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Maintenance

**GUIDELINES FOR PREVENTING,
INVESTIGATING, AND REPORTING
FOREIGN OBJECT DAMAGE (FOD)**

COMPLIANCE WITH THIS PUBLICATION IS MANDATORY

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This instruction establishes a wing program for Foreign Object Damage (FOD) prevention and applies to all personnel (military, civilian, and contractors) working in, on, around, or traveling through areas near aircraft, munitions, engines, components or aerospace ground equipment (AGE). This applies to all units and personnel attached or assigned to the 62d Airlift Wing (62 AW), 446th Airlift Wing (446 AW), and McChord Air Force Base.

SUMMARY OF REVISIONS

This document is substantially revised and must be completely reviewed.

This instruction has changes that align it to AFI21-101 AMCSUP 1, *Aerospace Equipment Maintenance Management*. All references to the Logistics Group (LG) organizational structure were changed to Maintenance Group (MXG) due to wing reorganization. Guidance changes include general FOD prevention awareness for all units assigned to McChord AFB, the wear of hats on the flight line, and personnel protection or duty-related equipment permanently issued identification requirements. Section 6, Missing Tool or Equipment Procedures was removed and will be addressed in the new wing tool control instruction.

1. McChord AFB FOD Prevention Committee.

1.1. The McChord AFB FOD prevention Committee will be composed of representatives from organizations whose personnel perform duties on or in the area of the flight line. The units identified below represent the McChord AFB FOD prevention committee.

- 1.1.1. 62d Airlift Wing Vice Commander (62 AW/CV)
- 1.1.2. 62d Wing Safety (62 AW/SE)
- 1.1.3. 62d Maintenance Group (62 MXG)

- 1.1.4. 62d Aircraft Maintenance Squadron (62 AMXS)
 - 1.1.5. 62d Maintenance Squadron (62 MXS)
 - 1.1.6. 62d Maintenance Group, Quality Assurance (62 MXG/QA)
 - 1.1.7. 62d Maintenance Operations Squadron, Maintenance Training (62 MOS/MXOT)
 - 1.1.8. 62d Operations Group (62 OG)
 - 1.1.9. 4th Airlift Squadron (4 AS)
 - 1.1.10. 7th Airlift Squadron (7 AS)
 - 1.1.11. 8th Airlift Squadron (8 AS)
 - 1.1.12. 62d Operations Group, Standardization/Evaluation (62 OG/OGV)
 - 1.1.13. 62d Operations Support Squadron, Airfield Management (62 OSS/OSAA)
 - 1.1.14. 62d Mission Support Group (62 MSG)
 - 1.1.15. 62d Logistics Readiness Squadron (62 LRS)
 - 1.1.16. 62d Aerial Port Squadron (62 APS)
 - 1.1.17. 62d Civil Engineering Squadron (62 CES)
 - 1.1.18. 62d Security Forces Squadron (62 SFS)
 - 1.1.19. 446th Airlift Wing Safety (446 AW/SE)
 - 1.1.20. 97th Airlift Squadron (97 AS)
 - 1.1.21. 313th Airlift Squadron (313 AS)
 - 1.1.22. 728th Airlift Squadron (728 AS)
 - 1.1.23. 446th Maintenance Group (446 MXG)
 - 1.1.24. 446th Maintenance Group, Quality Assurance (446 MXG/QA)
 - 1.1.25. 446th Aircraft Maintenance Squadron (446 AMXS)
 - 1.1.26. 446th Maintenance Squadron (446 MXS)
 - 1.1.27. 446th Maintenance Operations Flight (446 MOF)
 - 1.1.28. 446th Logistics Readiness Flight (446 LRF)
 - 1.1.29. 446th Security Forces Squadron (446 SFS)
 - 1.1.30. 36th Aerial Port Squadron (36 APS)
 - 1.1.31. 86th Aerial Port Squadron (86 APS)
 - 1.1.32. Detachment 1, HQ Washington Air National Guard (Det 1, WAANG/MA)
 - 1.1.33. Field Training Detachment (Det 12, 373 TRS)
- 1.2. Units identified above will provide a letter to the Wing FOD Prevention Program Office (62 MXG/QA) designating a primary and alternate FOD prevention officer or NCO. Any changes will be

coordinated through the Wing FOD Prevention Program Office. Personnel occupying these positions or a designated representative will attend all FOD prevention committee meetings.

