BY ORDER OF THE COMMANDER,
15TH AIRLIFT WING

15TH AIRLIFT WING INSTRUCTION 21-105

MAINTENANCE

29 APRIL 2004

FOREIGN OBJECT DAMAGE PROGRAM

COMPLIANCE WITH THIS PUBLICATION IS MANDATORY

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This instruction implements AFPD 21-1, Managing Aerospace Equipment Maintenance and establishes responsibilities and procedures for Foreign Object Damage (FOD) control and prevention. It applies to all possessed and transient aircraft, uninstalled engines and Aerospace Ground Equipment (AGE) maintained by the 15 AW. This instruction applies to US Air Force Reserve. Hawaii Air National Guard will follow paragraphs **7.2.** and **7.3.** of this instruction, and 154 LG OI 21-59.

SUMMARY OF REVISIONS

This document is substantially revised and must be completely reviewed.

1. References:

Technical Order (TO) 00-20-1, Aerospace Equipment Maintenance Inspection, Documentation, Policies, and Procedures.

AFI 21-101, Maintenance Management of Aircraft

PACAFI 21-101, Maintenance Management of Aircraft

15 ABWI 13-201, Vehicular Operations on the Airfield

15 ABWI 13-203, Airfield Operations

15 AWI 21-102, Aircraft/Engine Impoundment Procedures

154 LG OI 21-59, Foreign Object Damage Prevention and Reporting Program

735 AMS OI-10-1, Foreign Object Damage Prevention and Reporting Program

AFI 36-2903, Dress and Appearance

Air Force Occupational, Safety and Health Standards (AFOSH) 91-501, Air Force Consolidated Occupational Safety Standard

2. Foreign Object Damage (FOD) Prevention Program.

2.1. Definition. Foreign Object Damage: Any damage to an aircraft engine/aircraft system/tires caused by an external foreign object that may or may not degrade the required safety and/or operational characteristic of the engine/aircraft systems.

2.2. General. FOD prevention is the responsibility of all personnel (military, civilian, and contractors) working in, on, around, or traveling through areas near aircraft, munitions, AGE, engines, or components thereof. Personnel will comply with FOD prevention. Commanders are responsible for establishing and implementing procedures to prevent FOD. Supervisors will brief all maintenance, operations and base support personnel who work in, around, or drive through operational areas on the use of vehicles and how they relate to FOD. Supervisors will also address common causes of FOD; local shop, flight line, Hardened Aircraft Shelters (HAS) and hangar work policies; hardware and tool control policies, and individual responsibilities to prevent FOD.

2.3. To ensure adequate flight line FOD WALK coverage, the 15 AW/CC or designated representative may assign additional wing units to perform weekly or quarterly FOD walks.

2.4. FOD monitor additional duties are Quality Assurance (QA) inspector and Exercise Evaluation Team (EET) member.

3. FOD Prevention Flightline.

3.1. Due to Foreign Object Damage potential, hats will not be worn on the flight line.

EXCEPTIONS: In the performance of their duties, Security Forces, Fire-Fighting personnel, and DV reception parties are authorized to wear hats on the flight line. Extreme caution should be taken to avoid FOD damage to aircraft with engines running. Personnel conducting FOD walks are authorized to wear hats provided there are no aircraft with engines running on the same parking ramp.

3.2. All areas where aircraft are towed, taxied, or parked; shops and maintenance areas where equipment or components are worked on; and entry points to flight line will be kept free of debris, stones, hardware, etc.

3.3. Tools, hardware, equipment and devices will be inventoried and accounted for at the completion of each task. Ensure hardware storage bags are available and utilized to store and account for screws, nuts, bolts and other miscellaneous items that are removed from the aircraft during maintenance repair actions.

3.4. Tool and FOD inspections (of the immediate area) will be performed during and after any aircraft maintenance and will be documented in the discrepancy block of the AFTO Form 781 series as “Tool and FOD inspection complied with.” FO found but not immediately removed, will be documented in AFTO 781 series forms with the exact location to facilitate removal. FO and spare parts will be cleaned up and removed from the aircraft prior to any shift turn over.

3.5. All personnel entering aircraft cockpits will ensure that personal belongings are properly secured to prevent FOD. Before climbing into the cockpits of fighter aircraft, all open pockets must be emptied, unless pockets can be sealed, zipped, or otherwise closed shut to prevent items from falling out. Eliminate foreign objects in aircraft cockpits and flight decks prior to flight. Vacuums will be used

when cleaning debris from aircraft components. Compressed air will not be used to remove foreign objects debris.

