BY ORDER OF THE COMMANDER OF OSAN AIR BASE

OSAN AIR BASE INSTRUCTION 21-112

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Maintenance

END OF RUNWAY (EOR)/EXPLOSIVE LOADED AIRCRAFT, HUNG ORDNANCE/GUN SYSTEM MALFUNCTION PROCEDURES, AND HUNG ORDNANCE/GUN SYSTEM MALFUNCTION IMPOUNDMENT

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This instruction implements AFPD 21-1, *Maintenance of Military Material*. In accordance with (IAW) DAFI 21-101, *Aircraft and Equipment Maintenance Management*, **paragraph 2.7.13**, this instruction establishes procedures for parking/launch and recovery/End-Of-Runway (EOR) operations for explosives-loaded aircraft, hung ordnance/gun system malfunction, and hung ordnance/gun system malfunction impoundment of A-10/F-16 aircraft. It applies to all personnel assigned, attached to, or associated with the 51 FW. Ensure all records generated as a result of processes prescribed in this 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 OPR using the DAF Form 847, *Recommendation for Change of Publication*; route DAF Forms 847 from the field through the appropriate functional chain of command. The use of the name or mark of any specific manufacturer, commercial product, commodity, or service in this publication does not imply endorsement by the Air Force.

SUMMARY OF CHANGES

This document has been revised and should be completely reviewed. Changes include the implementation of the Fighter Generation Squadron (FGS), end-of-runway (EOR) super's office

symbol, and an updated airfield map. Additional changes reflect personnel requirements and task requirements.

1. EOR and Cursory Program Management: The 25th and 36th Fighter Generation Squadrons (FGS) will be responsible for launch and recovery (arming/de-arming) of A-10/F-16 aircraft. Both FGS's leadership will ensure personnel are familiar with requirements in this instruction prior to assigning them to EOR or cursory duties. Each EOR Super is responsible for maintaining their EOR facilities. The 25th FGS will assist with maintaining the runway 27 EOR facility and the 36th FGS will assist with maintaining the 09 EOR facility. Immediately-prior-to-launch (IPL) and safing EOR in chocks may be performed at aircraft parking areas following guidance in **paragraph 1.7** with approval of Wing Safety, Airfield Operations and 51 MXG/CC.

1.1. EOR Personnel Requirements. EOR personnel will be in-place no-later-than (NLT) 1 hour prior to first takeoff and land times. During this period a safety briefing and foreign object (FO) walk will be accomplished. The following personnel are required:

1.1.1. One marshal-qualified AFSC 2AXXX, 7-level NCO as EOR Supervisor. EOR Supervisors are appointed by and report to their respective FGS leadership.

1.1.2. Arming Operations (IPL):

1.1.2.1. One 2A3X3 to perform aircraft inspection (A-Man). IAW T.O. 1F-16CG-6WC-1-11, *Combined Preflight/Postflight, End-of-Runway, Thruflight, Launch and Recovery, Quick Turnaround, Basic Postflight, and Walkaround Before First Flight of Day Inspection Work cards* or T.O.1A-10C-6WC-6, *End of Runway Inspection Workcards Ser No 78-0582 and Subsequent* as applicable.

1.1.2.2. Two 2W1X1, *Aircraft Armament Systems (B-Man).*.both of which are IPL/safing qualified. One member must be checklist qualified on T.O. 1F-16C-33-1-2CL-100, *Delayed Flight or Alert, Immediately Prior to Launch and Safing,* or T.O. 1A-10C-33-1-2CL-100, *Immediately Prior to Launch and Safing* and will be responsible for all Arming, De-arming actions.

1.1.3. De-arming Operations. Each FGS will assign:

1.1.3.1. One 2AXXX, marshalling qualified member (A-Man) who is also familiar with battle damage inspections.

1.1.3.2. Two 2W1X1 (B-Man), both of which are IPL/safing qualified. One member must be checklist qualified IAW T.O. 1F-16C-33-1-2CL-100 or T.O. 1A-10C-33-1-2CL-100 and will be responsible for all EOR arm/safe actions.

1.2. Cursory Personnel Requirements. Cursory personnel will be in-place NLT 30 minutes prior to first scheduled land time. The following personnel are required to conduct cursory operations:

1.2.1. One AFSC 2A3XX (A-Man) (recommended) or marshal and task qualified individual, to perform as cursory supervisor. This person will hold aircraft, establish Comm and look for battle damage.