1.3. The McChord AFB FOD prevention committee will meet quarterly unless the MAJCOM standard FOD rate is exceeded. In the event that MAJCOM standards are exceeded, the committee will meet monthly until the established standards are met. The committee chairperson may direct additional meetings as required.

1.4. 62 AW/CV will serve as chairperson of the FOD prevention committee. In his/her absence, the MXG commander will chair the committee. If both the wing vice commander and the MXG commander are absent, the OG commander will chair the committee. The Wing FOD Prevention Office will develop the meeting agenda.

1.5. The chairperson will monitor all phases of the program implemented within the wing to ensure that FOD incidents are thoroughly investigated and adequate corrective action is taken.

2. Responsibilities:

2.1. All commanders will ensure compliance with this instruction and establish guidance, as required, so every precaution is taken to prevent FOD.

2.2. The 62 AW/CV is responsible for ensuring an effective FOD prevention program is established and will:

2.2.1. Ensure group and unit commanders actively support the FOD prevention program.

2.2.2. Review all unit FOD mishap reports and analyze the reports and other data for trends that identify areas requiring management action.

2.2.3. Coordinate FOD prevention needs with the airfield manager and affected agencies when construction is in progress on or near the flight line, or other areas where FOD incidents could occur.

2.3. The 62 MXG/CC will direct impoundment of aircraft/equipment when FOD damage warrants investigation in compliance with 62 AWI 21-11, Aircraft Impoundment and Quarantine Procedures.

2.3.1. Appoint two qualified technical sergeants (or above) from 62 MXG/QA, with at least 8 years experience in the maintenance field, to the positions of wing FOD prevention manager/assistant manager.

2.4. The 62 AW FOD prevention manager will:

2.4.1. Schedule and prepare items for quarterly FOD prevention committee meetings.

2.4.2. Report FOD mishaps according to AFI 91-204, *Safety Investigations and Reports*; AFI 21-101, *Aerospace Equipment Maintenance Management*; section 18 and this instruction.

2.4.3. Assist squadron FOD monitors in investigating each case of FOD to determine its cause and prevent future occurrences.

2.4.4. Perform random FOD inspections of all aircraft hangars, ramps, and squadron maintenance areas.

2.4.4.1. Notify the respective squadron commander or supervision of any significant findings

upon completion of random FOD inspections.

2.4.5. Promote a FOD prevention publicity program to include establishing a FOD recognition program.

2.4.6. Inspect and report damaged pavement, flight line construction, or other hazards in or near aircraft parking ramps or taxiways to the airfield manager and monitor status to ensure timely repairs.

2.5. Squadron Commanders will:

2.5.1. Assign primary and alternate squadron FOD prevention monitors and ensure they comply with AFI 21-101, section 18; AFI 21-101 *AMCSUPI*; and this instruction. Forward an appointment letter to the Wing FOD Prevention Office (MXG/QA). Any changes will be coordinated through MXG/QA.

2.5.2. Establish a squadron FOD orientation program that includes briefings on the cost and importance of FOD prevention, spot check of vehicles and ramp areas for FOD, and a tool/equipment control program.

2.5.3. Ensure all work centers requiring access to the flight line or aircraft strictly adhere to 62 LGI 21-4, *Tool Control*, until 62 AWI 21-37, *Tool Control*; is released.

2.5.4. Schedule and conduct weekly FOD walks on Monday mornings for their respective units. If a Monday falls on a holiday, conduct FOD walk the following duty day. Contact the Maintenance Operations Center (MOC) or airfield manager to dispatch 62 CES for additional ramp sweeper service as required.

2.5.4.1. All grounding points will be kept clean of debris at all times and should be a high interest item for FOD walks.

2.5.4.2. 62 AMXS will FOD walk "Baker" and "Joker" aircraft parking ramps to include all vehicle parking areas on flight line side of AMU facilities.

