

**BY ORDER OF THE COMMANDER
354TH FIGHTER WING (PACAF)**

**354TH FIGHTER WING INSTRUCTION
21-135**



12 NOVEMBER 2020

Maintenance

**PREVENTING
FOREIGN OBJECT DAMAGE (FOD)**

COMPLIANCE WITH THIS PUBLICATION IS MANDATORY

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This instruction implements AFPD 21-1, Managing Aerospace Equipment Maintenance, and establishes wing FOD prevention committee participants. It identifies responsibilities not already identified in AFI 21-101, Aircraft Maintenance Organization and Procedures, specific to the effectiveness of the 354 FW FOD prevention program. It is used in conjunction with AFI 21-101, Maintenance Management of Aircraft and AFI 21-101 354FW_SUP, Aerospace Equipment Maintenance Management. It is applicable to all 354th Fighter Wing assigned and tenant units to the extent of their responsibilities as addressed. This publication does apply to the Air National Guard or US Air Force Reserve. 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 regarding this publication to the office of primary responsibility (OPR) using AF Form 847, Recommendation for Change of Publication route AF Forms 847 through the base publications and forms manager.

SUMMARY OF CHANGES

This revision reflects administrative changes, clarifies guidance and procedures dealing with FOD prevention program.

1. General. The high cost of damage to equipment and injury to USAF personnel dictates that all commanders and supervisors strictly comply with FOD prevention directives. Foreign Object (FO) removal is the first step in FOD prevention. Annual briefings will be documented by the responsible organization.

2. Responsibilities. Table 1 lists those individuals appointed as members of the wing FOD prevention committee. Personnel occupying these positions or their alternates will attend all meetings.

Table 1. FOD Prevention Committee Members.

354th Operations Group Commander	354th Fighter Wing Safety Office, Flight Safety Officer
18th Aggressor Squadron Commander	354th Maintenance Group Commander
353rd Combat Training Squadron Commander	354th Aircraft Maintenance Squadron Commander
354th Operations Support Squadron Commander	354th Maintenance Squadron Commander
354th Operations Support Squadron Airfield Manager	354th Maintenance Group Quality Assurance Chief
354th Mission Support Group Commander	354th Operations Group Stan/Eval Chief
354th Logistics Readiness Squadron Commander	354th Civil Engineer Squadron Commander
354th Security Forces Squadron Commander	168th Air Refueling Wing Quality Assurance Chief
168th Air Refueling Wing Vice Commander	168th Maintenance Group Commander
168th Air Refueling Wing FOD Monitor	168th Deputy Airfield Manager
355th Squadron Commander	356th Squadron Commander

3. General FOD Prevention Practices:

3.1. Flightline Vehicle FOD Prevention:

3.1.1. Airfield Management will ensure the airfield drivers' training program stresses the importance of FOD prevention and control applicable to vehicle operations on the flightline.

3.1.2. Vehicles will only access the aircraft parking areas, taxiways and runway by entry control points approved by Airfield Management, Security Forces, and the end users. 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, recheck all tires for debris before re-entering. Debris will be deposited in vehicle FOD cans or thrown clear of the pavement area. Do not leave removed debris on access road. Security Forces and Airfield Management will assist in monitoring for compliance of FOD tire checks. FOD checks will be accomplished by inspecting and removing FOD from all tires, then rolling forward to expose the area of tires that were on the bottom. Then re-inspect the tires and remove debris prior to entering the airfield.

3.1.3. Any lost object/tool or suspected lost object/tool on the airfield will be reported to Maintenance Operations Center (MOC). MOC will notify the other offices via check list if a lost object/tool is reported. If lost or misplaced, these items will be reported in accordance with AFI 21-101 PACAF_Sup1 and 354FW_Sup1 lost tool/object procedures and annotated on an ACC Form 145.

3.1.4. 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.