1.2.2. Two AFSC 2W1X1, *Aircraft Armament Systems(B-Man),* both of which are IPL/safing qualified. One member must be checklist qualified IAW T.O. IF-16C-33-1-2CL-100, or T.O.1A-10C-33-1-2CL-100. Weapons team performing safing operations will not perform A-man duties.

1.3. Personnel Training Requirements. Commanders and supervisors will ensure personnel subject to arm/de-arm/cursory operations are thoroughly knowledgeable of the inherent dangers of EOR/cursory operations and the precautions necessary for safe and efficient accomplishment.

1.3.1. FGS Leadership will ensure the following requirements are completed prior to training of personnel on EOR/cursory operations:

1.3.1.1. Familiarity with this instruction.

1.3.1.2. Specific A-10/F-16 aircraft maintenance orientation.

1.3.1.3. Specific A-10/F-16 egress familiarization.

1.3.1.4. Marshalling qualification (EOR Sup and A-Man position) (all AFSCs recommended).

1.3.1.5. Specific A-10/F-16 danger areas familiarity.

1.3.1.6. Specific A-10/F-16 EOR, IPL, Safing qualifications. 2W1's will be qualified by Weapons Standardization (WS).

1.3.2. Qualification. FGS Section Chiefs are responsible to ensure only qualified personnel are dispatched for EOR/cursory operations. Training/qualification will be documented in each individual's Total Force Training Record (TFTR) or Weapons Load Crew Management Tool, as applicable.

1.3.2.1. FGS Leadership will be provided qualification training for EOR/cursory procedures from aircraft arrival to departure. This training does not include IPL/safing specifics which are conducted by WS.

1.4. Equipment Requirements. In addition to requirements mandated in AFI 21-101, each respective FGS will ensure the following equipment is on-hand during EOR/cursory operations. NOTE: EOR Super will ensure adequate lighting must be available on the spot. Aircraft will not be armed or safed without adequate lighting. EOR Super will coordinate Aerospace Generation Equipment (i.e. light carts and heaters) in support of EOR duties no more than 3 hours prior to aircraft arrival. After use, all support equipment must be removed from aircraft parking area IAW UFC 3-260-01, *Airfield and Heliport Planning and Design* and OSANABI 13-204, *Airfield Operations and Local Flying Procedures*.

1.4.1. One 150-pound Halon 1211 fire extinguisher (per two aircraft).

1.4.2. F-16 aircraft ladder or appropriate maintenance stand (for emergency egress).

1.4.3. At least one vehicle per arm/de-arm area (for emergencies).

1.4.4. Radio with access to Maintenance Operations Center (MOC) and Air Traffic Control (ATC) tower (one per arm, de-arm end and cursory).

1.4.5. Two FL-1 light carts or equivalent (during hours of darkness).

1.5. Protective Equipment. The following protective equipment is required for aircraft having white phosphorus rockets (1.5.4. is required for BDU-33 cold spots).

1.5.1. Flame proof gloves.

1.5.2. Face shield.

1.5.3. Gauze sponges.

1.5.4. Five gallons of clean water (also required for BDU-33 cold spots).

1.6. EOR and Cursory Safety Briefing. EOR Supervisor in coordination with the respective FGS will develop a standard safety brief to be administered to personnel prior to arm/de-arm/cursory operations.

1.6.1. Safety briefing will include as a minimum:

1.6.1.1. Applicable warnings, cautions, and notes pertaining to specific process, aircraft and munitions.

1.6.1.2. Dropped object procedures.

1.6.1.3. Hot brake procedures and expectations.

1.6.1.4. Safety requirements (hearing protection, jewelry, jet blast, hydrazine).

1.6.1.5. Unique or specific aircraft orientation expectations.

1.6.1.6. Aircraft roll over and chalking expectations.

1.6.1.7. Aircraft shuts down procedures in respect to chalks and pins.

1.6.1.8. Emergency procedures (approach, munitions safing, event management, cordon).

1.6.1.9. Composite tool kit (CTK) inventory/accountability requirements.

1.6.1.10. **F-16.** Aircraft Danger Zone and approach areas.

1.6.1.11. Procedures when unsafe or unsecure stores are encountered.

1.6.1.12. **A-Man.** Requirements for aircrew hands and specific cockpit switch positioning before starting arm/dearm procedures.