2.5.4.3. 62 MXS will FOD walk "Delta" aircraft parking ramp to include AGE sub pool (adjacent to delta ramp).

2.5.4.4. When aircraft are present, Detachment 1 (Washington National Guard) will FOD walk the 300 alert area.

2.5.4.5. 62 APS will FOD walk the flight line side of building 1422.

2.5.4.6. "Charlie" aircraft parking ramp is not used for C-17A operations and does not require a weekly FOD walk. When units are TDY to McChord and are performing continuous aircraft operations, they will be required to perform weekly FOD walks until the unit departs.

2.6. 62 AW Airfield Manager will coordinate with 62 CES and develop a weekly ramp sweeper service schedule to cover all active runways, taxiways, and parking ramps. Airfield Manager will divert sweeper service to any immediate FOD problem areas.

3. General FOD Prevention Practices.

3.1. Personnel will be constantly alert for any form of FOD during all phases of a job. Special attention must be given to small items of debris (i.e., safety wire, bolts, nuts, screws, etc.). Loose materials/hardware will be placed in parts bags or FOD containers during the normal course of job performance.

- 3.1.1. All maintenance production areas and hangars will have approved FOD containers readily accessible to workers. The FOD cans will be easily recognizable and marked "FOD" in two-inch minimum contrasting letters. The containers will be emptied when full or at the end of each shift, whichever comes first.
 - 3.1.2. Ensure all consolidated tool kits, or equivalent, are inspected for tool accountability at the completion of each task and all foreign objects are removed.
 - 3.1.3. Ensure all work tasks, regardless of location, include a thorough cleanup as part of that task.
 - 3.1.4. Ensure that FOD bags (plastic/cloth) are available and are used to control hardware during maintenance.
 - 3.1.5. 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 foreign objects from entering these systems.
- 3.2. All vehicles normally driven on the flight line will be equipped with secured and lidded FOD containers. The cans will be easily recognizable and marked "FOD" in no less than two-inch contrasting letters. The containers will be emptied when full or at the end of each work shift, whichever comes first.
- 3.2.1. Vehicle operators are responsible for inspecting the cab interior, cargo bed area, and tires for FOD prior to use. Operation of flight line vehicles on unpaved surfaces will be avoided whenever possible. When circumstances require off-road vehicle operation or transit through construction zones with rocks present, ensure personnel stop before entering the flight line to inspect and remove debris collected in the tire treads.
 - 3.2.2. FOD bags located on maintenance stands will be emptied at the completion of each task and prior to being stowed or towed.
- 3.3. Personal tools are not authorized on the flight line or in any aircraft maintenance area. (e.g., mini-mag flashlights, leathermans, buck knives, etc). Personally issued equipment permanently assigned to individuals or duty position (e.g., government issue headsets, personal protective equipment, etc.) as a minimum will be marked with Last Name, Unit, and Employee Number (Units without employee numbers will use the last four of their SSN.).
- 3.3.1. All aircrew members must account for all personal items after each flight and ensure that any items that become lost during flight are documented in the aircraft AFTO Form 781A. Maintenance and Operations personnel will follow the guidelines for lost or missing tools/items outlined in LGI 21-4 or 62 AWI 21-37 (when released) for items unaccounted for after flight.
- 3.4. Inlet and Exhaust Inspections.
- 3.4.1. Prior to engine start and after engine shutdown, ground maintenance runs, and any engine inlet and exhaust maintenance, the inlet and exhaust will receive a FOD inspection IAW applicable technical orders. Use a light source of sufficient illumination to inspect aircraft inlets and exhausts for FOD. Inlet and exhaust inspections will be documented with a Red X symbol in the AFTO Form 781A's.
 - 3.4.2. Do not attempt entry into the inlet or exhaust until engine rotation has stopped. If the engine is "wind milling" due to high winds, cover the exhaust before entering the inlet. The inspection will be accomplished even if the engine is scheduled for removal.

