July 2014

AFMAN 48-146, *Occupational and Environmental Health Program Management*, 15 October 2018

AFMAN 91-201, *Explosive Safety Standards*, 21 March 2017

AFMAN 91-203, *Air Force Occupational Safety, Fire, and Health Standards*, 11 December 2018

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TO 00-25-172, *Ground Servicing of Aircraft and Static Grounding/Bonding*, 6 September 2019

TO 1F-16C-2-49GS-00-1, *Emergency Power System, USAF Series F-16C/D Aircraft Blocks 25, 30, and 32*, 1 February 2020

TO 1F-16C-2-49JG-00-1, *Emergency Power System USAF Series F-16C/D Aircraft Blocks 25, 30, and 32*, 1 September 2011

TO 1F-16C-2-49JG-00-2, *Emergency Power System USAF Series F-16C/D Aircraft Blocks 25, 30, and 32*, 1 September 2011

TO 1F-16C-2-49JG-00-3, *Emergency Power System USAF Series F-16C/D Aircraft Blocks 25, 30, and 32*, 1 September 2011

Adopted Forms

AF Form 847, *Recommendation for Change of Publication*

Abbreviations and Acronyms

ADEC—Alaska Department of Environmental Conservation

AFB—Air Force Base

AFI—Air Force Instruction

AFMAN—Air Force Manual

AFRIMS—Air Force Records Information Management System

AFTO—Air Force Technical Order

AMU—Aircraft Maintenance Unit

ATT—Alaska Transportation Ticket

BE—Bioenvironmental Engineering

DOT—Department of Transportation

EOD—Explosive Ordnance Disposal

EPU—Emergency Power Unit

FW/SE—Fighter Wing Safety

HRT—Hydrazine Response Team

IAW—In Accordance With

MOC—Maintenance Operation Center

MXG/CC—Maintenance Group Commander

MXG/MXOT—Maintenance Group Training

MXS/CC—Maintenance Squadron Commander

OPR—Office of Primary Responsibility

RDS—Records Disposition Schedule

SFS—Security Forces

SOF—Supervisor of Flying

Terms

Hydrazine (H-70) ---- H-70 is a clear, oily liquid having an ammonia-like odor that is corrosive, combustible and highly toxic. A major spill is considered 1 liter or more and a minor spill is considered 1 liter or less.