1.6.1.13. Enforcement and management of Forward Firing Munitions orientation and uploaded stations.

1.6.1.14. Daily fly schedule or ATO requirements (munition types, gun status, fuzing, take off and land times).

1.7. Designated Arming/De-arming/Cursory Locations. Designated arming/de-arming locations are as follows: Primary is EOR 09/27 for daily operations. Alternates are the flow thrus. Although not recommended unless necessary due to increased risk, the Alpha/Bravo diamond protective aircraft shelters, sited hardstands, Draggin's Lair 3rd Gen shelters may be used if explosive safety requirements can be met (exception: see **paragraph 1.7.2**.). 51 MXG/CC will be advised and will approve EOR performed at areas other than the Primary and Alternate locations before it occurs. The Doorstop may be used with MXG/CC and Airfield management approval to augment primary and alternate locations if required to mitigate airfield congestion. The Hot Cargo Pad (HCP), by virtue of its use as primary forward firing munitions anomaly area can be used to arm or de-arming aircraft. The approved Cursory areas are the taxiways entering East and West ends of the flow-thrus. Cursory supervisor will chock

aircraft prior to second bend of the taxiway on the 45 pointing munitions/guns towards the barrier wall. See **attachment 2** for reference locations. **NOTE:** During arming operations, ensure missile dome covers and influence fuze/target detector covers are removed at aircraft parking locations. All remaining munitions safing pins/devices will be removed at EOR IAW 1.7.2.

1.7.1. Contingencies, alert operations, and local exercises "may" require increased risk due to changes in processes and or procedures. Procedures used to execute daily operations should mirror contingency processes to the max extent possible. Deviations to procedures performed in daily operations for contingency or exercise should be kept to a minimum and performed out of necessity not convenience. This improves process familiarity, reliability, muscle memory, habits and emergency response practice. The EOR last look process requires consistency and standardization to improve reliability and timing. Efforts should be made for contingency procedures to mirror daily flying practices to the max extent possible.

1.7.1.1. All munitions and armament system safing gear/pins/devices may be removed at designated locations specified in **paragraph 1.7**.

1.7.2. Due to inherent hazards of some forward firing munitions, aircraft with loaded guns and rockets will not enter parking areas before being safed (waiver authority will be no lower than 51 MXG/CC). During EOR if the weapons crew determines an unsafe or unsecured gun or munition the aircraft will be directed to HCP and follow procedures of **paragraph 3**.

1.7.3. During airfield construction or other unique circumstances, Airfield Management in coordination Wing Weapons Safety, 51 OG and 51 MXG/CC's may deviate from designated EOR locations.

1.8. Safing Pin/Device Storage:

1.8.1. A-10 Secure safing pins/devices inside panel W-79.

1.8.2. F-16 Secure safing pins/devices in designated bag located within the pylon station from which pins/devices were removed. Exception: Missile diaper pin, chaff/flare pin, gun electrical pin, and ALE-50 pin can be stowed in station 5 compartment, or in the pylon station of easiest convenience.

1.8.3. EOR personnel will immediately report any missing safing pin/device to their EOR supervisor who will in-turn immediately notify FGS production. Missing gear will be replaced and installed to ensure all stations and munitions are safe before aircraft can return to chocks.

1.9. EOR Arming/De-Arming Procedures. During exercises, contingencies, or alert the 2AXXX (A-Man) inspector may assume EOR Supervisor duty at discretion of their FGS.

1.9.1. 2AXXX EOR Supervisor will:

1.9.1.1. Coordinates with production for discrepancies, redballs and monitors activities to ensure safety and technical data compliance.

1.9.1.2. Ensures verbal and visual contact with pilot is maintained and pilot hands are clear throughout arming of munitions.

1.9.1.3. Ensures captive carry or training munitions are treated as live for arm, de-arm execution purposes.

1.9.1.4. Monitors Radio traffic launch and recovery and fly windows.

1.9.1.5. Monitors personnel, vehicles, or aircraft to ensure they do not unnecessarily pass in front of or behind the aircraft when forward firing ordnance is being armed/de-armed.

1.9.1.6. Responds, supervises all IFE's/EOR related ground emergencies. Coordinates aircraft de-arm and response by crash recovery.

1.9.1.7. Track arrival, arm, taxi, takeoff times as well as findings (reports to MXAQA).

1.9.1.8. Maintains ATO or fly schedule and briefs it to EOR personnel. Monitors and receives changes from production.

1.9.1.9. Ensures all required specific munitions safety gear (White Phosphorous (WP) Rocket and BDU Cold Spots) hazard equipment is available at all EOR locations for munitions identified in the fly schedule or ATO.

1.9.2. 2A3XX Aircraft Inspector (A-Man):

1.9.2.1. Wears reflective vest at all times (not required when launching from parking area).

1.9.2.2. Marshal aircraft for tire rollover and parking.

1.9.2.3. Establishes comm with aircrew and notified Weapons Team Chief when switches are off, safe, normal and hands are properly positioned.