3.1.5. FOD Magnets will be optional but if they are in use, magnets will hang with a 3 to 5-inch clearance from pavement surface. Vehicles utilizing magnets will add "remove debris from magnet daily" to an available "other" block on AF Form 1800/1807, Operator's Inspection Guide and Trouble Report.

3.1.6. FOD picking tools and a serviceable flashlight are mandatory for all vehicles that operate on the flightline. In addition, all FOD picking tools and flashlights will be etched with the vehicle ID number. FOD picking tools and flashlights will be annotated on the vehicle's AF Form 1800/1807. Security Forces vehicles will be exempt from having to maintain a flashlight in their vehicles due to their requirement to have one on their person during daily execution of their duties.

3.1.7. All items permanently assigned to a vehicle (seasonal or not) will be marked with the vehicle ID number and annotated on the vehicle's AF Form 1800/1807 to ensure accountability. Equipment originally provided with a vehicle is exempt from this requirement, except the ignition key or key FOB which will be marked with the vehicle ID or have a streamer/ID tag attached with the vehicle ID. Vehicle rope chocks are exempt from the marking requirement; however strict control of the rope chocks must be adhered to. When not in use, chocks will be stored inside the vehicle or in the truck bed/tool box. If lost or misplaced, these items will be reported in accordance with lost tool/items procedures and annotated on an ACC Form 145.

3.1.8. 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 1800/1807 if not permanently affixed to the vehicle. "Empty FOD container daily" will be added to an available "Other" block on the AF Form 1800/1807.

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

3.1.10. Due to composition of Eielson AFB taxiways, studded tires will not be used. Tire chains may only be used on airfield pavements after obtaining, coordinating, and approval from Airfield Manager, Wing Safety, and Civil Engineer. The requesting agency will conduct a risk assessment with the above agencies when evaluating the need for tire chains to minimize pavement damage and FOD.

3.1.11. Metal valve stem caps are not authorized on any flightline vehicle or support equipment. Metal valve caps will be disposed of and replaced with plastic caps.

3.2. Individual responsibilities:

3.2.1. All personnel operating on the airfield or in a maintenance facility will ensure work area is FOD free and clean prior to leaving the job site for any reason.

3.2.2. Maintenance personnel will perform inspections for FOD prior to closing/installing any panel or completion to any maintenance task.

3.2.3. Hats will not be worn on the flightline.

3.2.3.1. Cold weather headgear is authorized during winter operations, extreme care will be exercised around operating aircraft engines to prevent ingestion.

4. Specific FOD Prevention Practices:

4.1. Air Intake Inspection:

4.1.1. Bird strike damage to engines is not considered FOD, but must be investigated and documented to preclude the wing from being charged with a FOD incident.

4.1.2. If the aircraft engine(s) is/are being operated by a pilot and the aircraft engine(s) is/are shutdown for maintenance, an intake inspection does not need to be accomplished if the pilot remains in the cockpit. If the aircraft was shut down after taxiing, and the pilot leaves the cockpit, an intake inspection must be accomplished prior to subsequent engine start.

4.1.3. Personnel within the danger area of any operating engine will secure all loose items such as badges, gloves, pens, pencils, and earplugs.

4.2. Cockpit maintenance:

4.2.1. All personnel entering the cockpit for maintenance will empty pockets of pens, pencils, keys, etc. and restricted area badges will be removed. Once maintenance is complete personnel will account for all tools and hardware prior to exiting the cockpit.

4.3. Protective Covers

4.3.1. Covers (engine intake/exhaust, pitot, and ejection seat(s) are to be installed whether aircraft is sheltered or not.

4.4. Panel Removal:

4.4.1. Screw bags or foam templates will be on hand prior to removing any screws/fasteners from the aircraft. Screws will be controlled in a screw bag or the foam template as removed, not after each panel removal is complete. Maintenance personnel will account for all hardware removed from aircraft and support equipment on an AFTO form 350, Repairable Item Processing Tag, and the screw bag.

