

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

**HOLLOMAN AIR FORCE BASE
INSTRUCTION 21-37**



15 FEBRUARY 2012

Maintenance

**FOREIGN OBJECT DEBRIS/DAMAGE
PREVENTION PROGRAM**

COMPLIANCE WITH THIS PUBLICATION IS MANDATORY

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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, *Aerospace Equipment Maintenance Management*, 26 July 2010, Paragraph 14.19.2.6. to develop a coordinated wing instruction to control the effects of 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 (49 WG) to include tenant units. Ensure that all records created as a result of processes prescribed in this publication are maintained in accordance with Air Force Manual (AFMAN) 33-363, Management of Records, and disposed of in accordance with Air Force Records Information Management System (AFRIMS) Records Disposition Schedule (RDS) located at <https://www.my.af.mil/afirms/afirms/afirms/rims.cfm>. Contact supporting records managers as required. Refer recommended changes and questions to the Office of Primary Responsibility (OPR) using AF Form 847, Recommendation for Change of Publication, to 49th Wing Foreign Object Damage (49 WG/CVF), 490 First Street, Holloman AFB, NM 88330-8277.

SUMMARY OF CHANGES

This document is substantially revised and must be completely reviewed. The following changes to the document have been made: Chapter 13: 13.2.3. (Added) CAM contractor maintenance personnel may wear baseball hats year round in the T-38 flightline areas IAW contractors operating instruction. 13.2.4. (Added) DS2 employees may wear headgear approved by the sight manager while performing official duties on the flightline. Employees will not wear hats/headgear within 25 feet of running aircraft engines and personnel will ensure that the

hats/headgear do not contain any type of metal emblems, buttons, pins, or insignias Rationale: Paragraphs added to incorporate existing policy letters and satisfy the requirements on the contractors operating instructions. Chapter 16: Removed paragraphs 16.4 through 16.10 Rationale: Items in these paragraphs addressed in AFI 21-101: Chapter 20: Reworded to incorporate the online sharepoint address for the virtual FOD program book Rationale: Address changed due to the movement of the virtual FOD program book from a COP to Holloman sharepoint.

1. 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 industry's "lessons learned" for continued improvement. This document uses excerpts from various instructions and is intended to be used as a guide. Users are encouraged to 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.

2. 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. It's a work ethic and a frame of mind. FOD prevention is becoming a science in itself; don't cut it short. Remember that FOD Prevention is one of the highest priority programs within Maintenance and Flight Operations. A good FOD prevention program can improve readiness, and save material, manpower, lives and money.

3. Program Scope. 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 or related components, or persons traversing the airfield. It is applicable to all squadrons, units, detachments, tenant units, TDY organizations, and supporting activities that have access to flight line, maintenance, or airfield areas at Holloman 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.

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 will be able to control the number of FOD incidents that occur. The overall program objective is ZERO FOD. To reach that objective, we strive to establish and maintain an effective FOD prevention program that is planned, integrated, and developed in conjunction with Quality Air Force concepts as much as possible.

5. Example of Foreign Objects. The definition of a foreign object 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, ice, etc. A foreign object is anything on the airfield that is not where it is supposed to be.

6. Common Causes of Foreign Object Damage. 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, etc., during operations and maintenance. All loose objects, regardless of their origin, can cause catastrophic and costly damage. With this in mind, people cause FOD! Because FOD is a "people problem," awareness and involvement are the primary means of control.

7. Effects of Foreign Object Damage. Foreign Object Damage 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 damage caused to your and your unit's reputation by reports of FOD in newspaper headlines or safety messages. How would you feel if, because of your carelessness, you cost a pilot or crewmember his or her life?

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 foreign object 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 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 regular basis to all maintenance, operations, and base support personnel who work in, around, or drive through aircraft flightline and maintenance areas, to include hangars. The primary objective of FOD prevention training is to apply the information received into performance of daily duties. Training should start with an initial orientation, and continue throughout skill certification and annual refresher briefings. FOD training may be conducted either in a classroom or through on-the-job training (OJT).