1.9.2.4. **A-10 AGM-65 Arming.** Ensure pilot positions flap switch to UP position.

1.9.2.5. Coordinates with weapons team chief to disconnect communication after arm, de-arm procedures are completed.

1.9.2.6. Looks for signs of battle damage.

1.9.3. 2W1X1 Weapons Inspectors will:

1.9.3.1. "Visually" verifies pilot's hands are visible and required switches are off, safe, normal.

1.9.3.2. Assist with chocking aircraft.

1.9.3.3. Removes, installs, stores safety pins/devices in IAW WS TALs and **paragraph 1.8**.

1.9.3.4. Confirms with EOR super the required gun status, munition types and fuzing on ATO or fly schedule and ensures it match mission requirements.

1.9.3.5. Signals EOR supervisor when arming or de-arming procedures are complete.

1.9.3.6. Mark IPL/Safing checklist for each aircraft armed or de-armed and will validate all steps and checks are completed before moving to additional aircraft.

1.9.3.7. Verify EOR Super has safety gear unique to munitions loaded available on the spot before EOR operations begin.

1.10. Cursory procedures:

1.10.1. De-arm and Cursory may be performed simultaneously. Cursory is intended to inspect aircraft for leaks, hazards, battle damage, and munitions safety before entering Hot Pit refueling.

1.10.2. Marshall qualified Cursory Supervisor will position the aircraft, install communication, and ensure aircrew switches are off, safe and normal and aircrew hands remain visible. He will inform the weapons team chief who will at that time de-arm all munitions. After completion of de-arm, the Weapons Team Chief will notify Cursory Super who will disconnect communications and direct the aircraft to taxi.

1.10.3. Cursory supervisor will have LMR radio and fire bottle available at all times.

1.11. Transient Aircraft EOR Procedures.

1.11.1. Ensure procedures exist to notify WS to safe or arm transient aircraft. WS will be the primary agency for transient aircraft arm and de-arm. The applicable FGS may perform EOR for aircraft and munitions for which they are certified only. Transient aircraft impulse cartridge storage is the responsibility of the 25th FGS.

1.11.1.1. The 51 MXG/CC may direct the WS Loading Standardization Crew (LSC) to arm, de-arm, and unload an aircraft on which they are not certified/qualified, if appropriate technical data and support equipment is available.

1.12. Unsafe condition discovered at EOR or cursory.

1.12.1. Aircrew instructions for BDU's and training rockets may differ from live munitions.. This can drive different expectations between maintenance and ops in terms of In-Flight Emergency (IFE) procedures, squawks, landing status codes and or classifications of an incident. For BDU's and training rockets, aircrew will perform in-flight wingman check and decide whether a hung BDU or training rocket is considered "hung secured", or "hung un-secured". This will drive their squawks, landing status codes and emergency procedure notifications. Aircrew will typically not treat a BDU or training rocket as an IFE if they feel it is "secured" in most cases. It is probable for EOR crews to not be notified of a hung stores until communication is established at EOR.

1.12.2. If unsafe condition involves rockets or missile motor showing signs of burns, or evidence of partial firing, aircraft will remain at EOR location. EOR personnel will declare ground emergency and evacuate to required withdrawal distance in appropriate weapons checklist.

1.12.3. When an unknown condition or unsafe condition exist and is caught by EOR crews (not informed by aircrew) involving explosives or guns, the EOR crew will attempt to mechanically and electrically safe the station and munition after all other stations are safed. If this occurs but a hazard still exist and there is no chance of dropped object or inadvertent firing, taxi aircraft to HCP. If this occurs successfully and no hazard still exists, direct aircraft to taxi to parking spot and immediately notify pro-super over the LMR of the anomaly. If station or munition cannot be electrically and/or mechanically safed and there would be risk of dropped object or inadvertent release or firing, declare a ground

emergency through MOC, shutdown aircraft and establish a cordon. Seek subject matter expertise from WS, Armament and Ammo before attempting to resolve and unknown condition. Note: Activated fuze initiators, tail kits, and activated GBU-10/-12/-24 CCG's and GCU's do not warrant declaring a ground emergency, however, hazards such as extreme heat and force may exist. Stop operations, keep personnel away and contact expediter and Ammo Leadership for disposition.

1.12.4. When notified by aircrew of "hung secured" situation (BDU's, training rockets only), safe all other stations first before responding to the affected station. Use caution when approaching affected station as stores could release or drop unexpectedly. Do not stand under or in-front of or behind affected station. Attempt to electrically and mechanically safe affected munition and station. If this occurs, send aircraft to chalks. If this cannot occur, shut down aircraft and declare ground emergency.