4.4.2. If a panel is tacked on the aircraft, attaching hardware will be put in a screw bag and attached to the outside of the panel. The screw bag must be labeled with the contents and quantity in the bag.

4.5. FOD Walks:

4.5.1. AMXS units will ensure FOD walks are accomplished within 2 hours prior to take off on each flying day and during the day as needed in their assigned aircraft parking areas, hangaring spaces, and the taxiways adjacent to them. FOD prevention in areas assigned to the 168th Air Refueling Wing will be performed IAW 168 ARW Instruction 21-101.

4.5.1.1. TDY/Transient units will follow local guidance on FOD prevention procedures.

4.5.1.2. During winter conditions; i.e., snow/ice on the ramp, FOD walks will be performed after snow removal is completed to prevent unseen FOD from inadvertently causing aircraft damage.

4.5.2. End of runway (EOR) crews will conduct a FOD walk of the arm and de-arm areas prior to aircraft taxi (F-35 Exempt).

4.5.3. Maintainers will perform a FOD walk under/around aircraft after they perform maintenance or inspections.

4.5.4. Maintenance squadron will be responsible for FOD walks around their maintenance facilities adjacent to aircraft taxiways. Transient Alert will be responsible for the areas occupied by transient aircraft.

4.5.5. The fire chief will ensure ramp access from fire station to main taxiway is inspected daily and remains FOD free.

4.5.6. Airfield Management is responsible for daily inspection of airfield pavement surfaces, daily runway monitoring, and taxiway sweeping schedules ensuring special requests for sweeper operations during normal duty hours.

4.5.7. In addition to FOD walks, the MXG will use FOD bosses to remove FO from airfield taxiways and aircraft parking spots. (See [Attachment 2](#))

5. FOD Prevention Inspections:

5.1. The wing FOD prevention monitor will perform weekly FOD spot checks of aircraft parking areas, adjacent taxiways, hangar spaces, and arm/de-arm areas; the monitor will also conduct spot checks of maintenance facilities. These spot checks will be documented in the QA database as a non-rated inspection.

6. Ice FOD Alert Procedures:

6.1. Refer to Eielson AFBI 15-101.

6.1.1. F-35s: Follow JTD

6.2. The Weather Flight will notify Command Post (CP) and base agencies of an ice FOD alert by Joint Environment Tool Kit (JET). If maintenance personnel suspect ice FOD conditions, they will inform the production superintendent who will confirm and notify the MOC. Ice FOD alerts will be sent as observed weather advisories and updated as required.

6.2.1. Upon notification of an ice FOD alert, only the 354 MXG/MXS/AMXS Commander, squadron maintenance officer or superintendent, AMU OIC/NCOIC or Production Supervisors will approve maintenance ground runs for F-16 aircraft engines. Engine anti-personnel screens will not be used under ice FOD alert or conditions. Instead, a qualified individual will be safely positioned to observe inlet ice buildup. This individual will be in clear view of the run supervisor at all times in order to signal for immediate shutdown should ice form on the inlet lip.

6.3. After an aircraft engine has been shut down for inlet icing, the observer will immediately notify the expediter or production superintendent, who will notify the MOC to announce an ice FOD alert.

6.4. The SOF will coordinate with tower personnel prior to their issuing clearance to taxi during ice FOD alert conditions. Ice FOD alerts will be placed on the Automated Terminal Information System (ATIS) as they occur.

6.5. Squadrons will ensure their pilots are aware of an ice FOD alert prior to flight via locally established procedures.

