

**BY ORDER OF THE COMMANDER
436TH AIRLIFT WING**

**DOVER AIR FORCE BASE
INSTRUCTION 21-105**

8 MARCH 2007

Maintenance

**FOREIGN OBJECT DAMAGE
PREVENTION PROGRAM**



COMPLIANCE WITH THIS PUBLICATION IS MANDATORY

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(Col Robert E. Hamm, Jr.)

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This Dover Air Force Base Instruction (DAFBI) outlines procedures and responsibilities for the Foreign Object Damage (FOD) prevention program for the 436th and 512th Airlift Wings. This instruction supplements AFI 21-101, FOD prevention procedures. Compliance with this DAFBI is mandatory by all agencies and maintenance organizations assigned under the 436th and 512th Airlift Wings. All personnel (military, civilian and contractors) working in, on, around, or traveling through areas near aircraft, munitions, AGE, engines, loading and unloading cargo will comply with this Operating Instruction. Refer recommended changes and questions about this publication to the Office of Primary Responsibility (OPR) using the AF IMT 847, *Recommendation for Change of Publication*; route AF IMT 847s from the field through the appropriate functional's chain of command. Ensure that all records created as a result of processes prescribed in this publication are maintained in accordance with AFMAN 37-123 (will convert to AFMAN 33-363), *Management of Records*, and disposed of in accordance with the Air Force Records Disposition Schedule (RDS) located at <https://afrims.amc.af.mil/>.

SUMMARY OF CHANGES

This document has been substantially revised and must be completely reviewed. Paragraphs **2.4.**, **2.7.**, **2.10.**, **4.2.1.**, **4.2.2.**, **4.2.3.**, **4.2.4.**, **4.2.5.**, **4.2.6.**, and **4.4.** have been completely re-written. Paragraphs **2.11.** through **2.17.**, **4.1.**, **4.2.1.1.** along with paragraphs **5.** and **6.** and sub paragraphs have been added. **Attachment 2** (Vehicular Parking and Travel on the Ramp), **Attachment 3** (FOD Boss Areas of Responsibility) and **Attachment 4** (Blade Blending Worksheet) have been included. **Paragraphs identified with an () indicate a minor change in wording from the previous edition.**

1. FOD Prevention Committee/Squadron FOD Prevention Monitors

1.1. For the purpose of FOD prevention at Dover AFB, the FOD Prevention Committee will meet quarterly, or as directed by the 436 AW/CV. When available the committee meetings will take place in the 436 AW headquarters conference room (Bldg 201). The specific dates and times of the committee meetings will be announced in advance. Primary and alternate FOD Prevention Managers will be appointed by their squadron commanders. (The name, grade, office symbol and duty extension of these committee representatives will be forwarded to the 436 MXG/MXQA, FOD Prevention Manager, in the form of an appointment letter and updated yearly, or as necessary.) Squadron FOD Monitors will attend FOD Prevention Committee meetings, consolidate FOD monthly data and forward it to the 436 MXG/MXQA within five working days from the first of each month. Data will include tire changes due to FOD and lost tools.

2. FOD Prevention

2.1. All maintenance and/or inspections in the engine inlet will require the use of protective rubber matting and pocketless coveralls. All pockets must be emptied and any jewelry (watches) removed before putting on the pocketless coveralls, which will be the outer most layer of clothing. The coveralls will be worn completely and not tied off at the waist. Any time fan blockers are removed for maintenance or flight, a complete FOD inspection shall be documented and performed; this will include entry into the engine inlet and exhaust areas to inspect for foreign objects or evidence of damage. Post engine run FOD inspections will be conducted after all maintenance engine runs.

2.2. All aircraft parking spots will be policed for foreign objects and debris prior to aircraft block-in and after aircraft block-out. Prior to towing an aircraft from any hangar or parking spot, the aircraft tow supervisor is responsible for ensuring the tow path is clear of foreign objects or debris and the hangar or parking spot being towed to is also clear of foreign objects.