10. Responsibilities. Leadership and a positive attitude is the key to establishing a disciplined and consistent FOD program. Without top management's full support, a FOD program cannot work effectively. Leaders must “walk the talk” and keep workers current and involved. They must also 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.

10.1. The Vice Wing Commander (CV) is responsible for ensuring an effective FOD prevention program is established.

10.2. The CV, all group commanders, and squadron commanders are members of the Base FOD Prevention Committee.

10.2.1. All FOD incidents will be discussed at FOD prevention committee meetings to ensure information regarding FOD hazards receives base-wide dissemination along with the appropriate corrective action.

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

10.4. Each unit with aircraft assigned will designate a Squadron, Flight or AMU FOD representative. These representatives are also members of the junior FOD committee, and brief their unit on FOD happenings.

11. FOD Inspection and Reporting Procedures. All actual or suspected FOD damage must be reported and investigated.

11.1. Anyone discovering FOD or bird strike damage will stop all maintenance on the affected aircraft/engine and notify their production superintendent.

11.1.1. Any aircraft maintenance activity discovering suspected or confirmed FO damage to any engine or aircraft will immediately report findings to their production superintendent, who will notify the Maintenance Operations Center (MOC). The MOC will immediately contact the Wing Safety office, Wing FOD Prevention Office, and Quality Assurance (QA). All aircraft sustaining damage from an unknown source will be considered for impoundment. If internal engine FOD is confirmed, the engine will be impounded.

11.1.2. The Wing FOD NCO and impoundment official will jointly investigate any aircraft/engine incidents. Additionally, the Wing Safety Office will perform a separate, independent investigation. In the event the wing FOD NCO is not available, a Quality Assurance representative will perform the initial investigation in accordance with AFI 21-101.

11.2. The Wing FOD Prevention NCO will perform FOD inspections in accordance with current directives.

12. Incentive Programs. Publicity is a key element of an effective FOD prevention program. Competitive FOD prevention programs between squadrons, branches, sections, and shops are 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:

12.1. 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.

12.2. 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.

12.3. 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.

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

13. General (All Base Personnel). Wigs, hairpieces, metal hair fasteners, earrings, bracelets, necklaces, and chains will not be worn in FOD critical areas or when performing maintenance. Escorts of visiting personnel will ensure FOD prevention measures are taken. All personnel will actively participate in work area cleanup to effectively reduce FOD potential to engines and tires. All debris (rags, hardware, safety wire, etc.) will be considered foreign objects and must be removed upon completion of any maintenance or operations action.

13.1. Never store trash or foreign objects in toolboxes or spot boxes.

13.2. Never wear (other than seasonally approved navy watch cap or cold weather type) hats on flightline.

13.2.1. Security Forces personnel will not wear berets within 50 feet of operating engines. Berets with metal insignias will not be worn on the airfield.

13.2.2. Seasonally approved hats will not be worn within the danger area of an operating aircraft engine.

13.2.3. CAM contractor maintenance personnel may wear baseball hats year round in the T-38 flightline areas IAW contractors operating instruction.

13.2.4. DS2 employees may wear headgear approved by the sight manager while performing official duties on the flightline. Employees will not wear hats/headgear within 25 feet of running aircraft engines and personnel will ensure that the hats/headgear do not contain any type of metal emblems, buttons, pins, or insignias.

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

13.4. The AF Form 1199, USAF Restricted Area Badge, and other badges will be secured to uniform with a nylon or cotton cord. If a metal clip is used, it must be attached securely to badge.

13.5. Designated areas must be policed daily and free of FO. Notification will be made to Airfield Management (2-5411) for any areas of the airfield that are damaged.

13.6. Privately owned vehicle (POV) or government owned vehicle (GOV) operators will ensure that prior to crossing taxiway Hotel or Lima that all potential FO that could come off or out of the vehicle is secured. These are high traffic areas, and items have been found at

these locations that were traced back to POVs and GOVs. If at any time, the control tower illuminates the red flashing lights at the Bong Street/taxiway Hotel crossing, POV and GOV operators must pull into the designated FOD check areas and perform a rollover inspection on the vehicle and anything being towed behind the vehicle if applicable.

