

**BY ORDER OF THE COMMANDER  
482D FIGHTER WING**

**482D FIGHTER WING INSTRUCTION  
21-203**



**9 FEBRUARY 2012**

**Maintenance**

**END OF RUNWAY ARMING/DE-ARMING  
PROCEDURES**

**COMPLIANCE WITH THIS PUBLICATION IS MANDATORY**

---

**ACCESSIBILITY:** Publications and Forms are available for downloading or ordering on the e-publishing website at [www.e-publishing.af.mil/](http://www.e-publishing.af.mil/).

**RELEASABILITY:** There are no releasability restrictions on this publication.

---

OPR: 482 AMXS/MXAAW

Certified by: 482 MXG/CC  
(Major Scott Briese)

Pages: 12

---

This Instruction incorporates procedures from Air Force Instruction (AFI) 21-101/Air Force Reserve Command Supplement (AFRC SUP), *Aerospace Equipment Maintenance Management*, Air Force Manual (AFMAN) 91-201 *Explosive Safety Standards*, Air Force Occupational Safety Health Standard (AFOSHSTD) 91-501 *Air Force Consolidated Occupational Safety Standard*. It assigns responsibilities, directs action for aircraft Weapons and Airplane General (APG) technicians when arming and de-arming aircraft in conjunction with launch/recovery at Homestead Air Reserve Base (HARB). These procedures are also to be used in the event of hung ordnance, jammed gun, and hot brake conditions while performing End of Runway (EOR) tasks. Commanders and supervisors are responsible for ensuring personnel comply with the provisions of this supplement. It applies to all personnel assigned to the 482d Fighter Wing (482 FW). Refer recommended changes and questions about this publication to the Office of Primary Responsibility (OPR) using Air Force (AF) Form 847 *Recommendation for Change of Publication*; route AF Form 847 from the field through the appropriate functional's chain of command. 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 in accordance with the Air Force Records Information Management System (AFRIMS) Records Disposition Schedule (RDS) located at <https://www.my.af.mil/gcss-af61a/afrims/afrims/rims.cfm>.

**1. Explosive Limits:** Munitions items physically loaded on aircraft.

**2. Personnel Limits:** Minimum of three weapons personnel, one being a 7 Level Technician, and two APG personnel, one being a 7 Level Technician, are required for aircraft

arming/launching of Air to Ground and air to air mission aircraft. A minimum of three weapons personnel is required for aircraft Air to Ground and air to air mission de-arming/recovery.

**3. Equipment Requirements:** One, one hundred fifty gallon Halon fire extinguisher, one weapons and one APG EOR Consolidated Tool Kit (CTK), two sets of aircraft chocks per EOR crew, proper technical data, one marshalling vest, one aircraft boarding ladder, dual hearing protection and for night operations; two marshalling wands, one flashlight, one lite-all, and reflector belts (worn by each member of the arm/de-arm crew).

**4. Location of Operations:** Designated arm/de-arm areas are located near the extreme ends of the taxiway A (Alpha) and taxiway E (Echo). **See attachments 2 and 3.** Taxiway A (Runway 05) will be the primary arming area with Taxiway B (Bravo) as backup, with the exception of forward firing ordnance. If taxiway E (Runway 23) becomes the active arming area; then, taxiway D will be used as the backup arming area with the exception of forward firing ordnance. Forward firing ordnance will be armed only in the primary arming areas, either taxiway A or E.

**5. Safety Requirements: Caution-Only trained personnel under the supervision of an individual who understands the hazards and risks involved in these operations are to use these procedures.**

5.1. Technician in charge of EOR will perform an emergency procedure/safety briefing and check firefighting equipment for serviceability before work is started.

5.2. Personnel will not unnecessarily stand directly in front of or behind forward-firing munitions or around the AIM-9 Infrared (IR) dome glass.

5.3. Personnel will not unnecessarily position any portion of their body under carted or munitions loaded stations and chaff/flare dispensers when inspecting and /or arming.

5.3.1. All personnel around aircraft during arming operations will use extreme care and caution.

5.4. Anytime an unsafe condition occurs, all operations will cease. The area will be evacuated until it is safe to resume operations. The EOR team chief will be responsible for notifying the 482d Maintenance Group/Operation Center (482 MXG/MOC) section.

