***BY ORDER OF THE COMMANDER***
***HOLLOMAN AIR FORCE BASE***

***HOLLOMAN AIR FORCE BASE***
***INSTRUCTION 21-370***

***12 NOVEMBER 2019***

***Maintenance***

# *FOREIGN OBJECT DEBRIS/DAMAGE PREVENTION PROGRAM*

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(Colonel Bryan T. Callahan)

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This instruction implements Air Force Policy Directive (AFPD) 21-1, *Air and Space Maintenance*, and fulfills the requirements of Air Force Instruction (AFI) 21-101, *Aircraft and Equipment Maintenance Management*, Paragraph 11.8., to develop a coordinated wing instruction to control the effects of Foreign Object Debris/Damage (FOD) and to address a clothing policy to all wing agencies dispatching to aircraft parking/runway/taxi areas or aircraft maintenance facilities prescribed by AFI 21-101. It applies to all units assigned to the 49th Wing (WG) to include tenant units. Contract maintenance organizations will follow their contract guidance when it conflicts with this publication. 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://afrims.cce.af.mil/afrims/rims.cfm** Refer recommended changes and questions to the Office of Primary Responsibility (OPR) using an Air Force (AF) Form 847, *Recommendation for Change of Publication*, to 49 Wing/Command Vice FOD (CVF), West 9th Street , Bldg. 572, Holloman Air Force Base (HAFB), New Mexico 88330-8277.

## *SUMMARY OF CHANGES*

This document is revised. The changes reflect the merging of the 49 WG and 54 Fighter Group (FG) under Air Education Training Command (AETC). Additional changes reflect the incorporation of Architecture, Engineering, Consulting, Operations, and Maintenance (AECOM)

civilian contracting to the 49 Maintenance Group (MXG) and clarification to specific wording that would contradict Civilian Contracts that were written prior to the merging of Commands.

**1. Overview.** The United States Air Force objective is to define FOD, understand its causes and effects, share successful control methods learned from other units and the aerospace industry, and eliminate potential sources of FOD. Everyone is responsible for controlling FOD at all times, from the design phase to the operational phase. FOD prevention is one of the highest priority programs within Maintenance and Flight Operations. A good FOD prevention program can improve readiness and manpower while saving valuable resources.

**2. Roles and Responsibilities.** The 49 WG FOD prevention program applies to everyone working in, on, around, or traveling through areas near aircraft, missiles, drones, space systems, support equipment, engines and related components. It is applicable to all squadrons, units, detachments, tenant units, Temporary Duty (TDY) organizations, and supporting activities that have access to flight line, maintenance, or airfield areas at Holloman Air Force Base (AFB). Aircraft Maintenance and Operations personnel bear the brunt of responsibility for this program due to the nature of their duties; however, this in no way relieves others of the responsibility for actively participating in an effective FOD prevention program. FOD prevention is everyone's responsibility.

**3. Purpose** . To provide members of the Holloman AFB community with information on how to reduce FOD to aerospace products being operated, repaired, modified, refurbished, and maintained to meet overall 49 WG program goals. Most FOD can be attributed to poor housekeeping, deterioration of facilities, and improper maintenance or operations practices. An effective FOD prevention program identifies potential problems and corrects negative factors. It also provides awareness and effective training and uses industries "lessons learned" for continued improvement. This document uses excerpts from various instructions and is intended to be used as a guide. Users should apply the contents of this document, as necessary, in conjunction with published instructions to assist in establishing a local FOD prevention program within their particular unit.

**4. Program Objectives** . The overall 49 WG objective is to eliminate potential FOD hazards. The FOD prevention program is based on training and awareness, with continuous individual and supervisory involvement. Professionalism is the key to any successful program, and through the initiative and pride exerted by Holloman AFB personnel, we strive to meet the overall program objective of zero FOD incidents.

**5. Example of Foreign Objects (FO).** FO is anything that is alien to the vehicle or assembly. Some examples are: metal shavings and chips, aircraft hardware, tools, personal items, natural items (gravel, dirt, wood), aircraft forms and manuals, birds, and ice. Foreign objects are anything on the airfield that is not where it is supposed to be.

**6. Common Causes of FOD** . There are many causes of FOD, but two major contributors are poor housekeeping and poor work habits. They include not accounting for hardware, safety wire, tools, during operations and maintenance. All loose objects, regardless of their origin, can cause catastrophic and costly damage. With this in mind, awareness and involvement are the primary means of control.

**7. Effects of FOD** . FOD is any damage attributed to a foreign object that can be expressed in physical or economic terms which may or may not degrade the product's required safety and/or

performance characteristics. Without effective control mechanisms for foreign objects, damage will happen. For years, FOD has cost American taxpayers tens of millions of dollars, money that could have been spent in other areas. If economic losses aren't enough, there is extra work that must be performed to repair aircraft or equipment.