2.3. All vehicles frequenting the flight line will be equipped with FOD containers and will be emptied at the end of each shift. FOD containers will be secured to the vehicle and be equipped with a lid stenciled with the word FOD, in contrasting letters, that will be two inches or larger. Staff vehicles and vehicles that do not transit the flight line on a regular basis, are not required to be equipped with FOD containers.

2.4. During all maintenance activities, good housekeeping and foreign object prevention practices will be adhered to. Personnel performing any type of activity, operation or maintenance action in, on, or around aircraft, munitions, aerospace ground equipment, or components thereof shall practice good housekeeping and ensure all trash, loose hardware, and other foreign objects are removed when the activity is complete. All serviceable work order residue will be returned to supply or the unit's bench stock.

2.5. Rags will be a controlled and considered an issued item. Rags will be issued in lots determined by the unit's Composite Tool Kit (CTK) monitor. Rags will never be used as a cap or plug device.

2.6. Aircrew and load crew members must account for all equipment and personal items to include any government issued items after each loading/flight and ensure any items lost are annotated in the aircraft AFTO Form 781A, **Maintenance Discrepancy and Work Document**. All lost items will be up channeled to MOCC and Archer 3, Production Superintendent. Aircrew members will identify personal (issue) equipment (e.g., headsets, flashlights, Leatherman, etc) with minimum of first initial, last name, squadron and last four of SSN. This does not include personal issue clothing.

2.7. Life Support Section has been assigned the world wide identifier (WWID) code of DMLS from Quality Assurance. Life Support will maintain one tool box for use on the flight line for flight crew support. Tools assigned to the box that will be labeled and identified with the WWID code. A Master Inventory List (MIL) will be maintained by the life support section and a copy of the MIL will be forwarded to Quality Assurance. In the event of a lost tool, Life Support Section will notify Quality Assurance and file a Lost Tool report in accordance with Dover MXGOI 21-2.

2.8. When maintenance personnel are preparing the aircraft for flight (ex. removing fan blockers, pitot covers, panel integrity, etc.), they will ensure the flight deck is clean of all maintenance debris and foreign objects.

2.9. When performing fan stopper operations, personnel will exercise extreme caution and will use proper equipment to prevent fan blade damage.

2.10. All personnel working in/on the aircraft, engine, AGE, munitions, loading and unloading of cargo, or components in an industrial maintenance area will ensure all loose items of clothing (scarves, baseball caps, etc), are accounted for. Hairpieces, metal hair fasteners, earrings or jewelry that may fall off without notice are not authorized in these areas. Personal items such as cell phones, beepers or other electronic devices will be the responsibility of the individual and will be accounted for. Local squadron policy will also apply.

2.11. The airfield manager will be made aware of all deteriorating airfield surfaces. The airfield manager can be reached at Airfield Management Operations, ext 4183.

2.12. Tool accountability checks will be performed at the end of each maintenance activity and prior to any aircraft engine start (ground maintenance run and aircraft launch).

2.13. The flight line is a no hat area. For more information, see the Dover Supplement to AFI 36-2903.

2.14. Squadrons owning or maintaining aircraft hangars or other flight line facilities must develop procedures to keep the facilities free of foreign objects.

2.15. Oil cans, absorbent pads, or any other type of foreign objects will not be left on aircraft or Aerospace Ground Equipment.

2.16. FOD prevention at Dover AFB is everyone's responsibility.

3. FOD Investigations and Reporting

3.1. When FOD has occurred or is suspected on an aircraft, aircraft tires, or aircraft engine, the following procedures will apply: The affected maintenance squadron will contact 436/512 MXG/MXQA at extension 5907 and Maintenance Operations Control Center (MOC) extension 5436 within 1 hour after discovery. A job control number will be obtained from MOC and the discrepancy will be entered into the aircraft forms. 436/512 MXG/MXQA will initiate the FOD incident/investigation and prepare a detailed report and send it to the 436/512 MXG/CC for further disposition. Squadrons may be tasked to provide assistance to 436/512 MXG/MXQA during investigations.