5.5. All personnel performing End of Runway operations will take appropriate measures to ensure loose clothing or objects that could be ingested into an aircraft engine are not carried into the work area. Refer to 482 FWI 21-101, *Foreign Object Damage (FOD) and Dropped Object Program* for further guidance.

5.6. Weapons EOR crew will ensure that all personnel are kept clear of the chaff and flare canisters prior to removing the safety pin.

5.7. All personnel (except personnel performing chock removal/installation) will clear the aircraft and position themselves outboard of the wing tip launchers for the purpose of chock removal and tire rollover check.

5.8. Double hearing protection will be worn within fifty feet of an aircraft with running engines.

5.9. Reflective belts, marshalling wands, flashlights, and floodlights will be utilized during the hours of darkness.

- 5.10. Personnel will not pass under tail hook.
- 5.11. Personnel will not walk forward of wing tanks to install/remove safety pins or perform inspections while engine is running.
- 5.12. Position aircraft to present the minimum hazard to personnel and resources in the event of a mishap.
- 5.13. The team chief must remain within the pilot's sight or be connected to the aircraft communication system during arming and de-arming operations. If the team chief is required to move out of sight of the pilot, an alternate will be posted to keep in contact with the pilot in his absence.
- 5.14. Floodlight(s) will be placed to the rear of aircraft parking locations only on the grassy area across taxiway Alpha or Echo respectively. The floodlight table will be fully extended with the lights directed to cover the whole EOR ramp. Additional floodlights may be needed during heavy fog, mist or rain conditions.
- 5.15. If hung ordinance is declared, De-arm supervisor will direct "safing" of hung munitions or external stores, control access to area from unauthorized personnel, ensure that all aircraft ordnance has been properly made safe and determine the cause of fault before aircraft is towed back or returns to flight line parking areas.

## **6. Sequence of Arming Operations:**

- 6.1. The EOR team chief will brief personnel on safety/emergency procedures, check firefighting equipment for serviceability and perform a FOD walk prior to performing EOR procedures.
- 6.2. APG Team Chief will marshal aircraft into arming location, hand signal the pilot to hold the brakes and ensure hands visible and perform tire inspection/roll over check. Once APG personnel have completed their EOR inspection, the aircraft will be turned over to the weapons arming crew to perform munitions arming procedures.
- 6.3. The team chief will signal the Weapons and/or APG personnel to perform EOR inspections and arming procedures.
- 6.4. After the munitions are armed and aircraft inspected, the weapons or APG person will give the team chief a THUMB UP to signify that all munitions have been armed and EOR inspection has been accomplished.
- 6.5. After the arming/inspection procedures have been completed, the team chief will hand signal the pilot to HOLD BRAKES. All personnel except the person removing chocks will clear area around aircraft. When the pilot acknowledges brakes held, the CHOCK REMOVAL signal will be given to the APG or weapons person to remove chocks. The team chief will signal the pilot that arming and EOR inspection are complete with a THUMB UP signal and the crew will proceed to the next aircraft. All aircraft will be armed in sequential order (i.e., 1, 2, 3, and 4.)

## **7. Sequence of De-arming Operations.**

- 7.1. The EOR team chief will brief personnel on safety/emergency procedures, check firefighting equipment for serviceability and perform a FOD walk prior to performing EOR procedures.

7.2. Aircraft will be marshaled in by the team chief and directed to stop at the designated parking spot. Once the aircraft has come to a complete stop, the team chief will hand signal the pilot to hold the brakes and ensure hands visible. After the pilot has acknowledged a safe condition, the team chief will signal crew member(s) to approach aircraft and install chocks.

7.3. After chock installation, personnel will inspect aircraft for possible hot brakes, hung ordnance, and aircraft damage. If hot brakes or hung ordnance are detected, perform emergency procedures outlined in paragraph eight of this instruction.

7.4. If no unsafe condition is detected, personnel will safe unexpended munitions IAW applicable tech data as required.

7.5. After the munitions have been made safe, the weapons technician will give the aircraft team chief a THUMB UP to signify that all unexpended munitions have been made safe.

7.6. After the de-arming procedures have been completed, the team chief will hand signal the pilot to HOLD BRAKES. All personnel except the person removing chocks will clear area around aircraft. When the pilot acknowledges brakes held, the CHOCK REMOVAL signal will be given to the APG or weapons person to remove chocks. The team chief will signal the pilot that the aircraft is de-armed with a THUMB UP and the crew will proceed to the next aircraft. All aircraft will be de-armed in sequential order (i.e., 1, 2, 3, and 4).