**8. Establishing an Effective Program.** Since no customer or user wants foreign objects in their product, FOD prevention plays a vital role in all production phases, from development to operations. Establishing a FOD prevention program that includes everyone from the top down is essential. To reach FOD prevention objectives, concentrate on the basic elements of a sound FOD prevention program:

8.1. Establish clear goals.

8.2. Establish clear guidance for all personnel.

8.3. Support involvement by senior managers.

8.4. Provide FOD Awareness and Prevention Training to all personnel.

8.5. Establish a sound tool control program.

8.6. Have an active Incentive Program to recognize outstanding performers.

8.7. Establish techniques to measure data for analysis, trending and feedback.

**9. FOD Prevention Awareness/Training.** All workers must know that FOD prevention is a top priority in every job, and compliance is a must. FOD awareness can be defined as "Information relating to the dangers of FOD" such as bulletins, newsletters, posters, visibility boards, and videos. Squadrons will provide FOD awareness briefings on a monthly basis to all maintenance, operations, and base support personnel who work in, around, or drive through aircraft flight line and maintenance areas, to include hangars. Squadron safety boards will contain information on the FOD program (e.g., FOD poster with picture and phone numbers for the FOD prevention Non-Commissioned Officer (NCO), Airfield Management, and sweeper).

**10. Incentive Programs.** Publicity is a key element of an effective FOD prevention program. Competitive FOD prevention programs between squadrons, branches, sections, and shops is encouraged. Wing FOD prevention incentives and rewards will be used to promote a vigorous FOD prevention program through recognition of exceptional individual achievement as follows:

10.1. FOD Fighter Award. This award is presented once a quarter to an individual who has brought an idea that improves the FOD program or whose accomplishment has prevented a FOD incident from happening.

10.2. FOD Poster Award. This award is presented quarterly. Any hand-drawn or computer-generated poster can be submitted for this award. The poster that best educates personnel about FOD prevention will be selected.

10.3. Golden Bolt Award. This award is presented quarterly, but there is no limit to the number of opportunities to find this item. A specially marked bolt is placed in areas around or adjacent to the airfield where it can be found by personnel.

10.4. Squadrons are also encouraged to establish incentive programs that fulfill the intent of the awards program and will meet that unit's needs.

**11. Leadership Responsibilities** . Leadership and a positive attitude the keys to establishing a disciplined and consistent FOD program. Without senior leadership's full support, a FOD program cannot work effectively. Leaders must keep the FOD prevention program dynamic so workers remain focused and stimulated. Additionally, supervisors must empower workers and demand that everyone accept the challenge of FOD prevention.

11.1. All FOD incidents will be discussed at FOD prevention committee meetings to ensure information regarding FOD hazards receive base-wide dissemination along with the appropriate corrective action(s).

11.2. FOD Prevention Quarterly Briefing. The Vice Wing Commander (CV) is the briefing chairperson. The MXG/Maintenance Weapons Flight (MXW) Commander (CC) will chair the meeting in the absence of the WG/CV. Minimum attendee representation are all group commanders, squadron commanders, director(s), and commanders of units with maintenance personnel, Safety (Center and Base), Base Civil Engineer (BCE), Airfield Manager, and Security Forces. The meeting should also be used to recognize personnel making significant contributions to FOD prevention (e.g., Golden Bolt Program, FOD poster contests, or other FOD recognition programs locally developed at each unit).

11.3. Each Squadron Commander is responsible for ensuring an effective FOD prevention program is established in his/her squadron. The commander is responsible for assigning a representative as a point of contact who is responsible for FOD issues within the unit.

11.4. Each Aircraft Maintenance Squadron will appoint a primary and an alternate FOD representative. Contractors will follow the procedures for FOD per established contract.

11.5. The unit Officer-in-Charge (OIC) or Non-commissioned Officer-in-Charge (NCOIC) or shift supervisor will be responsible for the overall organization and supervision of FOD walks within work centers' area of responsibility.

11.6. The Airfield Manager is responsible for daily inspection of aircraft movement areas, runway and taxiway sweeper schedules, and ensures special requests for sweeper operations are met promptly during operating hours. Airfield Management will coordinate with 49 Civil Engineer Squadron (CES) Contract Management to ensure continual inspection of areas where construction is in progress. During inclement weather conditions (e.g., periods of strong winds, rain, or snow), Airfield Management and the Wing FOD Monitor will increase surveillance of aircraft movement areas.

**12. General FOD prevention practices** . Personnel will be constantly alert for any form of FO. Special attention must be given to small items of debris (e.g., safety wire, bolts, nuts, screws). Loose material of this kind will be placed in FO bags or containers during maintenance. After job completion, a final FO and tool accountability check of the entire work area is required.

12.1. While maintenance is being performed on aircraft, uninstalled engines, and Aerospace Ground Equipment (AGE), openings, ports, lines, hoses, electrical connections, and ducts will be properly plugged or capped to prevent FO from entering the systems. At no time will items, (e.g., aircraft forms binders, Digital Video Recording (DVR) tapes, checklists, tools, and cell phones), be placed in or on engine intakes. Exception: Does not apply to technicians performing maintenance, inlet inspections and blade blending requiring lights, files, or other tools inside aircraft inlets. Inventory all items prior to entering the inlet and immediately upon exiting the inlet.

12.2. Items such as wigs, metal hair fasteners and earrings will not be worn by any personnel involved in aircraft, component or alternate mission equipment maintenance.

12.3. Wear of the stocking cap (solid black, dark blue, and sage green) is authorized and will comply with AFI 36-2903, Dress and Personal Appearance of Air Force Personnel.

12.4. T-38 contractor maintenance personnel may wear headgear approved by the contract program manager while performing official duties on the flight line.

12.5. QF-16 & 8th & Aircraft Maintenance Unit (AMU) contractor maintenance personnel may wear headgear approved by the sight manager while performing official duties on the flight line.

12.6. Personnel will account for all items in their possession when entering a work area and before exiting. The job site and equipment will be free of FOD prior to departing the area.

