

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

**ELLSWORTH AIR FORCE BASE
INSTRUCTION 21-507**



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Maintenance

**FOREIGN OBJECT DAMAGE (FOD)
PREVENTION PROGRAM**

COMPLIANCE WITH THIS PUBLICATION IS MANDATORY

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This instruction implements AFD 21-1, *Air and Space Maintenance* and AFI 21-101, *Aerospace Equipment Maintenance Management*. It establishes Foreign Object Damage (FOD) prevention program as required in AFI 21-101 Paragraph 14.19 in addition to any applicable MAJCOM instructions. Maintain and dispose of all records created as a result of prescribed processes in accordance with *Air Force Records Disposition Schedule*. Ensure that all records created as a result of processes prescribed in this publication are maintained in accordance with Air Force Manual 33-363, *Management of Records*, and disposed of in accordance with Air Force Records Information Management System (AFRIMS) Records Disposition Schedule (RDS) located at <http://www.my.af.mil/afirms/afirms/afirms/rims.cfm>. Send comments and suggested changes to this supplement through channels, using AF Form 847, *Recommendation for Change of Publication*, to 28 BW/FOD, 28 MXS/QA, 1910 Bergstrom, Suite 105.

1. Concept.

1.1. This instruction establishes the 28th Bomb Wing Vice Commander (28 BW/CV) Foreign Object Damage (FOD) prevention program and provides unit guidance. Effective FOD prevention program requires compliance with this instruction and adherence to AFI 21 - 101 Paragraph 14.19, CAF 21-101.

2. Requirements.

2.1. The 28 BW/CV will:

2.1.1. Appoint the 28th Bomb Wing Foreign Object Damage (28 BW/FOD) Program Manager and Alternate (must be in the rank of Technical Sergeant or above).

2.1.2. Chair Wing FOD prevention meetings.

2.1.3. Promote aviation safety through FOD awareness.

2.2. The 28 BW/FOD Manager will.

2.2.1. Monitor the 28 BW/FOD program for validity by performing daily FOD checks, documenting high interest areas, performing FOD sweeps with the FOD magnet, maintaining a database with monthly FOD trends and analysis.

2.2.2. The 28 BW/FOD manager will formally train all unit FOD monitors and alternates. All aspects of FOD education, prevention and protection will be presented. Unit FOD managers are the linchpin of a successful Wing program.

2.2.3. The 28 BW/FOD manager will conduct FOD briefings for all newly assigned maintenance personnel to include: impact of FOD to B-1B aircraft, sound maintenance procedures, personal responsibility, accountability and key areas where individuals can make a difference with respect to mishap prevention.

2.2.4. Hold quarterly meetings chaired by the 28 BW/CV discussing current prevention methods, high interest areas, monthly and quarterly statistics and pitfalls to the program.

2.2.5. Perform Failure Analysis Service Test (FAST) on all confirmed damaged engines and track results for trends over time.

2.2.6. Conduct and document unit FOD prevention monitor program spot inspections to ensure compliance with this instruction.

2.2.7. Conduct and document weekly spot inspections of Consolidated Tool Kits (CTKs) to ensure compliance with FOD preventative measures.

2.2.8. Maintain a database which documents the use of installation FOD Boss, magnets and unit level sweepers.

2.2.9. Conduct routine inspections and follow-ups of unit FOD walks to ensure compliance with the prevention program.

2.2.10. Plan and facilitate Wing-Wide FOD walks a minimum of twice annually; additionally at the discretion of the 28 BW/CV to include: runways, taxiways, parking locations, airfield infield, and runway over-runs.

2.2.11. Specify and document responsibility for FOD containers located at all Entry Control Points (ECPs). The FOD prevention manager will also provide a central drop off location for FOD accessible during shift work hours.

2.2.12. Conduct daily assessments of FOD containers located at ECPs.

2.2.13. Perform daily FOD check point assessments and document compliance and noncompliance.

2.2.14. Conduct and document annual assessments on unit run prevention programs to validate effectiveness. The 28 BW/FOD manager will use a formal checklist to conduct the assessment and publish a report detailing findings, recommendations and best practices. The report should be routed to the unit commander no later than one week after assessment.