## **8. Emergency Procedures:**

### **8.1. Hung Bombs:**

8.1.1. The Supervisor of Flying (SOF) officer will notify the MOC, Production Superintendent, weapons expediter and EOR de-arm crew with the following information:

8.1.2. Declare which end of the runway is active.

8.1.3. Identify aircraft tail number.

8.1.4. Identify the type(s) of ordnance that are hung.

8.1.5. Identify any other additional remarks given by the pilot that may be pertinent to the safety of personnel at EOR.

8.1.6. The designated EOR chief will perform the following duties:

8.1.6.1. Brief the de-arm crew on all information received from the MOC as well as any specific hazards that might be considered present. The aircraft will be directed to the hung ordnance/jammed gun area at taxiway A or E only if the EPU has not been activated (see [attachment 2](#)).

8.1.6.2. If aircraft ordnance cannot be properly made safe, all operations will cease. The EOR team chief will evacuate the area to the minimum withdrawal distance of three hundred feet and notify the MOC. The MOC will arrange for proper Explosive Ordnance Disposal (EOD) support. The EOR team chief will direct the pilot to shut down the aircraft after it has been properly chocked, landing gear, tail hook, and Emergency Power Unit (EPU) pins installed as well as all other aircraft ordnance has been made safe.

### **8.2. Jammed Gun System:**

8.2.1. When incoming aircraft are suspected of having a gun jam, the MOC will notify the Production Supervisor, the Weapons expediter, and the EOR de-arm crew with the following information:

8.2.2.1. Identify the active end of runway, aircraft tail number and any other information received from the pilot that may be pertinent to the safety of personnel performing EOR procedures.

8.2.3. The aircraft will be directed to the jammed gun area at taxiway A or E only if the Emergency Power Unit ( EPU) has NOT been activated. (**See attachments 2 and 3**).

8.2.4. The EOR team will shut down the aircraft and the senior weapons technician (must be at least a seven skill level) will perform an inspection of gun system.

8.2.5. No maintenance or aircraft towing will be performed until the senior weapons technician can properly safe the gun system by ensuring there are no 20mm rounds in the firing path, install the clearing cam sector holdback tool, install gun electrical safety pin, the rounds limiter has been set to 990/ON, and disconnect gun firing lead.

8.2.6. After gun is made safe and no rounds are in a hazardous or unknown condition, the aircraft with suspected gun jam will be parked on the 482 parking ramp, Charlie Row, Spot 1, with the aircraft turned forty five degrees to the left of the taxi line, pointing at the wooded area.

8.2.7. If rounds are detected to be in a hazardous or unknown condition, the aircraft will remain at the jammed gun area, personnel will evacuate to a minimum of three hundred feet. Only EOD and the on-scene fire chief can reduce the minimum evacuation distances.

### 8.3. Hung Rockets.

8.3.1. When incoming aircraft are suspected of having hung rockets, the MOC will notify the Production Superintendent, Weapons Expediter and the EOR de-arm team with the following information:

8.3.2. Identify the active end of runway, aircraft tail number and any other information received from the pilot that may be pertinent to the safety of personnel performing EOR procedures.

8.3.3. For an unexpended rocket with aircrew attempt (misfire condition), de-arm personnel will safe the aircraft IAW applicable technical data and visually check the rocket. If rocket is safe, recovery personnel will safe the aircraft IAW applicable technical data and direct the aircraft back to the aircraft parking spot.

8.3.4. If a Rocket is in an unsafe or unknown condition, the following procedures will apply:

8.3.4.1. The aircraft will be directed to the hung ordnance/jammed gun area at taxiway A or E only if the EPU has **not** been activated (**See attachments 2 and 3**).

8.3.4.2. All personnel will avoid standing or walking directly in front of or behind hung rockets.

8.3.4.3. The EOR team chief and/or the senior weapons technician (must be at least a 2W171) will shut down the aircraft and attempt to safe all hung rockets. If rockets cannot be made safe or are in an unknown or hazardous condition, all personnel will evacuate the area to the minimum withdrawal distance of three hundred feet and notify EOD. Only EOD personnel and the on-scene fire chief can reduce the minimum withdrawal distance.

8.3.4.4. No personnel (except weapons de-arm team) will approach the aircraft until the senior weapons technician or EOD can safe the rocket pod by ensuring the launcher shorting pin can be installed, the suspect rocket can be seated in the detent retainers, contact arms are closed and position the intervalometer to safe.