3.6. Personal tools not controlled through CTK procedures are not authorized on the flight line or in any maintenance area. Mark and control tools or equipment that work center assigns to an individual. Foreign Object Debris (FOD) will not be allowed in composite tool kits (CTK), except when in a sealed bag. **EXCEPTIONS**: In the performance of their duties, Security Forces, Fire-Fighting personnel, and Wing Safety are authorized to carry items that are issued that are considered professional gear (i.e. whistles, leathermans, etc.) on the flight line. These items will be permanently etched with squadron and office symbol. Extreme caution should be taken to avoid FOD damage to aircraft with engines running.

3.7. Personal pagers (beepers), cellular telephones, portable stereos, or personally owned electronic devices are not authorized on the flight line. Government issued pagers and cellular telephones are authorized if used in conjunction with official business, but will be controlled and accounted for like personal property (i.e. car keys, spare change) when in or around aircraft.

3.8. Loose items, such as rags, bags, or line badges, including arm band-type of line badge holders, will not be exposed on personnel or allowed within 25 feet of a running engine intake. All aircraft, portable -21 equipment storage boxes, FOD cans, toolboxes and equipment will remain to the rear of engine intakes during engine operation. These items will be no further forward than the main gear for F-15 aircraft, heavy aircraft. During runs above idle, position equipment outboard of wing tips (except for single-engine idle runs, the A/32M/A–86 ground equipment can remain in place and connected). Helicopters keep equipment well clear of rotor wash areas.

3.9. All users are responsible for inspecting AGE for FOD prior to and upon completion of all maintenance actions. Ground equipment will also be inspected for FOD prior to dispatch to ready lines, sub-pools or the flight line.

3.10. Supervisors will ensure miscellaneous hardware is removed from all flight line areas and effective parts accountability is maintained at all times.

3.11. Restricted area badges can be attached by a blue, black or subdued-colored cord to the uniform. To prevent the loss of an attached metal clip pass the chord through the clip eyelet (those individuals using the cord/rope for security) One-piece armbands holding line badges are authorized for use in a flight line environment. They will be worn snugly on the upper arm, and no items (pens, pencils, whistles, etc,) will be attached to or worn on the armband. Line badges or armbands will not be worn during intake/tail pipe inspections or around any operating turbine engine.

3.12. Unit support sections will set up a rag control program to ensure positive control of rags, per PACAFI 21-101.

3.12.1. Personnel will not place rags in or on top of the aircraft/engine intake unless required for tasks being completed.

3.12.2. Store rags that are not being used in marked rag containers.

3.13. Ground Cables. Use two hex-head screws to secure cable to ground clip. Remove unused screws from the ground clip.

3.14. While maintenance is being performed on aircraft, uninstalled engines and AGE, openings, ports, lines, hoses, electrical connections and ducts will be properly plugged or capped to prevent foreign objects from entering these systems.

3.15. Flight line Vehicle FOD Prevention:

3.15.1. The FOD prevention representative for Airfield Management will ensure the driver's training program stresses the importance of FOD prevention and control applicable to vehicle operations on the flightline.

3.15.2. Vehicles will only access the aircraft parking areas, taxiways and runway by entry points approved by Airfield Management. FOD checks will be accomplished on vehicles and towed trailers or equipment at these entry points prior to entering the airfield. If leaving a paved surface becomes necessary, re-check all tires for debris before re-entering. Debris will be deposited in vehicle FOD can. Do not leave removed debris on access road!

3.15.3. Fire Department personnel will ensure a FOD check is completed on all vehicles on standby status in the fire station bays. Vehicles returning to the fire station or airfield taxiways from unpaved or broken pavement areas will have a FOD check performed by the vehicle operator.

3.15.4. All items permanently assigned to a vehicle will be marked with the vehicle ID number or registration number and annotated on the vehicle's AF Form 1800/1806 "Other" block to ensure accountability. If lost or misplaced, these items will be reported in accordance with lost tool/items procedures and annotated on a PACAF Form 140A.

3.15.5. All government-owned or operated vehicles (trucks, vans, Coleman's, golf carts, etc.) traveling on the flight line will have a FOD container. Containers will be stenciled with the letters "FOD". The letters will be no smaller than 2 inches. FOD containers must be secured to the vehicle in a manner that would prevent the container from tipping over while the vehicle is in motion. The lid must be secured to prevent the container from inadvertently opening. The FOD container will be listed on the 1800/1806 if permanently assigned to the vehicle. "Empty FOD container daily" will be added to an available "Other" block on the AF Form 1800/1806.