2.2.15. Report an annual FOD assessment to the 28 BW/CV that details high interest areas, trends, local hazards specific to the B-1B and encompasses findings from unit inspections.

2.2.16. Conduct spot inspection assessments of localized bench stock, work order residue and unrestricted supply points. These inspections should focus on the level of consumption to complete specific maintenance tasks. During the inspection the FOD manager will validate the documentation of hardware removed to accomplish maintenance tasks.

2.2.17. Publish FOD flashes and literature pertinent to safe FOD free flying operations.

3. Maintenance and flying units will.

3.1. Appoint in writing, a primary and alternate FOD monitor and forward a copy to the 28 BW/FOD Program Manager.

4. The unit assigned FOD prevention monitor will.

4.1. Maintain a FOD bulletin board in each work center. One centrally located board may cover all shops located within a single building. At a minimum, the board will contain the following:

4.1.1. FOD prevention point of contact visual aids for Wing and Unit FOD POCs.

4.1.2. Incentive program visual aide.

4.1.3. All current FOD watches or alerts.

4.2. Maintain a FOD continuity binder. At a minimum the binder will contain the following and assembled as follows:

4.2.1. Tab A, copy of squadron FOD monitor appointment letter.

4.2.2. Tab B, ACC directory 90-2409, *Compliance and Standardization Requirements List (C&SRL)*, Logistics (A4/A4M), FOD Prevention.

4.2.3. Tab C, appropriate FOD self-inspection checklist.

4.2.4. Tab D, completed quarterly self inspection checklist.

4.2.5. Tab E, documentation of weekly unit/flight FOD walks, FOD boss and magnet (if applicable) spot checks, FOD briefings and FOD walk policy letter.

4.2.6. Tab F, 28 BW/FOD committee minutes (for one year).

4.2.7. Tab G, copy of current FOD flashes (minimum one year).

4.3. Perform interim duties for the 28 BW/FOD program during periods of primary FOD Program Manager's and alternate's absence.

4.4. Present a comprehensive FOD briefing annually to their respective units during unit commander' calls. This briefing will include: The current Ellsworth Air Force Base FOD trends, sound maintenance practices, personal reliability, accountability, FOD incentive programs and key areas where unit individuals can help with FOD mishap prevention. Unit commanders should also caveat and stress FOD awareness.

4.5. To help promote FOD awareness within the ranks of E-1 through E-4, unit FOD prevention monitors will advise their unit supervision to encourage a minimum of one enlisted (E-1 thru E-4) to attend the 28 BW/FOD meeting. The meeting will also be used to recognize personnel making significant contributions to FOD prevention.

4.6. Flyer's newcomer briefing will be conducted with the Squadron Assigned Flight Safety Officer (SAFSO) and include a segment on FOD prevention, individual FOD responsibilities and key areas where operators can help to eliminate the risk of FOD. Unit FOD prevention monitors will provide pertinent information or attend the briefing as deemed necessary by the SAFSO.

5. All 28 BW Personnel Will.

5.1. Pay close attention to areas under and immediately in front of aircraft during FOD walks. FOD walk follow up assessments may be conducted by 28th Maintenance Group Quality Assurance (28 MXG/QA), 28 BW/FOD Program Manager and 28th Bomb Wing Flight Safety (28 BW/SEF). FOD walks will be annotated by the unit FOD manager on a weekly basis. Each unit will conduct scheduled FOD Boss and Tow Magnet sweeps of their respective ramp areas. As a minimum FOD sweeps will be conducted once a day. FOD Boss and Tow Magnet will be inspected and made FOD free prior to the beginning of any daily sweep.

5.2. Monitor work areas to ensure a FOD free area. Secure FOD container to vehicle in a manner that does not modify or damage rental or government leased vehicles and prevents the container from tipping over while the vehicle is in motion. Vehicle FOD containers may be locally manufactured and secured using bungee cord or similar material. Containers will not be obscured from view. Add "Empty FOD container daily" to an "Other" block on the AF IMT 1800 or 1807.

5.3. Areas requiring a sweeper will be called into Maintenance Operations Center (MOC), who will in-turn notify Airfield Management Operations (AM Ops).