8.3.4.5. After rockets have been made safe, maintenance crews may approach the aircraft for towing procedures. Aircraft will be towed back to the Live Ordinance Loading Area (LOLA) for downloading.

**8.4. Hot brakes:** If hot brakes are detected at EOR, the EOR team chief will evacuate personnel from under the aircraft to a safe distance and signal pilot that a hot brake condition exists. Team chief will then notify the MOC with aircraft tail number and location. The MOC will notify fire department, flightline expediter and production superintendent.

8.4.1. The fire department will take over control of any aircraft considered to have hot brakes at EOR.

8.4.2. After the fire department has cleared the aircraft from hot brakes, the EOR team will make all munitions safe.

**8.5. Emergency Power Unit activation:**

8.5.1. If EPU has been activated, the EOR arm/de-arm crew will not approach the aircraft under any circumstances. The EOR team chief will withdraw personnel to a minimum distance of one hundred feet upwind and notify the MOC. The hydrazine response team will determine whether a hydrazine leak has occurred and give the EOR crew clearance to proceed with de-arm procedures.

**8.6. Hung Flare(s):**

8.6.1. If any evidence of exposed, initiated, or partially ejected flare exists, a ground emergency will be declared. The EOR crew will notify MOC of the condition, exact location, and aircraft serial number. MOC will notify EOD.

8.6.2. The Weapons EOR will proceed to perform an emergency shutdown of the aircraft and remove aircrew. No attempt will be made to safe the rest of the aircraft or install chaff and flare pin. Evacuate the area to 300 feet.

8.6.3. The incident aircraft will not be moved from its present location to reduce the possibility of jarring the flare (s) loose and inadvertent ignition.

8.6.4. All remaining aircraft will be de-armed at the backup arm/de-arm areas. Refer to section 4 of this OI for backup EOR areas.

8.6.5. If the flare(s) ignites on the ground, allow the flare to burn itself out. Do not look directly at the burning flare(s) and evacuate to 300 feet.

**9. Aircraft Shutdown:**

- 9.1. In the event an aircraft has to be shut down the following steps will be accomplished;
- 9.2. Chock aircraft and establish communication with the pilot.
- 9.3. Safe munitions as applicable and if possible.
- 9.4. Ensure the EPU pin can be installed.
- 9.5. Install the EPU safety pin.
- 9.6. Install external fuel tanks safety pins, if applicable.
- 9.7. Instruct the pilot to shut down.
- 9.8. Install the landing gear and arresting hook pins.
- 9.9. The EOR crew will notify MOC that the incident aircraft is shut down.

DONALD R. LINDBERG, Colonel, USAFR  
Commander, 482d Fighter Wing

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

482 FWI 21-101, *Foreign Object Damage (FOD) and Dropped Object Program (DOP) 12 July 2011*

AFI 21-101\_AFRC\_Sup 1, *Aerospace Equipment Maintenance Management*, 26 July 2010

AFMAN 33-363, *Management of Records*, 1 March 2008

AFMAN 91-201, *Explosive Safety Standards*, 12 January 2011

AFOSHSTD 91-501, *Air Force Consolidated Occupational Safety Standard*, 7 July 2004