1.12.5. EOR personnel will ensure aircraft do not taxi in front of aircraft having unsafe forward firing munitions.

1.12.6. Missing Flare end caps or dropped chaff does not warrant ground emergency.

2. Hung/Unsafe Ordnance Program Management. FGS Weapons Section Chiefs will ensure only highly qualified 2W171 personnel are dispatched to respond to weapons anomalies. The Weapons Crew Chief will perform on-scene supervisor responsibilities and will brief EOD and Fire Dept of the details specific to the situation. At this time, he will turn over the situation to the senior fire official who will function as the incident commander. If declared emergency involves a transient aircraft and is not of the same type/block assigned to Osan AB or with Osan's UCML munitions, WS LSC will be notified to respond.

2.1. General Hung/Unsafe Ordnance Notification**.** Upon notification of IFE/ground emergency for aircraft returning with hung or unsafe ordnance MOC will initiate emergency action checklist to notify applicable respondent agencies. Security forces (SF) will be notified of the IFE through the crash net and respond to close/block Perimeter Road 300 feet on each side of HCP gun berm until termination of emergency if aircraft are on the HCP. NOTE: Explosive ordnance disposal (EOD) personnel will remain on standby until such time weapons personnel requests EOD presence through the on-scene incident commander. MOC will ensure quantity and type of munitions that remain on-board aircraft is gathered from the SOF and report to affected agencies.

2.1.1. Hung/Unsafe "Inert" Ordnance Notification. Per AFMAN 11-2F-16V3, *F-16-Operations Procedures*/AFMAN 11-2A-10CV3, *A-10c – Operations Procedures,* a pilot who has a hung practice/inert bomb or hung training rocket does not have to declare an IFE. The pilot should squawk Code-3 which will provide heads up notification and allow proper response preparation and actions to verify safety/reliability of the munition at EOR or at the alternate safing location. Once deemed safe, the aircraft can then return to its applicable parking location.

2.1.2. FGS Personnel Requirements. When an IFE/ground emergency is declared the FGS will dispatch the following personnel as a team in an expedient manner.

2.1.2.1. One 2W1X1 7-level supervisor, IPL/safing qualified and checklist qualified.

2.1.2.2. Two 2W1X1 technicians, IPL/safing qualified.

2.1.2.3. One 2AXXX marshal and aircraft shut down qualified.

2.2. Equipment Requirements.

2.2.1. Weapons and/or hot gun CTK.

2.2.2. Aircraft ground cord.

2.2.3. Aircraft communication cord and headset.

2.2.4. A minimum of one 150-pound Halon fire extinguisher or equivalent.

2.2.5. One or more 20mm ammunition cans (as required) with ground cord.

2.2.6. Protective Equipment (specific to type of munition i.e. WP, Spotting Charge Cold Spot etc.).

2.3. Hung/Unsafe Ordnance Procedures. Cardinal Rule of Explosive Safety: Minimum personnel exposure, to minimum amount of explosives for the least amount of time will be followed. The procedures in DESR6055.09_AFMAN 91-201, *Explosives Safety Standards*, 28 May 2020, all applicable technical orders, and this instruction will be followed. Any hung live ordnance, unsafe forward firing ordnance, unsecure 2.75"rockets or missiles and illumination flares will be de-armed on the Hot Cargo Pad pointed at the gun berm. If the Hot Cargo Pad is unavailable, the secondary dearm location will be on TWY F, West of TWY A, above the trim pad, pointed West. If neither is available, the tertiary location will be Alpha EOR spot closest to the runway pointed West. Visual diagram available, see **attachment 2**. Any changes to these procedures or locations will be modified in this instruction as well as the OSS OGV In-Flight Guide.

2.3.1. Once aircraft taxis to HCP, aircraft will be chocked and checked for hot brakes prior to any other personnel entering the area. If Fire Dept is on the spot when the crew arrives, FGS personnel will get clearance from incident commander to enter area, use a headset and communication cord to establish communication with the aircrew, and begin safing all other munitions prior to taking action on hung/unsafe munition(s). If Fire Dept has not arrived, the AFSC 2W1XX 7 level will gather as much info as possible, assess the situation and make initial contact to brief the Fire Official immediately upon arrival on scene.

2.3.1.1. When released by Fire Dept to safe aircraft, the response crew will establish comm with a headset, verify switches are off, safe and normal, verify aircrew hands are in plain sight and safe non-affected stations before proceeding to affected station. When safed, the Load Team Supervisor will notify Fire Officials “aircraft safe”.