3.5. A protective mat must be in place prior to any entrance into an engine inlet. All jewelry (i.e., watches, rings, and necklaces) and restricted area badges will be removed and pockets emptied prior to entrance into engine inlet/exhaust. A pocketless, zipperless, buttonless bunny suit will be worn whenever physical entry into an aircraft intake/inlet or exhaust is required.

3.6. Ensure all engine intakes/inlets are inspected and engine and pitot covers are installed immediately after last flight of the day. All engine intakes/inlet and pitot covers will remain installed within 6 hours of scheduled mission. Reinstall covers if there is a significant flight delay (exceeding 6 hours) or immediately upon mission cancellation.

3.7. Ensure a FOD inspection of the aircraft parking spot is performed preceding the block-in and prior to and following the block-out of all aircraft.

3.8. Hats/berets, wigs, or hairpieces **will not** be worn on the McChord AFB flight line. The MXG/CC can authorize exceptions to the no-hat policy for official functions that occur on the flight line.

3.8.1. On-duty security force personnel are the only exclusion to McChord AFB flight line hat-free zone. Security force personnel will remove berets within 50 feet of operating aircraft engines.

3.8.2. Wear of the seasonal watch cap is authorized. Wear of the seasonal watch cap will comply with AFI 36-2903, *Dress and Personal Appearance of Air Force Personnel*. The watch cap will not be worn within 50 feet of any operating aircraft engine.

3.9. Metal or leather hair fasteners, earrings, necklaces, and bracelets are not authorized on the flight line or in hangars and aircraft maintenance areas.

3.10. 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 when in or around aircraft. As a minimum, government-issued pagers and cellular telephones will be marked with unit markings for accountability (i.e., 62 MXS/Mike2).

3.11. Any individual that escorts a person or group onto the flight line is responsible for the personal belongings and/or equipment of the escorted person(s).

3.12. Restricted area badges will be secured with a subdued, nylon/cotton cord or plastic armband. Pass the cord through the hole of the metal clip (eyelet) to prevent the loss of the metal clip.

4. Actual or Suspected Foreign Object Damage Reporting and Investigation Procedures:

4.1. Supervisor or maintainer will notify the MOC immediately upon finding or suspecting FOD. The MOC will notify Wing Safety and the on-duty MXG Quality Assurance representative. Individuals finding or suspecting FOD will make every effort to leave the aircraft or equipment in the same condition as discovered until a preliminary FOD investigation is completed.

NOTE: Aircraft or vehicle tires incurring FOD do not require an investigation team.

4.1.1. FOD to an APU or engine requiring removal or replacement of the component necessitates an aircraft impoundment IAW 62 AWI 21-11 **and** a FOD incident investigation IAW para. **4.1.2.**

4.1.2. FOD **not** necessitating component removal or replacement will require a FOD Incident Investigation Team. Team members as a minimum will have one representative from 62 AW

Safety, 62 MXG/QA, and a maintenance supervisor from the owning organization. Follow investigation and reporting procedures established in AFI 91-204, para 7.1.5 and AFI 21-101, para 18.23.9.

4.1.2.1. Investigators will use the McChord Form 199, **Foreign Object Damage (FOD) Incident Investigation**, to report FOD incidents. 62 MXG/QA will forward the FOD report to HQ/AMC within 24 hours of a FOD incident. 62 MXG/QA will assign a FOD control number consisting of unit designator, fiscal year, and a three-digit number (i.e., 62AW2003001). Final report and investigation will be accomplished no later than seven days after the occurrence.

NOTE: Copy of McChord Form 199 may be found at or at <https://intranet.mcchord.af.mil/units/cs/html/forms.html> 62 MXG/QA website: <https://intranet.mcchord.af.mil/units/lg/qa/>

5. When an engine suspected of FOD is received from off-base:

5.1. The responsible en route base shall initiate the FOD investigation according to AFI 91-204 and forward initial investigation results to the 62 MXG/QA. 62 MXG/QA will forward copies to Boeing engine management.

5.1.1. Upon receipt of a C-17 engine, Boeing engine management will process the engine IAW the Flex Sustainment Contract.