12.7. Aircraft forms are a FOD hazard and must be kept secure from sudden winds or jet blasts at all times.

12.7.1. **(F-16)** The aircraft forms binder should be stored in the forms pouch sewn into the aircraft intake plug or cover, flight line storage bins, Consolidated Tool Kits (CTKs), or the work bench in the hangars when not in use on the flight line. No other items are authorized in the forms pouch at any time.

12.7.2. **(F-16)** Other than the intake pouch, forms are not authorized to be stored on any other part of the aircraft for any reason, on or off the flight line. Exception: TDY aircraft may keep forms in cockpit.

12.7.3. All personnel prior to cockpit entry will ensure all pockets have been emptied and all loose articles have been removed, including jewelry. Personal articles may be stored in FO bag for this purpose (see paragraph 5). Writing instruments are authorized for operations or maintenance use in the cockpit.

12.8. Ensure aircraft cockpits (when canopies are not installed), aircraft components, equipment openings, ports, lines, hoses, ducts, and electrical connectors are covered to prevent FO from entering systems and/or components.

12.9. Pilots and aircrew members must account for all equipment and personal items after each flight and ensure any items that become lost during flight are documented in the aircraft Air Force Technical Order (AFTO) Form 781A, *Maintenance Discrepancy and Work Document*. When an item is lost on or in the vicinity of aircraft or equipment, lost item/tool procedures in IAW AFI 21-101 Holloman Air Force Base Supplement (HOLLOMANAFBSUP), and AFI 21-101 Air Education and Training Command Supplement (AETCSUP), *Aircraft and Equipment Maintenance Management*, will be followed. Contractors will follow the supplements of the Command to which they are assigned.

12.10. The AF Form 1199, *Air Force Entry Control Card*, and other badges may have metal clips installed. If a clip is used a nylon string must be installed through the hole and may be worn around the neck. Badges will be stowed anytime personnel are working around aircraft with the engine operating, e.g., intake danger zone, or within the limits of the wing tips and exhaust areas (armbands may remain on arm).

12.11. **(F-16)** All F-16 ground safety pins (including suspension utility unit, triple ejector rack, and pin stowage bags) will be attached to a streamer by a brazed retaining ring. Exception: If Part Number (PN) 19-100C (National Stock Number (NSN) 5325-01-306-4235) ring is used, brazing requirement is optional. See applicable aircraft general vehicle manual (00(GV)-00-1) for further requirements. If ring PN 19-100C is not brazed and discovered worn or disfigured, it must be replaced.

12.12. All aircraft safety pins and applicable Dash 21 equipment will have a "Remove before Flight" streamer (minimum of four inches) attached directly to the head assembly to ensure no chances of a FOD incident.

12.12.1. **(F-16)** Streamers attached to landing gear, emergency power unit, external fuel tanks, chaff and flare, gun, Munitions Adapter Unit (MAU)-12, and tail hook pins will have a minimum length of eight inches and a maximum length of 12 inches IAW 00GV-00-1.

12.13. With the exception of M1 Support Services (M1SS) T-38, aircraft covers will be installed within 45 minutes after engine shutdown. Intake covers or plugs will be installed at all times (except for engine operation or intake and exhaust inspection, or maintenance).

12.13.1. **(F-16)** Intake plugs will not be installed behind heater strut.

12.14. Prime aircraft and spare aircraft inlet covers/plugs can be removed 1 hour prior to scheduled aircrew arrival. Spare/Aborted aircraft will have the inlet covers/plugs and Pitot tube covers reinstalled after the scheduled aircraft are airborne. At the end of the flying day, all the remaining Dash 21 equipment will be installed. Inlet covers/plugs will be installed during non-emergency towing operations.

12.15. With the exception of M1SS T-38 aircraft, Aircraft Maintenance Squadrons (AMXS) are responsible for ensuring that all Dash 21 equipment is identified to the assigned aircraft.

12.16. Uninstalled aircraft engines will have proper intake and exhaust covers installed at all times except to facilitate maintenance and inspection.

12.17. Air Force issued "Camelbaks ™" (personal hydration packs) are authorized for use on the flight line, but are not authorized inside aircraft intake or exhaust. Camelbaks™" are authorized during launch and recovery if serviceable and worn properly.

12.18. Mission Ready Airman (MRA) Instructors are authorized to carry issued helmet bags. Items in the bag may include lesson plan, headsets/earplugs, personal items (e.g., hat, keys, wallet, and sunglasses), protective gear (e.g., sun block, gloves), and hydration system (Camelbak™), screw bags, panels and latches:

12.18.1. Screw bags will be utilized when removing any screws, fasteners, or rivets, and will be identified with the aircraft tail number, panel/panel number, and contents of the bag, (e.g., 4 bolts, 4 nuts, 4 washers, and aircraft or equipment to which it belongs).

12.18.2. If a panel is tacked in place, document the AFTO Form 781A, *Maintenance Discrepancy and Work Document,* and attach hardware by screw bag to outside of panel or turn into Facilitate Other Maintenance (FOM) location.

12.18.3. **(F-16)** Aircraft panels 4305 (Bathtub) and 4409 (Donut) will be properly stowed on panel racks or turned in to FOM to prevent damage to panels.

12.18.4. **(F-16)** Replace the swivel pad stud on all aircraft door latches with a solid machine bolt MS70433-11 and safety wire jam nut.