13.7. Glass containers, other than those in sample kits, and aluminum cans are prohibited on the airfield in FOD critical areas. Plastic bottles and paper or Styrofoam cups are authorized on the airfield, but will be properly stowed when not in use.

14. Tool And Equipment Control.

14.1. Personally owned tools and equipment, not controlled through CTK procedures in AFI 21-101 or HAFBI 21-38 are NOT authorized on the airfield. Some examples include multi-tools, mini-mag flashlights, and pocket knives.

14.1.1. Personnel assigned to aircraft maintenance units must always check items out from a Consolidated Tool Kit (CTK) or support section.

14.1.2. Personnel not assigned to aircraft maintenance units will ensure an inventory of tools is on hand when working on the airfield, IAW HAFBI 21-38.

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

14.3. Report all lost items. Complete CAF Form 145, Lost Tool/Object Report, for each lost item, and turn completed form in to CTK monitor and QA. For non-aircraft maintenance units, follow guidelines set up in HAFBI 21-38.

15. Flightline/Airfield Vehicle Operations.

15.1. 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, or when reentering a paved surface after exiting. Exception: no FOD check is currently required when crossing taxiway Hotel at Bong Street or taxiway Lima at Kelly Road. Other measures are in place to ensure the area is FOD free prior to aircraft taxi.

15.2. FOD check includes:

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

15.2.2. Secure all loose items to prevent accidental exit from vehicle.

15.3. Vehicles equipped with a magnetic FOD bar must have the bar installed approximately 3-4 inches above the ground. The FOD bar must be annotated on the vehicle's 1800, under "Other" on page 3. It must be FOD free at the beginning of each shift, prior to turn in, and each time a FOD check is accomplished.

15.4. Vehicle Magnet will be installed not lower than 3" (as damage to magnet or vehicle may occur) to approximately 4" about the ground. If the Vehicle magnet cannot be installed higher than 3" inform Vehicle NCO and Wing FOD manager to receive direction on procedures.

15.5. If a large amount of debris is encountered while on the airfield, contact Maintenance Operations Center (MOC) or Airfield Management (2-5411) to have a sweeper dispatched.

15.6. For additional airfield vehicle FOD prevention procedures refer to HAFBI 13-202.

16. Aircraft Maintenance.

16.1. Cover all aircraft, aircraft components and equipment openings, ports, lines, hoses, ducts, and electrical connectors to prevent foreign objects from entering systems or components. Never use tape or metal foil (Pertains to US Aircraft only).

16.2. Install appropriate engine compressor covers during non-flying periods.

16.3. Remove all articles (pens, pencils, change, etc.) from uniform pockets prior to entering cockpits of aircraft. Aircrew will account for all personal carried items prior to exiting the aircraft or GCS.

17. Deployment.

17.1. Maintenance supervision will ensure a FOD Prevention monitor is designated for aircraft deployments. Contact the Wing FOD Prevention office at least 3 days prior to the deployment for a FOD and dropped object briefing for the deployment.

18. FOD Fighting Equipment.

18.1. A towable sweeper or FOD Boss will be assigned to each unit having aircraft assigned. A daily operator inspection will be accomplished by the user and documented on an AFTO Form 244, Industrial/Support Equipment Record.

18.2. The FOD boss will be inspected for loose hardware, cracks and tears and other items which may make it unserviceable for use.

18.3. The FOD boss will be operated prior to the first flight of each duty day and throughout the flying window (dependent on weather). Each unit will sweep their assigned aircraft parking rows and the adjacent portions of the taxiways and access roads.

18.4. Any FOD fighting equipment (i.e. FOD BOSS, push sweepers and push magnets) will be cleaned/emptied upon completion of each use.

19. 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. Ensure aircraft parking spots and maintenance areas have approved, properly marked FOD containers with lids. Empty all FOD containers upon task completion but no later than the end of each shift.