2.3.1.2. If AFSC 2W1X1’s cannot render munitions or stations safe, the aircrew will be directed to shut down engine(s) and aircrew will exit the aircraft. The on-scene incident commander will be notified to request EOD dispatch.

2.4. Specific Hung/Unsafe Ordnance Procedures.

2.4.1. A 2.75 Inch Rocket.

2.4.1.1. After installing launcher electrical safing pin, inspect rocket motors for signs of bulging, burns, soot, evidence of partial firing, and see if any rocket has moved in the LAU-131. If all remaining rockets have not moved, and it can be determined that no rocket motor(s) have fired, the aircraft may taxi to the normal parking area.

2.4.1.2. If any rocket motor(s) show signs of bulging, burns, soot, evidence of partial firing, or if rocket has moved in the LAU-131, AFSC 2W1X1 lead will notify incident commander and request dispatch of EOD.

2.4.2. General Purpose/Cluster Bomb(s).

2.4.2.1. After bomb rack mechanical and electrical safing pins are installed, inspect bomb for safe indications IAW applicable technical order. If all indications are safe, aircraft may return to normal parking area.

2.4.2.2. If bomb cannot be safed or determined safe, The AFSC 2W1X1 lead will notify on- scene commander and request dispatch of EOD.

2.4.3. AGM-65/AGM-88/AGM-158 Missile.

2.4.3.1. If the thermal battery is determined to have been fired, aircraft will remain at HCP and emergency procedures, to include wait times as prescribed in loading technical data will be followed. AFSC 2W1X1 lead will notify incident commander and request dispatch of EOD.

2.4.4. AIM-9/120 Missile.

2.4.4.1. If pilot attempted to launch missile and there is no evidence of burns, soot, or partial firing, missile will be safed and aircraft may return to normal parking area.

2.4.4.2. If pilot attempted to launch missile and there is evidence of burns, soot, or partial firing, EOD will be dispatched immediately. Aircrew will be directed to shutdown engine(s) and missile will be downloaded at HCP, as directed by EOD.

2.4.5. GBU-39

2.4.5.1. In the event of a hung store, verify all BRU-61 safety lock levers are positioned to safety lock. Once BRU-61 is safed, aircraft may return to normal parking area. Do not attempt to handle or download munition for at least three hours after attempted munition release.

3. Gun Malfunction Program Management. Commanders and supervisors will ensure all personnel subject to safing/clearing gun malfunctions are familiar with guidance within this instruction. Personnel will be kept to the minimum number necessary to complete the job safely per T.O. 1A-10C-2-94JG-6, *Job Guide – Armament 30mm Gun Sys,* or T.O. 1F-16CG-2-94JG-50-1, *M61A1 Gun System*, as applicable. The responding senior fire official will function as the incident commander.

3.1. Notification of Required Personnel. Upon immediate notification of gun malfunction, MOC will initiate applicable emergency action checklist and follow procedures in **paragraph 2.2**. FGSs will dispatch response crews with required equipment to the HCP.

3.2. Personnel requirements:

3.2.1. One AFSC 2W1X1 E-6 or higher to act as Emergency Maintenance supervisor.

3.2.2. One AFSC 2W171 with inherent knowledge of the affected system as gun stoppage supervisor. For 30mm unsafe guns, only highly qualified personnel designated by 51 MXG/CC and WWM (IMDS Course Code 005).

3.2.3. Two AFSC 2W1X1 load crew member.

3.2.4. One 2AXXX, qualified to marshal and shut down aircraft.

3.2.5. Armament Flight Personnel Requirement:

3.2.5.1. One highly qualified 7-level 2W1X1 gun technician (minimum). For 30mm unsafe guns, only highly qualified personnel designated by the 51 MXG/CC and WWM in IMDS Course Code 005 will be dispatched.

3.3. Equipment Requirements are the same as other hung store emergency response except:

3.3.1. 5ft long pry bar & foam mat to prevent bullet/ground contact, ground cord for ammo cans and will immediately dispatch an ammo trailer with empty ammunition cans.

3.4. Initial Gun Safing Procedures. The procedures in DESR6055.09_AFMAN 91-201, all applicable technical orders, and this instruction will be followed. After aircraft taxis to HCP and points at gun berm, aircraft will be chocked and checked for hot brakes by 2A3/2W1 personnel prior to any other personnel entering the area. The FGS Weapons Maintenance NCOIC will identify a gun stoppage supervisor to be responsible for monitoring and enforcing safe operations. This can be an FGS or Armament Flight member.