3.15.6. Pintle hooks will have cotter pin installed whether open or closed, and pin will be secured to vehicle or support equipment by means of a chain or wire rope.

4. Aircraft/Engine Foreign Object Damage Mishap Responsibilities and Procedures.

4.1. Appropriate Production Superintendent will notify the Maintenance Operation Center (MOC), Quality Assurance Office and the 15 AW FOD Monitor whenever a FOD incident occurs. (See **Attachment 1** and **Attachment 2**)

4.2. Wing FOD monitor will report all FOD incidents to appropriate MAJCOM FOD manager by telephone, fax or e-mail as soon as the damage is known, but no later than 24 hours after occurrence.

4.3. 15 AW FOD Monitor or designated Quality Assurance (QA) inspector will conduct an initial investigation to determine the cause of the FOD mishap. The initial investigation will be accomplished immediately after receipt or discovery of damage to an engine/aircraft. All maintenance will cease in the mishap area until cleared by the production supervisor or the quality assurance investigator. All aircraft sustaining FOD damage from an unknown cause will be considered for impoundment. All units will notify the maintenance Operations Center (MOC) of FOD. MOC will then notify Wing

Safety who will then join the FOD Monitor and QA in accomplishing the final investigation procedures. Units will use automated AFTO Forms 781A, Maintenance Discrepancy and Work Document, for FOD investigations and documentation. The impoundment will be cleared in accordance with 15 AWI 21-102 Impoundment Program after all inspections, repairs and documentation are completed.

4.4. When transient/deployed aircraft (Permanent Assigned Aircraft (PAA) possessed or controlled)) incur FOD, the host unit will conduct the investigation and notify the owning organization within 72 hours and will accept accountability with the following exceptions.

4.4.1. The owning organization will accept accountability and investigation responsibility for FOD which is a direct result of transient/deployed unit negligence.

4.4.2. The owning organization will accept accountability and investigation responsibility for FOD discovered upon arrival or prior to any engine run.

4.4.3. The owning organization will accept accountability and investigation responsibilities for FOD that occurs when the owning organization's maintenance personnel are working on the aircraft at the deployed site.

4.5. All FOD incidents determined to be repairable on the aircraft will be reported by message monthly by the wing FOD Monitor (not later than the 5th working day of the following month) to PACAF/LGMFE. The following format will be used:

4.5.1. FOD control number

4.5.2. Date discovered

4.5.3. Engine type, serial number, and position (if applicable)

4.5.4. Aircraft tail number (if applicable)

4.5.5. Cause of damage

4.5.6. Cost of repairs

4.5.7. All FOD incidents determined to be not repairable on the aircraft will be reported by message within three duty days after discovery to HQ PACAF. If the investigation cannot be completed within the three-working-day time-period, preliminary message will be submitted. Following completion of the investigation, a final message will be submitted. The following format will be used for both preliminary and final messages. A combination of preliminary and final reports may be submitted if all the details of the incident are known at report time.

4.5.7.1. FOD control number, engine type

4.5.7.2. Date discovered

4.5.7.3. Narrative

4.5.7.4. Cause of damage

4.5.7.5. Cost of repairs

4.5.7.6. Recommendation as to chargeable with justification when requesting non-chargeable

4.5.7.7. Any other pertinent details at the discretion of the wing FOD manager.

5. Bird Strike to Engine Procedures.

5.1. Bird strike damage to engines is not chargeable as FOD, but must be investigated to preclude the 15 AW from being charged with a FOD incident. The following procedures will be followed:

5.1.1. Upon discovery of a bird strike to the intake area, a red X entry will be placed in the **AFTO Form 781A** requiring an inlet inspection by a qualified technician. Particular attention is required to the leading edges of second stage fan blades. The MOC, Flight Safety Office and the FOD Prevention Office must be notified.

5.1.2. Inspect engine intake and air/oil coolers for bird remains.

5.1.3. Any damage noted will be documented in the engine records and aircraft **AFTO Form 781A** and reported to the wing FOD prevention office.