12.19. Do not hang, tie or Velcro™ items to aircraft boarding ladders. Exception: Pouch containing AFTO Form 244, Industrial/Support Equipment System Record, may be attached in such a way as not to pose a FOD hazard.

12.20. Eye and sunglass restraining straps are authorized for use on the flight line (black or brown colored only), as long as they do not have any metallic pieces or parts. Contractors are authorized to wear any color restraining straps.

12.21. Privately Owned Vehicle (POV), Government Owned Vehicle (GOV), and Contractor Owned Vehicle (COV) operators will ensure any potential FOD which could come off or out of the vehicle is secured prior to crossing Taxiways Hotel or Lima. These are high traffic areas, and items have been found at these locations that were traced back to POV(s) and GOV(s). If at any time, the control tower illuminates the red flashing lights at the Bong Street/ Taxiway Hotel and Kelly Road/Taxiway Lima crossing, all POV/GOV operators will perform a vehicle FO and tire rollover inspection on the vehicle and on anything being towed by the vehicle.

12.22. All vehicle key chain contents( e.g., gas key, identification tag or any additional items attached) will be marked with the vehicle registration number (if possible) and total number of keys will be annotated in Tool Control max (TCMax™) and AF Form 1800, *Operator's Inspection Guide and Trouble Report*, blocks 13-19. If any of these items are ever noted missing, it will be treated as a lost tool/object.

12.23. Glass containers, other than those in sample kits, and aluminum cans are prohibited on the airfield in FOD critical areas. Exception: Glass and aluminum cans are allowed in flight line vehicles if stored in a factory installed cup holder.

**13. Procedures for FOD walks and Areas of Responsibility** . FOD walks for aircraft parking areas on Holloman AFB will be conducted prior to the first aircraft taxi, and as needed during the day. AMU(s) will coordinate FOD walks prior to first aircraft taxi and as needed during the day (e.g., day and night flying). Special attention will be given to cleaning of cracks and expansion seams in hard surfaced areas where engines will be operated. All grounding points will be kept clean of debris at all times and should be a high interest item for FOD walks. Units will vacuum and/or clean out the grounding points on the parking ramp once every month or sooner if needed. This will not be applicable to grounding points that have been filled in.

13.1. Each AMU is responsible for their aircraft parking areas, the adjacent portions of the taxiways, access roads, as well as their assigned hangar space. All AGE and/or support equipment will be inspected during daily FOD walks, ensuring all debris is removed. If cracks are found in the concrete, report area to Airfield Management.

13.2. **The East Ramp areas of responsibility are as follows (see Attachment 4):**

13.2.1. The 49 Maintenance Operations Flight (MOF) Weapons Load Training (WLT) is responsible for the south flight line side of Bldg. 564 and their respective loading pad.

13.2.2. The 49 AMXS, 9 AMU, 29 AMU will be responsible for the north side of Hangar 564 and 301, alpha 1 through 5, extending towards the 8 AMU ramp red

restricted area line, and adjacent portions of the taxiways, also, Hangar 565 extending north and south, and the adjacent portions of the taxiways.

13.2.3. 49 Equipment Maintenance Squadron (EMS) EAST Ramp AGE is responsible for the AGE ready line, the area between Bldg. 304 & Large Area Maintenance Shelter (LAMS ) Alpha, and the FOD check point at the end of 5th Street.

13.3. **The ARMY AIR area of responsibility are as follows (see Attachment 5):**

13.3.1. The ARMY AIR FOD walks will be conducted prior to the arrival and departure of aircraft, but will, in any case, be at the discretion of the AMU Production Superintendent.

13.3.2. ARMY AIR is responsible for the parking apron directly behind Bldg. 1079, west side portion of the North Ramp extending towards the far west edge of the parking area, and the taxiways between this parking area.

13.4. **The 82 Aerial Targeting Squadron (ATRS) /QF-16 areas of responsibility are as follows (see Attachment 5):**

13.4.1. The 82 ATRS/QF-16 FOD walks will be conducted at the beginning of each shift. Morning FOD walk will begin prior to first aircraft taxi of the day. Second FOD walk will normally be at the next shift change, but will in any case be at the discretion of the Site Manager.

13.4.2. The 82 ATRS/QF-16 section is responsible for the parking apron directly behind Bldg. 1080, east side of north ramp, and the taxiways between this parking area.

13.5. **The West Ramp areas of responsibility are as follows (see Attachment 3)** :

13.5.1. 849 AMXS and 311 AMU will FOD walk from the flight line side of Bldg. 894 from FOD check point to the Entry Control Point (ECP), inside the red restricted area line, and the south end of the West Ramp aircraft parking/shelter area (Hangars 13-24 and 37-44). The F-16 trim pads will be FOD walked prior to engine start to ensure no possible FOD exists during the engine run.

13.5.2. 849 AMXS and 314 AMU will FOD walk from the flight line side of Bldg. 868 from FOD check point to the ECP, inside the red restricted area line, and the north end of the West Ramp aircraft parking/shelter area (Hangars 1-12 and 25-36). The F-16 trim pads will be FOD walked prior to engine start. The 49 Component Maintenance Squadron (CMS) Egress Shop is responsible for flight line side of Bldg. 866 out to the red restricted area line.

13.5.3. The 49 CMS Fuel Shop/49 WLT is responsible for Bldg. 564 extending to Alpha Taxiway and the ramp extending to Bldg. 84564.

13.5.4. The 49 EMS Phase/Armament Flight is responsible for the flight line side of Bldg. 877 out to the red restricted area line.