<https://www.my.af.mil/gcss-af61a/afirms/afirms/rims.cfm>

***Adopted Forms***

AF Form 847, *Recommendation for Change of Publication*

***Abbreviations and Acronyms***

**AF**—Air Force

**AFI**—Air Force Instruction

**AFMAN**—Air Force Manual

**AFOSHSTD**—Air Force Occupational Safety Health Standard

**AFRC**—Air Force Reserve Command

**AFRIMS**—Air Force Records Information Management System

**APG**—Air Plane General

**CC**—Commander

**CTK**—Consolidated Tool Kit

**EOD**—Explosive Ordinance Disposal

**EOR**—End-of-Runway

**EPU**—Emergency Power Unit

**FOD**—Foreign Object Damage

**FW**—Fighter Wing

**HARB**—Homestead Air Reserve Base

**IAW**—In accordance with

**IR**—Infrared

**LOLA**—Live Ordinance Loading Area

**MOC**—Maintenance Operations Center

**MXG**—Maintenance Group

**OPR**—Office of Primary Responsibility

**RDS**—Records Disposition Schedule

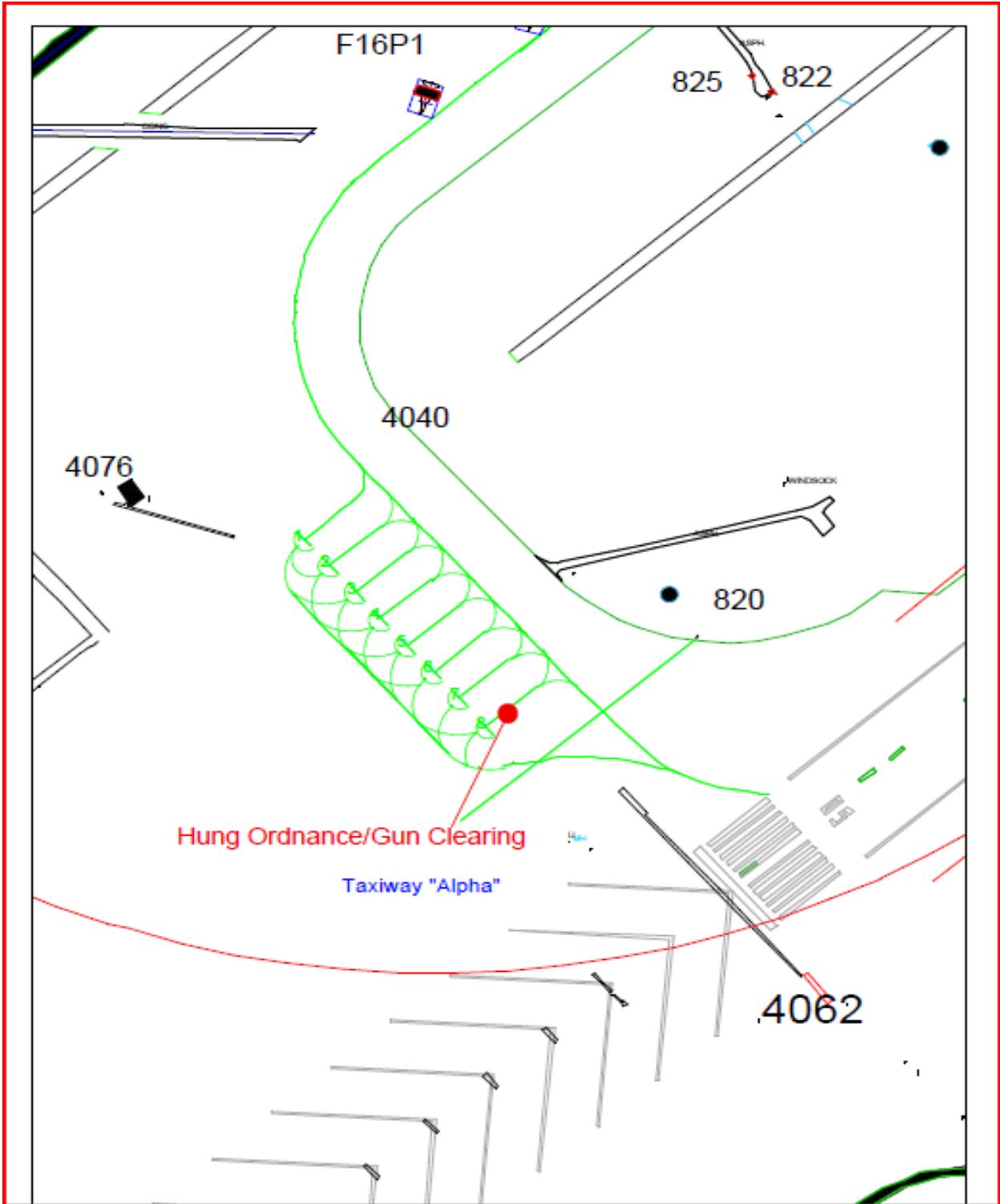
**SOF**—Supervisor of Flying

**SUP**—Supplement

Attachment 2

HUNG ORDNANCE/GUN CLEARING TAXIWAY ALPHA

Figure A2.1. Hung Ordnance/Gun Clearing Taxiway Alpha.



**Attachment 3**

**HUNG ORDNANCE/GUN CLEARING TAXIWAY ECHO**

**Figure A3.1. Hung Ordnance/Gun Clearing Taxiway Echo.**