5.4. Maintenance units will clean all grounding points within their respective area on a weekly basis and annotate in the unit FOD manager's weekly checks. They will ensure the grounding points are kept free of sand and rock build-up that could hide potential FOD sources. Inspection and cleaning of grounding points will be accomplished during the daily FOD walk.

5.5. All maintenance personnel working in aircraft docks will perform FOD walks in their respective areas a minimum of once per shift. These dock areas are subject to spot inspections by quality assurance, 28 BW/FOD Program Manager and 28 BW/SEF.

5.6. All loose hardware will be contained in cloth screw bags and secured to the removed item to prevent them from becoming FOD hazards. In back-shop environments, small parts containers may be used in lieu of cloth screw bags during active, ongoing maintenance where the use of bags is impractical.

5.7. Engine, aircraft, seat, and pitot tube covers will be removed no earlier than 2 hours prior to crew show, take high wind conditions into consideration for more stringent need.

5.8. Vehicle operators will perform a visual FOD inspection on all equipment and tires, to include golf carts, four wheelers and vehicles with FOD proof tread prior to entering airfield areas or after departing an unpaved surface. The tire rollover technique will be used. This method involves rolling the vehicle forward, not more than 2 feet, after the initial FOD check has been completed; allowing for inspection of tire underside. If the driver vacates the seat, the vehicle must be placed in park/neutral if manual and emergency brake set. A vehicle walk around will be accomplished, ensuring vehicle is free of foreign objects (i.e., rocks, water bottles, trash, etc.) to include wheel wells. All loose items or material that could fall from the vehicle will be secured.

5.9. All vehicles operating on the airfield must have a locally manufactured FOD picker to remove FOD from vehicle tires. FOD pickers will be etched with the vehicle's ID number, attached to vehicle key ring, and annotate on the vehicle's AF Form 1800, *Operator's Inspection Guide and Trouble Report* and AF Form 1807, *Operator's Inspection Guide and Trouble Report (Fuel Servicing Vehicles)*.

5.10. All vehicles operating on the flight line during hours of darkness must have a serviceable flashlight to perform roll over FOD check. If assigned to vehicle, etch the flashlight with the vehicle's ID number and annotate on the vehicle's AF Form 1800/1807.

5.11. With the exception of removable (e.g., slide on) pocket clips on tools, do not disassemble or damage tools for the purpose of removing clips, rubber switch guards, extra bulbs, etc. in accordance with AFI 21-101 para. 10.3.9.

5.12. The 28 BW/FOD Manager, in coordination with Airfield Management (28 OG/OSAA) and 28 BW/SEF may suspend vehicle operator's flight line driving privileges for failing to perform FOD checks. Violators are subject to suspension of flight line driving privileges for a minimum of 15 days. Return of privileges will require written proof of retraining and a written statement from the individual along with the corrective course of action from the unit commander provided to the 28 BW/CV.

5.13. All wing agencies dispatching by vehicle or other means to aircraft parking/runway/taxi areas and aircraft maintenance areas will ensure all tools, supplies, packing materials, etc. are accounted for prior to entering the controlled area and after reason for dispatching has been completed. If any items are missing, responsible person will notify the MOC and ensure the lost item checklist is initiated (ref AFI 21-1-1 para 3.2.2.).

6. Prior to any aircraft engine operation, personnel will ensure the following.

6.1. Tools, equipment and hardware have been accounted for and secured.

6.2. Engine run supervisor will ensure a FOD check to the front, sides and aft of the intakes is conducted.

6.3. Areas where unpaved portions are directly behind the aircraft and areas where debris may be blown onto active taxiways/parking ramps will be inspected immediately after engine shutdown for FOD.