4. FOD Prevention Walks

4.1. Flight line FOD prevention will be comprised of squadrons using the FOD Boss sweeper in conjunction with normal FOD walks conducted in paragraph 2.2. **NOTE:** Squadrons will use the FOD

Boss to sweep their areas of responsibility every week on Monday, Wednesday, and Friday at 0730 hrs. Areas of responsibility are outlined on the Dover AFB Alpha map (See [Attachment 3](#)) and in para 4.2. Areas that are inaccessible with the FOD Boss will be policed by means of foot patrol. The Wing FOD prevention manager will make the determination to cancel and reschedule the FOD sweeps in case of inclement weather. Notification will be made through the MOC to all participating squadrons no later than 0730 hrs the morning of the sweep. In addition to the above required sweeps, Squadrons will sweep the flight line for cigarette butts two times daily according to the following schedule below. Five passes will be done from one end of the flight line to the other. The passes will be as follows: One pass over the center taxi line, one pass on each side of the center taxi line and two passes over the aircraft parking spot designator letters.

Table 1. FOD Boss Sweep Schedule.

	MON	TUES	WED	THURS	FRI	SAT	SUN
0730 hrs	MXS	MXS	MOS	MXS	MOS	AMXS	AMXS
1500 hrs	MXS	MXS	MOS	MXS	MOS	AMXS	AMXS

- 4.2. Squadron areas of responsibility during weekly FOD Prevention sweeps are as follows:
 - 4.2.1. 436/512 AMXS Transient Maintenance - Aircraft parking spots “A” thru “D” rows to include front and back taxiways.
 - 4.2.1.1. 436/512 MXS - Aircraft parking spots from “E” thru “P” rows to include front and back taxiways.
 - 4.2.2. 436/512 AMXS AMUs - Aircraft parking spots from “Q” to “CC” rows to include front and back taxiways. In addition, the areas north of Bldg 760 to hangars 792, 793 and 794 between Orly Street and the flight line will be the responsibility of the 436/512 AMXS.
 - 4.2.3. 436/512 AMXS All Flights - South Ramp, Hazardous Cargo Area, “Christmas Tree” Area and Compass Rose. All FOD walks/sweeps for these areas are conducted on an as-needed basis. Police foreign object debris prior to and immediately after any aircraft movement in these areas. The FOD walk/sweep will include the entire aircraft movement path within these areas.
 - 4.2.4. 436/512 AMXS AMU’s - Inside hangar 706 and the outside wash rack between hangar 706 and 711 when an aircraft is present.
 - 4.2.5. 436/512 MXS Isochronical Section - The area between hangars 711 and 714.
 - 4.2.6. 436/512 MXS Propulsion Flight - The areas between hangars 714 and 715.
 - 4.2.7. 436/512 APS - The area between Atlantic Ave and the flight line, from Bldg 501 to 8th Street, particularly flight line side of Bldg 505.
 - 4.2.8. 436/512 MOS (MQTP) - Walk the area around Bldgs 704 and 706 to include the outside aircraft wash rack only if the aircraft wash contractor has finished or the spot is empty. 436 AMXS will be responsible for conducting a FOD prevention walk if an aircraft is being washed or is not completed during the 436 MOS FOD walk. Note: If student manning permits, MQTP will assist 436 AMXS personnel if requested.
 - 4.2.9. 436/512 LRS - The POL truck yard and the area between hangars 792, 793, 794, and 2nd St, from the flight line to Atlantic Ave 436 LRS (Vehicle Management Flight). The areas between

and around Bldgs 780 and 781, to extend to the middle of the vehicle/AGE parking yard shared with 436 MXS. This area is commonly referred to as the "Transportation/AGE yard".

4.3. 436/512 CES - Temco Ramp Sweepers. All ramp sweeper operations will be controlled by Airfield Management Operations and will follow the established sweeper schedule. Production superintendents will contact base operations and coordinate unscheduled sweeper requirements.

4.4. AMXS vehicle section, AMXS transient maintenance, MXS jet engine shop, and MXS AGE shop maintains and controls the FOD bosses. These sweepers are available for sign out and use by all maintenance squadrons.