13.5.5. The 49 EMS Non Destructive Inspection (NDI)/ Corrosion Flight is responsible for flight line side of Bldg. 898 out to the red restricted area line.

13.5.6. The 49 CMS Avionics Section is responsible for the flight line side of Bldg. 824 out to the red restricted area line.

13.5.7. The 49 EMS aircraft structural maintenance section is responsible for Bldg. 830 out to the restricted area line.

13.5.8. The 49 EMS F-16 AGE Flight is responsible for theflight line side of Bldg. 818, the AGE ready line, and the area out to the red restricted area line.

13.5.9. Metals Technology is responsible for Bldg. 820 out to the F-16 AGE ready line, the AGE ready line will be accomplished by the F-16 AGE Flight.

13.5.10. The 49 EMS Propulsion Flight is responsible for the flight line side of Bldg. 800 out to the red restricted area line and in front of the Hush House 11648 to Hotel Taxiway.

13.5.11. The 849 Aircraft Maintenance Squadron End of Runway (EOR) personnel will perform FOD walks every workday prior to the arrival of the first aircraft at EOR. Area of inspection is the parking pad, 25 feet of taxiway in both directions of parking pad, and road from FOD sign to the parking pad.

13.6. **The Field Training Detachment (FTD) 10 areas of responsibility are as follows (see Attachment 3):**

13.6.1. FTD 10 is responsible for Bldg. 823 out to the restricted area line.

13.7. The M1 T-38/Distinguished Visitor (DV) flight line FOD walks will be conducted at the beginning of each shift. Morning FOD walk will begin prior to first aircraft taxi of the day. Second FOD walk will normally be at the next shift change, but will be at the discretion of the unit Maintenance Supervisor.

13.7.1. The M1/T-38 section is responsible for the parking apron directly behind Bldgs. 577 and 578, and the taxiway between this parking area and Alpha Taxiway.

13.8. All aircraft hangars will be inspected for FOD (paying special attention to door tracks) at the beginning of each shift.

13.9. In addition to FOD walks, a towable sweeper or FOD Boss™ will be assigned to each unit having aircraft assigned. The FOD Boss™ will be operated prior to the first flight of each duty day and as needed throughout the flying window (dependent on weather, e.g., rain, snow and/ or ice). Each unit will sweep their assigned aircraft parking rows and the adjacent portions of the taxiways and access roads.

**14. FOD Inspection and Reporting Procedures** . Aircraft/Engine FOD: The Wing FOD monitor will perform FOD inspections IAW current directives. All FOD incidents will be discussed at FOD prevention quarterly briefings to ensure dissemination of information regarding FOD hazards.

14.1. All aircraft maintenance actions cease upon discovery of any aircraft or engine damage; report all findings immediately to the maintenance officer/supervisor.

14.2. A “Red X” will be entered into the aircraft forms stating there is damage to the engine caused by a foreign object.

14.3. The Maintenance Operations Control (MOC) must be notified and will run the appropriate Quick Reaction Checklist (QRC) as required. Airframe specific Quality Assurance (QA) /Quality Control (QC) will act as Wing FOD Monitor if he or she is unavailable.

14.4. Engine blade damage, other than minor sand nicks, require QA/QC or the Wing FOD monitor to inspect the damaged engine components, the surrounding area and applicable Dash 21 equipment for any evidence of what may have led to the FOD. This excludes M1SS, J-85 engines shipped to Holloman AFB for maintenance.

14.5. If damage to an engine is found internally, conduct investigation to determine if aircraft impoundment is warranted. Once a damaged engine is removed, it will be impounded.

14.6. Any repairs made to the first stage fan will be blue dyed and annotated on the Fan Module Blending Record (Pin Wheel). Blades that are damaged but within limits will be blue dyed and annotated on the pin wheel. This excludes M1SS J-85 engines, they will operate per specific Technical Order (TO).

**15. Bird Strike and Engine Procedures.** Bird strike damage to engines is not chargeable as FOD, but must be investigated to preclude the 49 WG from being charged with a FOD incident. The following procedures will be followed:

15.1. Upon discovery of a bird strike to the intake area, a "Red X" entry will be placed in the aircraft forms requiring an inlet inspection by a qualified technician. The MOC, Flight Safety office, 49 MXG QA, Contractor specific QC and the Wing FOD monitor must be notified.

15.2. **(F-16)** Perform thorough visual inspection of leading edges of first and second stage fan blades, borescope Fan Module, and Core Module.

15.3. **(F-16)** Fan Module and Core Module will use a borescope through ports AP1, AP2, AP3, and AP7, IAW applicable T.O. (s).

15.4. If at any time during inspection, damage is found and requires engine removal for in shop repair due to FOD, cease inspection and notify AMU Production Superintendent. To ensure timely reporting and assessment when the engine is removed for FO damage, the AMU(s) will complete an engine borescope with sheet and route to Engine Management prior to delivery of engine.

15.5. **(F-16)** Inspect engine air/oil coolers, augmenter duct, and environmental control system ram air intakes for bird remains.

15.6. Any damage noted will be documented in the engine records, aircraft forms, and reported to the Wing FOD Monitor.

15.7. Bird remains will be collected for type matching. Contact Flight Safety at Defense Switched Network (DSN) 572- 3793 for disposition of collected remains. Consult T.O. 1-1-691, Cleaning and Corrosion Prevention and Control, Aerospace and Non-Aerospace Equipment for bird strike clean up procedures and AFMAN 91-223, Aviation Safety Investigations and Reports, for bird strike reporting procedures.