20. FOD Book. For standardization, the FOD program uses an Online FOD Book, and, as long as the 49 WG FOD NCO receives timely squadron updates, a hard copy is not required. Location of the online book can be found on Holloman Sharepoint at the following link:

https://holloman.eim.acc.af.mil/49_MXG/49MXGstaff/QA/insp/Programs/Forms/AllItems.aspx?RootFolder=%2f49%5fMXG%2f49MXGstaff%2fQA%2finsp%2fPrograms%2fFOD%2dDOP&FolderCTID=&View=%7b9B4590CD%2d91E1%2d4BCD%2dBEF7%2d41FDA7F3F1CF%7d
If a 49 WG unit chooses to create a hard copy program, the book should be set up in the following manner.

- 20.1. A) TABLE OF CONTENTS.
- 20.2. B) TAB A – APPOINTMENT LETTER (Squadron, Flight, and Wing Appointment Letter).
- 20.3. C) TAB B – FOD TRAINING (Available from Wing FOD NCO, Any Additional Unit FOD Training).
- 20.4. D) TAB C – DOCUMENTED INSPECTIONS (Maintained on the FOD Web Site).
- 20.5. E) TAB D – AWARD PROGRAMS (Wing and Squadron Programs).
- 20.6. F) TAB E –LOCAL FOD INSTRUCTION.
- 20.7. G) TAB F – ANY WING FOD MESSAGES/SQUADRON FOD POLICY LETTERS.
- 20.8. H) TAB G – QUARTERLY FOD MEETING NOTES.

Note: GAF FTC Keeps records IAW German regulations. Access to those records will be granted upon request by the 49 WG FOD NCO.

21. Points of Contact.

- 21.1. Airfield Manager: 572-5410.
- 21.2. Flight Line Sweeper: 5722-5411.
- 21.3. MOC: 572-3342.
- 21.4. Ramp Repair: 572-5411.
- 21.5. Quality Assurance: 5722-3148.
- 21.6. Wing FOD NCO: 572- 0235.
- 21.7. Wing Safety: 572-3793 (call Command Post after normal duty hours).

DAVID A. KRUMM, Colonel, USAF
Commander

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

AFI 21-101, Aircraft and Equipment Maintenance Management, 29 June 2006
CAFI 21-101, Aircraft and Equipment Maintenance Management, 24 April 2007
AFI 23-302, Vehicle Management, 29 October 2007
AFI 91-202, The US Air Force Mishap Prevention Program, 1 August 1998
AFI 91-204, Safety Investigations and Reports, 14 February 2006
AFMAN 33-363, Management of Record, 1 March 2008
AFOSH Standard 91-100, Aircraft Flightline – Ground Operations and Activities, 1 May 1998
AFPD 21-1, Air and Space Maintenance, 25 February 2003
HOLLOMANAFBI 21-38, Wing Tool Control, 30 April 2008
HOLLOMANAFBI 13-202, Flightline Driving Operations, 9 April 2007

Prescribed Forms

AFTO Form 244, Industrial/Support Equipment Record, 13 January 2011
CAF Form 145, Lost Tool/Object Report, 1 April 2007

Adopted Forms

AF Form 847, Recommendation for Change of Publication, 22 September 2009
AF Form 1199, USAF Restricted Area Badge, 1 December 1968

Abbreviations and Acronyms

AFI—Air Force Instruction
AFMAN—Air Force Manual
AFPD—Air Force Policy Directive
AFRIMS—Air Force Records Information Management System
CTK—Consolidated Tool Kit
CV—Vice Wing Commander
ECP—Entry Control Point
FOD—Foreign Object Debris/Damage
GOV—Government Owned Vehicle
MOC—Maintenance Operations Center
OPR—Office of Primary Responsibility
OJT—On-the Job Training

QA—Quality Assurance

POV—Personally Owned Vehicle

RDS—Records Distribution Schedule

TDY—Temporary Duty