5. FOD Fighter Program

5.1. The intent of the "FOD Fighter of the Quarter" program is to increase foreign object damage awareness within the Wing. The winner will receive a letter of appreciation and one-day pass from the Wing/CV. The annual winner receives a three-day pass.

5.2. Throughout the quarter, each Sq's FOD rep will have members of their Sq submit foreign objects discovered accompanied by a brief description of the circumstances surrounding their discovery. Individuals developing a procedure or process reducing FOD potential or increasing awareness are also eligible for nomination.

5.3. The Wing FOD monitor will then choose the quarterly winner.

5.4. The annual winner will be chosen from the quarterly winners by the Wing FOD monitor. The annual winner will be based on overall best contribution to the total program.

5.5. Benefits of the program are immediate exposure of the FOD program within the Wing among all agencies with flight line operations while increasing awareness and decreasing potential damage. The program also reinforces basic FOD prevention practices driven home during technical training and eliminates the risk of unintentional FOD that could occur with a Golden Bolt program.

6. Jet Engine Blade Blending

6.1. Blade Blending Documentation Procedures: Blade blending procedures for installed engines will be as follows:

6.2. Notify the Wing FOD Monitor prior to blade blending anytime FOD is identified, other than for minor sand nicks or scratches. Ensure evaluated or repaired FOD is documented in the AFTO Form 95, **Significant Historical Data** (automated or manual), and Comprehensive Engine Management System (CEMS), IAW TO 00-20-1.

6.3. Notify Engine Management Section with the following information for input into engine historical records; engine serial number, stage number, number of blades blended, depth of damage before and after blend, area of damage and employee number of maintenance personnel. See [Attachment 4](#) for sample blade blending worksheet.

6.4. Blade blending procedures for uninstalled engines/modules:

6.5. Notify Wing FOD Monitor prior to blade blending anytime FOD is identified, other than for minor sand nicks or scratches. Ensure evaluated or repaired FOD is documented in the AFTO Form 95 (automated or manual) and CEMS IAW TO 00-20-1.

- 6.6. Fill out Blade Blending/FOD Damage worksheet or applicable form; file in engine/module work package.
- 6.7. Engine Management Section document following information for input into engine historical records; engine serial number, stage number, number of blades blended, depth of damage before and after blend, area of damage and employee number of maintenance personnel.

SAMUEL D. COX, Colonel, USAF
Commander, 436th Airlift Wing

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

AFI 21-101, *Chapter 18, Special Programs, Aerospace Equipment Maintenance Management*