**16. Intake and Exhaust FOD Inspections.** If the aircraft engine is operated and the aircraft is shutdown as part of a maintenance procedure such as a "Red Ball", an intake FOD inspection is not required if the pilot or operator remains at the aircraft.

16.1. Aircraft intake suits will not have rips or tears. Suits will fit individuals in a manner that will allow legs and entry openings to be secured. Suits will be completely donned and

openings secured when an intake is entered. Intake suits are for intake inspections and intake maintenance only. Intake suit serviceability will be maintained by the owning organization.

16.1.1. Prior to donning an intake suit, all items will be removed from pockets. All buttons on clothing will be accounted for prior to entering and after exiting any intake or exhaust.

16.1.2. Prior to entering intake or exhaust, shoes will be inspected for FO. Over-boot protective covers will be free of FO and will be used on aircraft for intake inspections.

16.1.3. Wear of the half bunny suit is authorized for intake inspections from 1 May to 31 Oct. When a half bunny suit is worn a pocket-less T-shirt is the only authorized outer garment for wear on the upper body.

16.2. All jewelry (i.e., watches, rings, and necklaces) will be removed prior to entry into aircraft intakes and exhaust, line badges and FO bag will be removed and all pockets will be emptied prior to entry. Do not slide any item (flashlight, mirror, etc.) inside an intake. Exception: Does not apply to technicians performing maintenance, inlet inspections, and blade blending requiring lights, files, or other tools inside aircraft inlets. Inventory all items prior to entering the inlet and immediately upon exiting the inlet.

**17. F-16 Engine Anti-Personnel Guards and Bellmouth Screens** (see **Attachment 2**). Anti-personnel guards and bell mouth screens will be used IAW the applicable technical data, any time the engine is run for ground maintenance and operational checks by maintenance personnel.

17.1. Anti-personnel guards and bell mouth screens will be inspected for FO and serviceability prior to and after engine run. These inspections will be documented on the AFTO Form 781A as a “Red -”. For installed engine runs, the guard number will be entered in the "CORRECTIVE ACTION” block.

**18. Tool and Equipment Control.** Personally owned tools and equipment, not controlled through CTK procedures in AFI 21-101 or Holloman Air Force Base Instruction (HAFBI) 21-380, Tool/Equipment Control and Accountability Program, are not authorized on the airfield. Some examples include multi-tools, mini-mag flashlights, and pocket knives.

18.1. Personnel not assigned to aircraft maintenance units will ensure an inventory of tools is on hand when working on the airfield, IAW HAFBI 21-380.

18.2. All tools, equipment, and personal items must be accounted for after each task and before moving to the next job or area.

18.3. Report all lost items. Complete AETC Form 138, Lost Tool or Item Investigation Record, for each lost item, and turn completed form in to CTK monitor and QA. For non-aircraft maintenance units, follow guidelines outlined in HAFBI 21-380. M1SS will follow forms outlined in their specific contract.

**19. Flight line/Airfield Vehicle Operations.** Vehicle FOD checks will be conducted prior to entering the airfield at all designated entry control points (ECPs). Additionally, FOD checks will be conducted anytime entering a taxiway/ramp from the shoulder. Exception: No FOD check is currently required when crossing Taxiway Hotel at Bong Street, or Taxiway Lima on Kelly Road unless the warning lights are flashing. Other measures are in place to ensure the area is FOD free prior to aircraft taxi.

19.1. If the vehicle leaves the hard surface, the operator will stop and conduct a tire check and rollover inspection before proceeding onto the flight line or taxiways.

19.2. Unit Vehicle Control Officer/Vehicle Control Non-commissioned Officer (VCO/VCNCO) will brief supervisors and vehicle operators on FOD prevention and control. The VCO/VCNCO will accomplish monthly spot check inspections of assigned vehicles to ensure operators are complying with the FOD prevention program. It is the responsibility of the vehicle operator to ensure vehicle is free of debris and cleanliness is maintained. Contractors will follow the guidance in their contract.

19.3. **FOD checks include** :

19.3.1. Vehicle's tires (to include golf carts, utility vehicles, and towed equipment), wheel well, magnetic FOD bar visual inspection, a roll-over check to inspect any unseen portion of tires, and a check of the entire vehicle for items that may fall off or out of the vehicle.

19.3.2. A locally manufactured tool for removing debris from tire treads is authorized for use and will be associated with the vehicle by using the vehicle ID number.

19.3.3. Secure all loose items to prevent accidental exit from the vehicle.

19.3.4. Use of magnetic bars on the flight line is mandatory. Installed magnetic bars will be inspected and made FOD free prior to the beginning of each shift and prior to turn-in. Work-centers will designate vehicles for flight line use and ensure a FOD magnet is properly installed.

19.3.4.1. Vehicles equipped with a magnetic FOD bar must have the bar installed approximately 3-4 inches above the ground. If the Vehicle magnet cannot be installed higher than 3 inches, inform the VCNCO for further direction. The FOD bar must be annotated on the vehicle's AF Form 1800, *Operator's Inspection Guide and Trouble Report*, under "Other" on page 3.

19.3.5. Vehicles and equipment, equipped with pintle hooks will have the pintle hook jaws locked and closed with pin installed. An appropriate length of chain or cable will secure the safety pin. The chain or cable must not touch the ground when fully extended. During the hours of darkness a flashlight will be used to inspect the vehicle for FO.