5.2. Bird remains will be collected for typing / matching. Contact Flight Safety for disposition of collected remains.

6. Foreign Object Damage Walks.

6.1. Each unit will perform a FOD walk in each active parking location weekly and or as soon as it is practical after sunrise, preferably before the first flight of the day. Each unit will submit a map of their respective FOD walk area to the 15 AW FOD Monitor for approval. Supervisors will report any area of the flight line requiring repair to Airfield Management (448-6920/6921), Command Post (448-6900), or the Maintenance Operations Center (MOC 448-6910). Supervisors will coordinate with Command Post for sweeper support if debris is of such a magnitude that FOD walks are unable to accomplish a thorough cleaning. **Mandatory:** All units with arriving or departing aircraft will conduct a FOD inspection of the parking area prior to all aircraft arrival/departures.

6.2. All FOD walks conducted at Hickam Air Force Base will be in compliance with the following guidelines. One supervisor, seven-level or above, will be assigned to each team performing a FOD walk and will be responsible for completing the following:

6.2.1. All units will contact the Hickam Advisory Tower who will notify Hickam Ramp prior to the beginning and at the completion of all FOD walks.

6.2.2. Organize and control the walk at all times, ensuring team concentrates on task at hand (looking for FO). Distance between individuals should not exceed three paces to prevent overlooking any area of responsibility. Maintain effectiveness of the walk by ensuring team members remain in a “line abreast” formation and pause to reform line when required.

6.2.3. All grounding points will be kept clean of debris **at all times** and should be a high interest item for FOD walks. When/if needed, units can use a vacuum or hand clean the grounding points on the parking ramp.

7. Areas of Responsibilities.

7.1. 15 AMXS\Maintenance Division (MXD): Hanger 35, Dock 1, 6A-6C, 7A-7G and 8A-8B, 9A-9C, 10A-10C, 11A-11C, 12A-12C, 13A-13F, 14A-14E and 15A-15G. (See attachment 4)

7.2. 154th Wing (Fighter): Hangar 3400 and Mike taxiway to Romeo Bravo taxiway. (See **Attachment 3** and 4)

7.3. 154th Wing (HIANG Transport Aircraft): Building 2020 and 2021 (ISO docks), area 4 in front of docks and 1A-1E, 2A-2E, 3A-3E, 4A-4E, and Hangar 35 (bay 2) to end of wash rack. (See **Attachment 3** and 4)

7.4. 735th Air Mobility Squadron: Aircraft maintenance personnel will perform FOD walks weekly. Areas will include 20-23, Hot Cargo spots 1, and the area around the occupied maintenance building. When parking spots on rows 17 and 18 are used for AMC aircraft, logistics maintenance personnel will FOD walk the spots used prior to aircraft arrival and after aircraft departure. Aerial Port is responsible for 16A-16F, 19, the area around bldg. 4069 (and the restricted area to the AMC ramp), as well as the area between the passenger terminal and the restricted area.

7.5. 15 OSS: DV1-DV4.

8. Unit Representatives will:

8.1. Post on the unit display board the names of the unit FOD representatives and the wing FOD Monitor. This will provide easy access for unit members to promptly contact appropriate individuals in case of mishap.

8.2. Perform spot checks of selected areas once each week and report findings to Wing FOD Monitor.

8.3. Perform spot checks on vehicles to ensure FOD containers are in place and empty when not in use.

8.4. Conduct initial investigation on any type FOD mishap until the Wing FOD Monitor arrives.

9. Quarterly Committee Meetings.

9.1. Active participation by senior leadership is imperative in order for the program to be effective. The purpose of the FOD Committee meeting is to emphasize the responsibility of key personnel to actively support the wing FOD program and to fully understand the problems facing the 15 AW. Active participation in this committee is required to attack problems more knowledgeably and inform the majority of our work force about the program. The following units have representatives on the FOD Committee.

9.1.1. FOD Manager/Chairman- 15 AW/CV

9.1.2. Wing FOD Monitor

9.1.3. Wing Safety

9.1.4. Aircraft Maintenance Squadron QA

9.1.5. 65th Airlift Squadron

9.1.6. 15th Logistics Readiness Division

9.1.7. Civil Engineering Squadron

9.1.8. Security Forces Squadron

9.1.9. Operations Support Squadron

9.1.10. 735th Air Mobility Squadron

9.1.11. 154th Wing/QA

9.1.12. 154th Logistics/QA

10. Foreign Object Damage Incentive Program.

10.1. The 15 AW FOD Prevention Program requires active involvement by each organization and individual. We should always identify possible FOD hazards and do our best to prevent FOD incidents. The intent of the incentive program is to reward FOD-conscious personnel that take the extra steps to identify and correct potential FOD hazards by accounting for tools and personal articles and picking up loose debris and hardware. Promoting positive action to eliminate flight line and work area FOD that will reduce the potential for FOD-related incidents.