AFI 21-101, AMCSUP 1, *Aerospace Equipment Maintenance Management*

MXG OI 21-2, *Tool Control Program*

TO 00-20-1, *Aerospace Equipment Maintenance General Policy and Procedures*

Abbreviations and Acronyms

AMU—Aircraft Maintenance Unit

AMXS—Aircraft Maintenance Squadron

APS—Aerial Port Squadron

BLDG—Building

CEMS—Comprehensive Engine Management System

CES—Civil Engineer Squadron

CTK—Composite Tool Kit

CV—Vice Commander

DAFBI—Dover Air Force Base Instruction

FOD—Foreign Object Damage

LRS—Logistics Readiness Squadron

MIL—Master Inventory List

MOC—Maintenance Operations Center

MOS—Maintenance Operations Squadron

MQTP—Maintenance Qualification Training Program

MXG—Maintenance Group

MXS—Maintenance Squadron

MXQA—Maintenance Group Quality Assurance

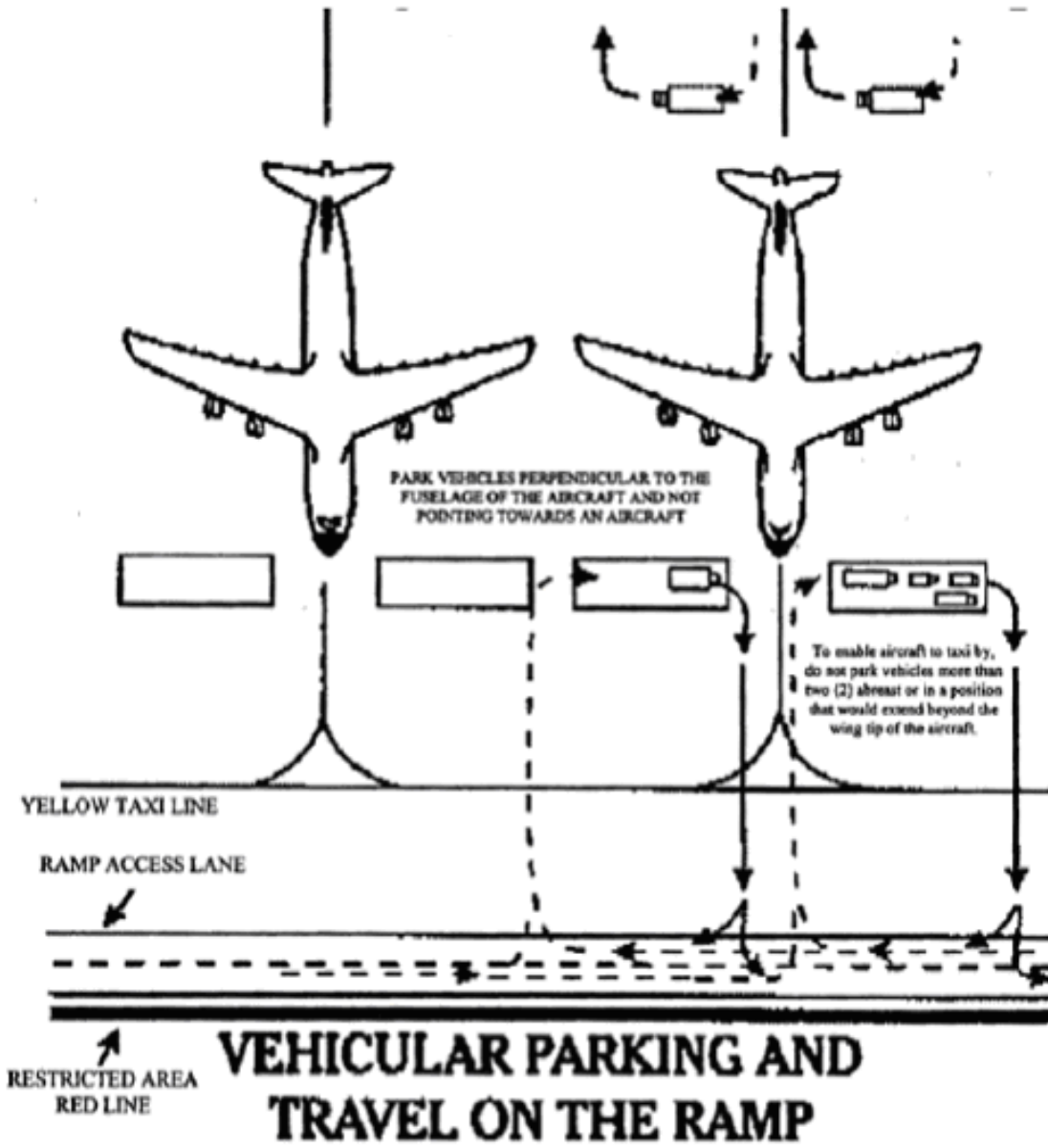
POL—Petroleum - Oil - and Lubricants

WG—Wing

WWID—World Wide Identifier

Attachment 2

RAMP SMOKING AREA



Attachment 3

FOD BOSS AREA OF RESPONSIBILITY



Attachment 4

BLADE BLENDING WORKSHEET

A4.1. Notify Quality Assurance FOD manager if fan blade damage is not repairable or out of limits according to T.O. 1C-5a-2-4.

A4.2. The following information will be forwarded to Quality Assurance and Engine Management so the AFTO Form 95 can be updated.

Aircraft serial number: _____

Job control number: _____

Engine serial number: _____

Stage number/location: _____

Number of blades blended: _____

Depth before and after blend:

Before: _____

After: _____

Area of blend: _____

5-level employee # _____

7-level employee # _____