3.4.1. At HCP, after aircraft are chocked and checked for hot brakes, the gun stoppage supervisor will establish communications with pilot and examine the rounds counter to determine whether gun rotation occurred (F-16 only). If the gun system did not rotate and no evidence of FOD exists, the gun stoppage supervisor may perform normal EOR procedures and allow the aircraft to taxi. If the gun rotated, the aircraft will be shut down at the HCP to assess possible damage and if rounds are chambered. The gun stoppage supervisor with assistance of the Gun Maintenance Team (GMT) will attempt to clear the gun IAW T.O. F-16CG-2-94JG-50-1 chapter 1.13. or T.O.1A-10C-2-94JG-6, or T.O.1F-16CG-2-94JG-50-1. (F-16) The gun firing lead will be disconnected and the clearing sector holdback tool will be installed before making any attempt to clear or rotate the gun. GMT will determine condition of gun and make decisions throughout all maintenance actions until the gun is rendered safe. The gun stoppage supervisor will be the final authority and focal point on required procedures. If the jam causes a significant safety issue, the FGS Maintenance NCOIC will coordinate with WWM who will notify OO-ALC/WM Munitions Rapid Response Team (MRRT) at DSN 777-AMMO or 775-AMMO for assistance. PACAF/LGW will be notified at DSN 449-8588 or 448-8589 of the MRRT request.

3.5. Prior to operations to safe/clear jammed system, GMT will attempt to determine cause of malfunction. First efforts will be made to safe and clear the jammed system while in the aircraft. It may be necessary for GMT to remove rounds in the gun or system components. **NOTE:** In the event broken 20mm/30mm rounds/loose propellant is discovered, GMT will notify incident commander and request EOD. EOD will assist the GMT with course of actions. EOD will apply a non-volatile lubricating fluid to render loose propellant inert and collect as much of the propellant as possible. 51 MUNS will be responsible for storage and security of all loose 20mm/30mm rounds and or propellant.

3.5.1. If jammed/broken rounds cannot be removed from gun or system, the GMT, IAW applicable technical data may proceed to disassemble necessary gun system components in an effort to safe/clear the gun.

3.5.1.1. Only "safe" guns (mechanical, safety pins, holdback tool installed, and breech bolts in the clearing cam path) and gun system components may be transported to Armament Flight or a hardened aircraft shelters for continued attempts to remove rounds. At no time will an unsafe gun, ALA's or UAL be transported for removal of jammed rounds. In this case, the unsafe gun or ammo loader will be worked at the HCP.

3.5.1.2. If rounds are brought into Armament Flight, they will notify MOC and Ammo Control and initiate explosive operations checklist. Explosive operations procedures will be followed and will ensure caution is taken to not exceed 50 lbs of net explosive weight (NEW) for 20mm/30mm HEI rounds. Non-essential personnel will be evacuated. Max NEW is critical when bringing in a drum containing HEI.

Table 1. Net Explosive Weight Table.

One Each:	**NEW**	**Total Rounds Allowed**
20mm round (HEI)	**.**1094 ea	457
20mm round (TP)	**.**0754 ea	Unlimited (Per DESR6055.09_AFMAN 91-201
30mm round (HEI)	**.**433 ea	115
30mm round (TP)	**.**343 ea	Unlimited (Per DESR6055.09_AFMAN 91-201)

3.5.1.3. If the WWM and MRRT determines their presence is not necessary, they will be notified before destruction of gun or system components.

3.5.1.4. A-10/F-16 aircraft will remain secure at HCP (with Perimeter Road remaining closed/blocked for A-10) until MRRT responds and gun is safed/cleared. PACAF/LGW will be notified of any MRRT request.

3.5.2. Specific Unsafe Gun Procedures.

3.5.2.1. **A-10.** If mechanical gun safing pin cannot be validated as installed properly/correctly or gun is determined to be unsafe for transport. **(F-16)** Correct installation of holdback tool and proper positioning of the gun breech bolts in the clearing cam path will be validated by gun stoppage supervisor. If holdback tool cannot be validated as installed correctly or breech bolts cannot be validated as being in the clearing cam path, or gun is otherwise determined to be unsafe and will not be transported. Unsafe Guns will remain secured at HCP on a maintenance stand until safed and cleared or until arrival of MRRT. 24 hr security will be maintained. MOC will notify SFS to ensure Perimeter Road will remains closed/blocked. PACAF/A4MWS will be notified of any MRRT request.