19.3.6. If a large amount of debris is encountered while on the airfield, contact MOC at DSN 572-3342/3343 or Airfield Management at DSN 572-5411 to have a sweeper dispatched.

**20. GCS Maintenance** . GCSs are the control elements of Remotely Piloted Aircraft (RPA) and are considered to be a flight deck and therefore do not fall under the same FOD guidance as aircraft cockpits.

20.1. Cover all GCS components and equipment openings, ports, lines, hoses, ducts, and electrical connectors to prevent FO from entering systems or components. Never use metal foil (pertains to all GCS's during maintenance).

20.2. Aircrew and GCS Maintenance personnel may need to utilize pens, pencils, dry erase markers, etc., for FTD missions. These items do not have to be removed from the GCS at the

end of the flight period; however, items brought in by personnel will be removed by the individual.

20.3. Food shall not be consumed inside the GCS where foreign particles could present a hazard and cause damage to communications equipment (refer to AFI 91-203, *Air Force Consolidated Occupational Safety Instruction*). Drinks are allowed in the GCS but will be in an approved closable container. Glass containers and aluminum cans are prohibited on the airfield.

20.4. General housekeeping, to include vacuuming, will be performed during the 7-day preventative maintenance inspection. Anything that could interfere with the safety or operational characteristics of the GCS will be removed after each flight. Areas beneath the false floor of the GCS are not required to be inspected on a scheduled basis. The sole occasion these areas are policed for debris is during the search for identified missing items.

20.5. Rocks and dirt are known hazards in the GCS compound due to the position and layout. Because the GCS compound is located on the flight line, the GCS compound will fall under General Housekeeping rules (refer to AFI 91-203).

**21. Deployments.** Maintenance supervision will ensure a FOD NCO is designated for aircraft deployments. Contact the Wing FOD Monitor at least 3 days prior to the deployment for a FOD/Dropped Object Program (DOP) briefing for the deployment

**22. FOD Fighting Equipment.** A towable sweeper or FOD Boss™ will be assigned to each unit having aircraft assigned.

22.1. The FOD Boss™ will be inspected before and after use for loose hardware, cracks, tears, and other items which may make it unserviceable for use. The sweeper inspection will consist of checking for any loose or missing hardware, checking the brush for wear (if installed), and removing rocks or other debris from the tire treads.

22.2. Any FOD fighting equipment (i.e. FOD Boss™, push sweepers and push magnets) will be cleaned and emptied upon completion of each use.

**23. Foreign Object Containers.** Ensure all vehicles normally driven on the airfield (to include golf carts and utility vehicles) are equipped with properly marked FOD containers/pouches and will have a lid or cover to secure FO. The containers/pouches shall be marked “FOD” and will be annotated on the vehicles AF Form 1800 under “Other” on page 3.

**24. Points of Contact.**

24.1. Airfield Manager: 572-5410.

24.2. MOC: 572-3342.

24.3. Wing FOD Monitor: 572-0081.

24.4. Wing Safety: 572-3793.

BRYAN T CALLAHAN, Colonel, USAF
Vice Commander

## Attachment 1

## GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION

***References***

**AFI 21-101**, *Aircraft and Equipment Maintenance Management*, 21 May 2015

**AFI 21-101_AETCSUP**, *Aircraft and Equipment Maintenance Management*, 18 September 2015 AFMAN 33-363, *Management of Records*, 1 March 2008

**AFI 36-2650**, *Maintenance Training*, 20 May 2014

**AFI 91-203**, *Air Force Consolidated Occupational Safety Instruction*, 15 June 2012

**AFMAN 91-223**, *Aviation Safety Investigations and Reports*, 16 May 2013

**AFPD 21-1**, *Maintenance of Military Material*, 29 October 2015

**HOLLOMANAFBI 21-380**, *Tool/Equipment Control and Accountability Program*,

27 January 2017

**Technical Order (TO) 35-1-3**, *Corrosion Prevention and Control, Cleaning, Painting, and Marking of Support Equipment*, 26 April 2014

***Adopted Forms***

**AF Form 847**, *Recommendation for Change of Publication*

**AF Form 1199**, *Air Force Entry Control Card*

**AFTO Form 244**, *Industrial/Support Equipment Record*

**AFTO Form 781A**, *Maintenance Discrepancy and Work Document* AF Form 1800, *Operator's Inspection Guide and Trouble Report* AETC Form 138, *Lost Tool or Item Investigation Record*