10.2. The current wing FOD Prevention Program consists of FOD Find of the Quarter and FOD Poster of the Quarter.

10.3. Nominations for FOD Find of the Quarter and FOD Poster of the Quarter should be submitted to the 15 AW FOD Monitor. Contest winners are selected by the Wing FOD Monitor prior to the quarterly meeting. Winners are notified and presented awards/certificates at the FOD prevention committee meeting. In order to promote maximum participation, individuals may not win awards in two consecutive cycles.

10.4. The following is a list of gratuities for:

10.4.1. FOD Find of the Quarter Winner: Plaque/1-day pass, photo in base paper and a coupon package.

10.4.2. FOD Poster of the Quarter Winner: Plaque/1-day pass, photo in base paper and a coupon package.

10.4.3. Annual Winner will receive a plaque/3-day pass and a coupon package.

NOTE: All FOD awards are subject to change based upon the availability of sponsors and funding. All passes will be coordinated with the individual's supervisor.

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Commander, 15th Airlift Wing

Attachment 1

FOD REPORTING CHECKLIST

A1.1. Upon notification of a FOD incident, the production supervisor will immediately notify:

A1.1.1. Maintenance Operating Center 448-6910

DATE_____TIME_____

A1.1.2. MOC will notify:

NOTE: All units will notify the Maintenance Operations Center (MOC) of a FOD incident.

A1.1.3. Wing FOD Monitor (MSgt Coward) 449-6292

DATE_____TIME_____

A1.1.4. Respective Quality Assurance

DATE_____TIME_____

A1.1.5. Wing Safety (15 AW/SE) 449-0749

DATE_____TIME_____

Attachment 2

FOD INVESTIGATION CHECKLIST

UNIT: _____ **DATE:** _____

LOCATIONS: _____

AIRCRAFT TYPE: _____ **AIRCRAFT S/N:** _____

ENGINE NUMBER: _____ **POSITION #** _____

ENGINE TYPE: _____

TIRE TYPE: _____

STRUCTURE: _____

FLIGHT CONTROL: _____

OTHER: _____

WHEN DISCOVERED: _____

PREFLIGHT: _____

BASIC POSTFLIGHT: _____

PHASE: _____

ISOCHRONAL (MINOR, MAJOR, HOME STATION CHECK):

_____

OTHER: _____

DESCRIPTION OF MISHAP INCLUDING EXTENT OF DAMAGE AND CAUSE:

_____
_____
_____
_____
_____

DISPOSITION:

_____
_____
_____

REPAIRED LOCALLY (EXTENT OF REPAIR):

_____
_____
_____

SHIPPED TO O/H (DATE & LOCATIONS):

_____
_____
_____

MDR NUMBER:

_____

ESTIMATED COST TO REPAIR:

_____

Attachment 3

AREA OF RESPONSIBILTY

The following OICs and NCOs are responsible to assign the individuals/crews to accomplish the FOD walks of their assigned areas:

Table A3.1. F-15 Ramp

Section	Area	FOD OIC/NCO
Asphalt area between bldg. 3416 and wash rack, area west side of hangar to Bldg. 3416/wash rack, area north side of hangar to red rope, area east side of hangar to coral.	Red (EMB & CRB)	154 MXS/CC
Flight line wash rack, asphalt area between the flight line bldg., CE, and Mike pad.	Yellow (AGS)	154 AGS/CC
Old fuel hangar (ES storage), Metro from flight line to east end of Mike pad, Trim pad area, Hush house area.	Green (Engine)	154 LG/LGMP
Area east and south of new fuel hangar (inside fence and red rope).	Blue (Fuel)	154 LG/LGMC

Table A3.2. C-130/KC-135 Ramp

Section	Area	FOD OIC/NCO
Area 1: Slots 1A through 5A. From curbing to Restricted area line.	Yellow 130 AGS	154 AGS/CC
Area 2: Remaining slots, Rows 1 through 4.	Green 135 AGS	154 AGS/CC
Area 3: Front of Hanger 35 dock 1extending to and including Aircraft Wash Rack.	Olive 135 Docks	154 AGS/CC
Area 4: Taxiway from Row 1 thru 4, including area in front of Bldg. 2020 and 2021.	Blue 130 Docks	154 AGS/CC

NOTES:

C130 and KC-135 ramp will be supported by MXS as follows.

Area 2 will be supported by LGMP, LGMV, and LGMG.

Area 3 will be supported by LGMF, LGMC.

Figure A3.1. AREA OF RESPONSIBILTY