7. Incident and mishap investigation.

7.1. Initial emergency response vehicles responding to an In-Flight Emergency/Ground Emergency will perform a vehicle FOD inspection as time permits. FOD checks will be accomplished at flight line ECP or standard FOD checkpoints. If a FOD check was not accomplished prior to entering the flight line it will be accomplished at the predetermined staging area. Once staged and time permitting, all vehicles will do a tire rollover check. If time does not permit (i.e., aircraft has already landed) a FOD check will then be accomplished after In Flight Emergency (IFE) terminates and before returning to station. The on-scene commander, AM Ops, 28 BW/SEF, or 28 BW/FOD Program Manager will ensure the airfield is inspected for FOD and sweepers called if necessary. If response vehicles did not perform a FOD inspection, prior to entering taxiway(s), they will inform Ellsworth tower of known or suspected FOD. Tower will ensure aircraft do not taxi over the affected areas.

7.2. The 28 BW/FOD Program Manager will be notified of all Dropped Objects (DOP), FOD, Lost Tools and suspected/confirmed engine foreign object damage. The 28 BW/FOD manager will track, report and investigate all lost tools and dropped objects to completion and provide synopsis' of each event to the 28 BW/CV.

7.3. The 28 BW/FOD Program Panager will provide monthly DOP updates to 28 BW/SEF.

7.4. Upon completion and receipt of FAST results the 28 BW/FOD Program Manager will contact the 28 BW/SEF office and provide a copy of the FAST results for mishap investigation purposes.

8. Incentives and awards.

8.1. FOD prevention awareness awards and incentive programs are established by the 28 BW. All FOD Fighter of the Month and FOD poster contest nominations must reach the 28 BW/FOD Program Manager by the 25th of the month in order to be considered. These awards are subject to change based upon availability and funding requirements.

8.2. FOD Fighter of the Month Award. This award recognizes anyone contributing significant value to the FOD prevention program by increasing FOD awareness to personnel or improving the FOD prevention program. Any person, from any level of supervision, may nominate an individual for the FOD Fighter Award. Submit written nominations to the 28 BW/FOD Program Manager. State what was done, who did it (name, rank, duty title, unit and phone number), when it was done, and how it prevented damage to assets. The 28 BW/FOD Program Manager selects the winner at the end of each month, with final approval by the 28 BW/CV. Winner receives a certificate of recognition and an award of the wing's choice. Nominee packages for the FOD Fighter award are due to FOD manager NLT the 25th day of the month.

8.3. FOD Poster Contest. Submit posters to the 28 BW/FOD Program Manager. Posters must be on standard 8 ½ " X 11" paper (or electronic equivalent) and include a slogan with the acronym "FOD". On the back of the poster or in email, print creator's name, rank, squadron, flight and duty phone. The 28 BW/FOD Program Manager and Quality Assurance selects the winner at the end of each month; with final approval by the 28 BW/CV. Winner receives a certificate of recognition and an award of wing's choice. FOD posters will be submitted no later than the 25th day of the month no exceptions.

8.4. Golden Bolt Award. Individual is recognized for finding the "Golden Bolt" placed by the 28 BW/FOD Program Manager. The monitor (or designated representative) places the "Golden Bolt" somewhere on the ramp or in a maintenance back shop. If it is not found within a reasonable time period, it is moved to a different location. Winner receives a certificate of recognition and an award of wing's choice.

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Commander, 28th Bomb Wing

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

AFPD 21-1, *Air and Space Maintenance*, 25 February 2003

AFI 21-101, *Aerospace Equipment Maintenance Management*, 26 July 2010, Incorporating Change 1, 16 Aug 2011

AFMAN 33-363, *Management of Records*, 1 March 2008

Adopted Forms

AF Form 847, *Recommendation for Change of Publication*

AF Form 1800, *Operator's Inspection Guide and Trouble Report*

AF Form 1807, *Operator's Inspection Guide and Trouble Report (Fuel Servicing Vehicle)*

Abbreviations and Acronyms

28 BW—28th Bomb Wing

28 BW/CV—28th Bomb Wing Vice Commander

28 BW/SEF—28th Bomb Wing Flight Safety

28 MXG/QA—28th Maintenance Group Quality Assurance

AM Ops—Airfield Management Operations

CTKs—Consolidated Tool Kits

DOP—Dropped Objects

ECP—Entry Control Point

FAST—Failure Analysis Service Test

FOD—Foreign Object Damage

MAJCOM—Major Command

MOC—Maintenance Operations Center

IFE—In Flight Emergency

SAFSO—Squadron Assigned Flight Safety