***Abbreviations and Acronyms***

**ACC**—Air Combat Command

**AECOM**—Architecture Engineering Consulting Operations

**AETCSUP**—Air Education Training Command Supplement

**AF**—Air Force

**AFI**—Air Force Instruction

**AFMAN**—Air Force Manual

**AFPD**—Air Force Policy Directive

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

**AFTO**—Aircraft Forms Technical Order

**AGE**—Aerospace Ground Equipment

**AMU**—Aircraft Maintenance Unit

**AMXS**—Aircraft Maintenance Squadron

**ATRS**—Aerial Targets Squadron

**ASM**—Aircraft Structural Maintenance

**BCE**—Base Civil Engineer

**CC**—Commander

**CES**—Civil Engineering Squadron

**CMS**—Component Maintenance Squadron

**COV**—Contractor Owned Vehicle

**CTK**—Consolidated Tool Kit

**CVF**—Vice Commander FOD

**CV**—Vice Wing Commander

**DET**—Detachment

**DOP**—Dropped Object Program/Program

**DSN**—Defense Switched Network

**DV**—Distinguished Visitor

**DVR**—Digital Video Recording

**ECP**—Entry Control Point

**EMS**—Equipment Maintenance Squadron

**EOR**—End of Runway

**FG**—Fighter Group

**FLTS**—Flight Test Squadron

**FO**—Foreign Object

**FOD**—Foreign Object Debris/Damage

**FOM**—Facilitate Other Maintenance

**FTD**—Field Training Detachment

**FTD**—Formal Training Detachment

**GCS**—Ground Control Station

**GOV**—Government Owned Vehicle

**HAFBI**—Holloman Air Force Base Instruction

**HOLLOMANAFBSUP**—Holloman Air Force Base Supplement

**IAW**—In Accordance With

**LAMS**—Large Area Maintenance Shelter

**M1SS**—M1 Support Services

**MOC**—Maintenance Operations Center

**MOF**—Maintenance Operations Flight

**MRA**—Mission Ready Airmen

**MXG**—Maintenance Group

**MXQ**—Maintenance Quality Assurance Flight

**MXS**—Maintenance Squadron

**MXW**—Maintenance Weapons Flight

**NCO**—Non-Commissioned Officer

**NCOIC**—Non-Commissioned Officer in Charge

**NDI**—Non Destructive Inspection

**OIC**—Officer in Charge

**OJT**—On-the Job Training

**OPR**—Office of Primary Responsibility

**POV**—Personally Owned Vehicle

**QA**—Quality Assurance

**QC**—Quality Control

**QRC**—Quick Reaction Checklist

**RDS**—Records Distribution Schedule

**RPA**—Remotely Piloted Aircraft

**TAMS**—Tactical Aircraft Maintenance Section

**TCMax™**—Tool Control Max

**TDY**—Temporary Duty

**TO**—Technical Order

**VCNCO**—Vehicle Control Non-Commissioned Officer

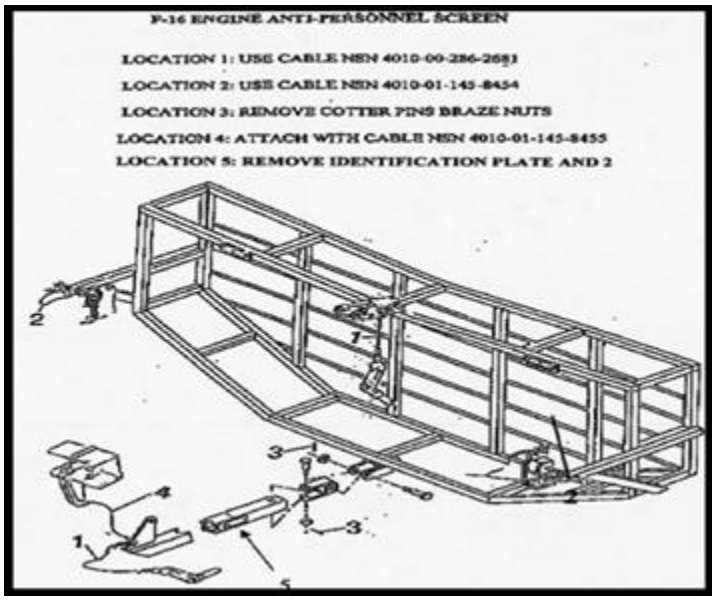
**VCO**—Vehicle Control Officer

**WG**—Wing

**WLT**—Weapons Load Training

**Attachment 2**

**FIGURE A2.1. F-16 ENGINE ANTI-PERSONNEL SCREEN.**

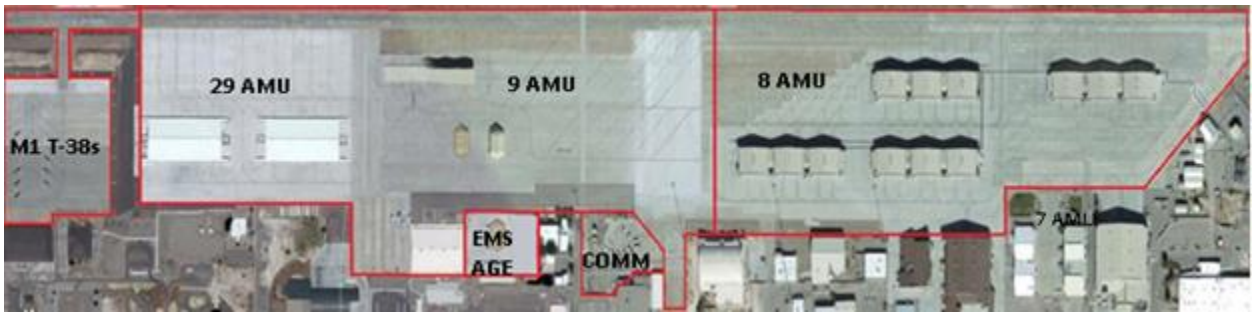


**Attachment 3**

**FIGURE A3.1. WEST RAMP AREAS OF RESPONSIBILITY.**

**Attachment 4**

**FIGURE A4.1. (ADDED) EAST RAMP AREAS OF RESPONSIBILITY.**



**Attachment 5**

**FIGURE A5.1. ARMY AIR FLTS & 82 ATRS AREAS OF RESPONSIBILITY**