6.6. Air traffic control operations will incorporate the ice FOD alert into the ATIS.

6.7. Fighter Squadron Commanders will ensure all pilots comply with the engine anti-ice procedures found in the following: 1F-16C-1 (Flight Manual); AFI 11-2F-16 Vol. 3, all applicable sups, and this instruction. If “inlet icing” light illuminates while aircraft is on the ground, a visual inspection must be accomplished prior to taxiing or takeoff. If in-flight or ground icing is encountered, pilots will make an informational entry in the AFTO Forms 781A. If aircraft icing greater than trace is detected after flight, notify production super of the situation and a determination will be made by supervision to taxi the aircraft to parking or to shut down and tow to parking. Consideration will be given as to the most expeditious manner of engine shut down. Any chunking of ice on the aircraft is cause for immediate shut down. For cross-country flights, the pilot will brief transient maintenance on the possibility of inlet ice formation when the ambient temperature is less than 45° Fahrenheit. If any-time inlet icing has occurred, the aircraft will be shutdown and the occurrence will be documented in the aircraft forms.

7. Airfield Sweeping:

7.1. The Civil Engineer Operations Flight is the office of primary responsibility for implementing and following the sweeping plan. Airfield Management is responsible for inspecting and reporting of FOD to the Operations Flight. Airfield Management has the authority to establish flightline sweeping priorities to facilitate aircraft operations or to expedite the cleanup of a serious FOD hazard. The flightline sweepers will follow the general guidelines set in the sweeping plan when priorities are not established by Airfield Management.

7.1.1. Flightline sweepers will operate and respond to Airfield Management sweeping requests 24 hours per day during the summer months. Airfield Management sweeping requests are considered to be a priority. If more than one request is generated, Airfield Management will prioritize the requests. The Operations Flight will notify Airfield Management when flightline sweepers are down for maintenance and when sweeping request can not be met. Sweeper operators should make every effort to cover all surfaces of taxiways and runway, not just yellow taxi lines.

7.1.2. Operations Flight will maintain a sweeping plan to ensure all taxiways, parking aprons and hanger areas are covered each week. Daily spot checks will be done on all pavement surfaces and swept as necessary.

7.1.3. Sweeper operators may exercise discretion and deviate from this plan if they discover a potential FOD hazard elsewhere on the airfield that requires immediate attention. If the FOD hazard is significant, contact Airfield Management so they can temporarily close that area to taxiing aircraft.

7.1.4. Sweeper operators will inspect runway daily for FOD. Sweep runway, runway edges and barrier shoulders upon Airfield Management request. Exercise caution when operating near barrier cables.

7.1.5. Maintain a 25-foot distance from parked aircraft and avoid jet blast. When ramps are full of aircraft, (i.e., RED FLAG-Alaska) Sweepers will sweep the areas outside of this stand-off and will clean areas where aircraft are parked while they are flying.

7.1.6. The use of flightline Sweepers will only be conducted when the ambient air temperatures are above 32 F. Serious FOD hazards that are discovered anytime the temperature is below 32 F will be cleared with snow brooms or removed by end user.

7.1.7. At no time shall flightline sweepers sweep inside buildings, including hangers.

8. Failure Analysis Service Technology (FAST) Tests:

8.1. FAST tests will be utilized to determine the cause of significant engine damage.

8.2. The use of FAST tests will be authorized at the group level, with 354 FW/CV having final authority for the program.

8.3. FAST tests will be funded by the authorizing group.

9. Use of Airfield Sand:

9.1. The Airfield Manager is the approving authority for the use of abrasives (sand) only in emergency condition to improve traction on the airfield surface. Specifications are listed in AFI 32-1002, para 4.3.4., Table 4.1.

10. FOD Prevention Awards:

10.1. Units can nominate individuals who they feel made the most significant contribution to FOD prevention within their unit for the monthly FOD Fighter Award. Nomination will be accomplished by e-mailing the member's name and office symbol along with justification for their nomination to the Wing FOD manager.

10.1.1. One monthly winner will be chosen. The individual will receive a certificate. The monthly award will be forwarded to the recipient's squadron for presentation at commander's call or other suitable venue.

10.1.2. One quarterly winner will be chosen from that quarter's monthly winners. The winner will receive a 1-day pass and will be presented at the wing FOD prevention committee by the Vice Wing Commander or acting chairperson. If the individual cannot attend due to TDY, leave, or shift conflict, the award will be forwarded to the recipient's squadron for presentation at commander's call or other suitable venue.