5.1.2. The 62 AW Safety Office will provide a copy of all preliminary and final FOD incident reports to the 62 MXG/QA and will act as the focal point for disseminating FOD program information to flying squadrons as required.

ROBERT R. ALLARDICE, Colonel, USAF
Commander, 62d Airlift Wing

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

AFI 21-101, *Aerospace Equipment Maintenance Management*, 01 Oct 2002

AFI 21-101, AMCSUP1, *Aerospace Equipment Maintenance Management, AMC Supplement*, 31 Jan 2003

AFI 91-204, *Safety Investigations and Reports*, 11 Dec 2001

AFOSHSTD 91-100, *Aircraft Flightline – Ground Operations and Activities*, 01 May 1998

62 AWI 21-11, *Aircraft Impoundment and Quarantine Procedures*, 27 Sep 2002

62 AWI 21-37, *Tool Control*, Pending

Abbreviations and Acronyms

AETC—Air Education and Training Command

AGE—Aerospace Ground Equipment

AMC—Air Mobility Command

AMXS—Aircraft Maintenance Squadron

AS—Airlift Squadron

APU—Auxiliary Power Unit

AW—Airlift Wing

FOD—Foreign Object Damage

MOC—Maintenance Operations Center

MIKE-2—Maintenance Squadron Supervision

MXG—Maintenance Group

MXS—Maintenance Squadron

OG—Operations Group

QA—Quality Assurance

Attachment 2

MCCHORD AFB FORM 199, FOREIGN OBJECT DAMAGE (FOD) INCIDENT INVESTIGATION

A2.1. MCCHORD AFB FORM 199, FOREIGN OBJECT DAMAGE (FOD) INCIDENT INVESTIGATION

FOREIGN OBJECT DAMAGE (FOD) INCIDENT INVESTIGATION					DATE OF REPORT
<i>(Use reverse side for additional comments or continuation of items)</i>					
1. ORGANIZATION OWNING AIRCRAFT/ENGINE			BASE/LOCATION CHARGED WITH INCIDENT BEING REPORTED		
A. AIRCRAFT TYPE AND SERIAL NUMBER (if applicable)			B. FOD CONTROL # (Filled out by Wing FOD Manager)		
2. TYPE OF DAMAGE					
A. <input type="checkbox"/> ENGINE	TYPE MODEL SERIES	POSITION ON AIRCRAFT	SERIAL NUMBER	TIME SINCE OVERHAUL	
B. <input type="checkbox"/> TIRE	C. <input type="checkbox"/> STRUCTURE	D. <input type="checkbox"/> FLIGHT CONTROL	E. <input type="checkbox"/> OTHER (Specify)		
3. DAMAGE WAS DISCOVERED DURING					
A. <input type="checkbox"/> PREFLIGHT	B. <input type="checkbox"/> BASIC POST FLIGHT	C. <input type="checkbox"/> PHASE	D. <input type="checkbox"/> PERIODIC	E. <input type="checkbox"/> ISOCHRONAL	
F. <input type="checkbox"/> HOURLY POST FLIGHT	G. <input type="checkbox"/> THRU FLIGHT	H. <input type="checkbox"/> OTHER (Specify)		(MINOR, MAJOR, HOME STATION)	
4. DESCRIPTION OF INCIDENT (Include date of incident, extent of damage and cause)					
5. DISPOSITION					
A. <input type="checkbox"/> REPAIRED LOCALLY (Explain extent of repair)			B. <input type="checkbox"/> SHIPPED TO OVERHAUL (Date and location)		
6. ESTIMATED COST TO REPAIR (Not applicable if engine is shipped to overhaul)					
A. MANHOUR COST		B. MATERIAL COST		C. TOTAL	
7. ACTION TAKEN TO PREVENT RECURRENCE					
8. TRENDS (Cite last similar occurrence and other details to assure a firm understanding of the situation)					
9. ANALYSIS AND RECOMMENDATIONS (State if negligence or violation of FOD Directives were involved)					
SIGNATURE, GRADE & ORGANIZATION OF INVESTIGATOR			SIGNATURE OF SENIOR MAINTENANCE OFFICER		