3.5.2.2. If jammed components are in the Armament Flight and jammed rounds can't be removed, MOC will be notified to request EOD to assess the situation. If EOD is unsuccessful in assisting with rounds removal, the WWM will be notified to contact the MRRT before any components are handed off to EOD for disposal. Armament will coordinate removal of any live rounds from the building as soon as practical. Under no circumstance will Armament Flight store loose rounds in the building. Armament will salvage as many serviceable components as possible before handing components over to EOD for disposal.

3.6. Off-Station Gun Malfunction Procedures.

3.6.1. **(On-Peninsula)** If F-16 gun electrical safing pin and holdback tool or mechanical gun safing pin can be installed and live ammunition can be cleared from A-10 gun, the aircraft may be flown back to home station (with approval from 51 MXG/OG). Upon return to home station, gun will be worked by GMT and all applicable procedures of this instruction will be followed.

3.6.1.1. If F-16 gun electrical safing pin and holdback tool or A-10 mechanical gun safing pin cannot be properly installed or live ammunition cannot be cleared from A-10 gun, respective FGS and Armament Flight personnel will be sent to work gun malfunction. Specific procedures in this instruction will be followed to maximum extent possible. MOC will notify Weapons Safety and 51 FW Command Post of the incident who will in-turn notify the host nation base Safety Office.

3.6.2. **Off-Station.** If 20mm/30mm gun malfunction occurs while deployed, specific procedures in this instruction, as applicable, will be followed to the maximum extent possible. This includes request for EOD support (from nearest USAF EOD unit) and MRRT, as applicable. Host base policy should be reviewed upon arrival to look for possible conflicts in procedures. Discuss differences with the operating base WWM, WS or Weapons Safety Office. Parking locations and designated hung ordinance areas will be determined by host base policy.

4. Impoundment of Aircraft with Hung Ordnance or Gun Malfunction.

4.1. Hung Ordnance:

4.1.1. Refer to DAFI 21-101 for guidance. AME/NIE that is removed from impounded aircraft to aid in troubleshooting or investigation will be impounded. Impounded AME/Guns will be segregated from other maintenance.

4.2. Gun System Malfunction:

4.2.1. Impound aircraft when there is an un-commanded gun firing/rotation occurrence.

4.2.2. Impound aircraft when item(s) are missing from a damaged gun/gun bay and item(s) cannot be located.

4.2.2.1. Safe gun and system components will be removed, as applicable, and transported to Armament Flight maintenance bay for a thorough search of missing item(s).

4.2.2.2. Establish separate impoundment for gun system if thorough search of aircraft fails to locate missing item(s). AFTO Form 350, *Repairable Item Processing Tag,* bordered in red, will be attached to gun immediately after removal from aircraft.

4.2.2.3. Gun/system components will be disassembled in the Armament Flight maintenance bay to the point necessary to ensure a thorough search for lost item.

4.2.2.4. Gun/system components may be released from impoundment after thorough search and inspection by a 7-Level Armament Flight technician and a Quality Verification Inspection (QVI) performed by a QA inspector.

WILLIAM H. McKIBBAN, Colonel, USAF
Commander

Attachment 1

GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION

References

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AFSC 2W1X1, *Aircraft Armament Systems(B-Men)*, 1 November 2016

Adopted Forms

AF Form 797, *Job Qualification Standard Continuation/Command JQS*

AF Form 847, *Recommendation for Change of Publication*

AFTO Form 350, *Repairable Item Processing Tag*

Abbreviations and Acronyms

AFI—Air Force Instruction

AFMAN—Air Force Manual

ATC—Air Traffic Control

CTK—Composite Tool Kit

EOD—Explosive Ordnance Disposal

EOR—End-Of-Runway

FGS—Fighter Generation Squadron

FO—Foreign Object

GMT—Gun Maintenance Team

HCP—Hot Cargo Pad

IAW—in accordance with

IFE—In-Flight Emergency

IPL—Immediately Prior-to-Launch

LSC—Loading Standardization Crew

MOC—Maintenance Operations Center

MRRT—Munitions Rapid Response Team

NEW—Net Explosive Weight

NLT—No Later Than

QVI—Quality Verification Inspection

SF—Security forces

TFTR—Total Force Training Record

WP—White Phosphorous

WWM—Wing Weapons Manager

WS—Weapons Standardization

Attachment 2

PRIMARY/ALTERNATE ARMING/DEARMING/EOR/HCP LOCATION MAP

Figure A2.1. Primary/Alternate Arming/Dearming/EOR/HCP Location Map.