10.2. Original FOD prevention posters submitted to the wing FOD prevention monitor will be judged monthly.

10.2.1. One monthly winner will be chosen. The individual will receive a certificate. The monthly award will be forwarded to the recipient's squadron for presentation at commander's call or other suitable venue.

10.2.2. One quarterly winner will be chosen from that quarter's monthly winners. The winner will receive a 1-day pass and will be presented at the wing FOD prevention committee by the Vice Wing Commander or acting chairperson. If the individual cannot attend due to TDY, leave, or shift conflict, the award will be forwarded to the recipient's squadron for presentation at commander's call or other suitable venue.

10.2.3. The winning poster for each quarter will be published and posted on FOD bulletin boards.

11. Golden Bolt Program.

11.1. Administered by the wing FOD prevention monitor.

11.1.1. "Golden Bolts" are available for check out by flight chiefs/OICs. Bolts will be checked out for 1-day then returned to the FOD office. The flight chief/OIC can place the bolt within their workcenter, either during FOD walks or at any time during the day.

11.1.2. Flight chiefs/OICs will forward the name of who finds the bolt to the FOD office. Names will be collected and submitted to FW/CV monthly for signatures.

12. Lost items in flight.

12.1. Ensure all pilots and aircrew members account for all equipment and personal items after each flight and ensure any items that become lost during flight are documented in the aircraft AFTO Form 781A/ALIS immediately after landing.

THOMAS B. WOLFE, Colonel, USAF
Vice Commander

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

AFMAN 33-363, *Management of Records*

AFPD 21-1, *Managing Aerospace Equipment Maintenance*

AFI 11-2F-16 Vol 3, *F-16--Operations Procedures*

AFI 21-101_PACAF, *Aircraft and Equipment Maintenance Management, 20 June 2019*

EIELSONAFBI32-1002, *Snow and Ice Control Plan*

1F-16C-1, *Flight Manual -- USAF Series -- F-16CD Blocks 25, 30, and 32 Aircraft*

Adopted Forms

AF Form 847, *Recommendation for Change of Publication*

ACC 145, *Lost Tool/Object Report*

AFTO Form 350, *Repairable Item Processing Tag*

AFTO FORM 781A, *Maintenance Discrepancy and Work Document*

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

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

Abbreviations and Acronyms

AFI—Air Force Instruction

AFMAN—Air Force Manual

ARW—Air Refueling Wing

AMU—Aircraft Maintenance Unit

AFI—Air Force Instruction

AFMAN—Air Force Manual

AFTO—Air Force Technical Order

AFRIMS—Air Force Records Information Management System

ATIS—Automated Terminal Information System

AF—Air Force

AGE—Aerospace Ground Equipment

AFB—Air Force Base

CAF—Combat Air Force

CV—Vice Commander

CP—Command Post

EOR—End of Runway

EPU—Emergency Power Unit

EOR—End of Runway

FO—Foreign Object

FOD—Foreign Object Damage

FW—Fighter Wing

FWI—Fighter Wing Instruction

IAW—In Accordance With

JET—Joint Environment Tool Kit

MOC—Maintenance Operation Center

MXG—Maintenance Group

MSEP—Maintenance Standardization & Evaluation Program

OIC—Officer In Charge

OPR—Office of Primary Responsibility

PACAF—Pacific Air Forces

QA—Quality Assurance

RDS—Records Disposition Schedule

SOF—Supervisor of flight

Attachment 2

SCHEDULE AND AREAS OF RESPONSIBILITY FOR FOD BOSS OR MAGNETS

Figure A2.1. Schedule and Areas of Responsibility for FOD Boss or magnets.

During summer operations the FOD Boss will be used DAILY.

18AMU – North Bays and Aircraft Parking areas

355AMU/356AMU – F-35 Bays and Aircraft Parking areas

NOTE: The 168ARW will FOD boss IAW 168th Air Refueling Wing Instruction 21-101.