

**BY ORDER OF THE COMMANDER
919TH SPECIAL OPERATIONS WING**

**919TH SPECIAL OPERATIONS WING
INSTRUCTION 21-101**



13 JUNE 2014

Maintenance

**DROPPED OBJECT PREVENTION (DOP)
AND FOREIGN OBJECT DAMAGE (FOD)
PREVENTION PROGRAM**

COMPLIANCE WITH THIS PUBLICATION IS MANDATORY

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This instruction implements Air Force Policy Directive (AFPD) 21-1, *Managing Aerospace Equipment Maintenance*. This instruction extends the guidance of Air Force Special Operations Command (AFSOC) Supplement 21-101, *Aerospace Equipment Maintenance Management*. It establishes responsibilities and outlines procedures for the Foreign Object Damage (FOD) and the Dropped Object Prevention (DOP) program. It implements procedures in AFI 21-101, *Maintenance Management of Aircraft*; AFI 91-204, *Safety Investigations and Reports*; and AFI 91-203, *Air Force Consolidated Occupational Safety Instruction*, Chapter 24. This instruction applies to all operational, maintenance, and support activities functionally assigned or TDY to Eglin Field 3 or better known as "Duke Field". Refer recommended changes and questions about this publication to the Office of Primary Responsibility (OPR) using the Air Force Form (AF Form) 847, *Recommendation for Change of Publication*; route AF Forms 847 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 Air Force Manual (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/>. The use of the name or mark of any specific manufacturer, commercial product, commodity, or service in this publication does not imply endorsement by the Air Force.

SUMMARY OF CHANGES

This document has been substantially revised and must be completely reviewed. Major changes include paragraph insertion and renumbering of all paragraphs. This instruction includes the Foreign Object Damage (FOD) program

1. Dropped Object Prevention (DOP) and Foreign Object Damage (FOD) Program Objective.

- 1.1. To raise DOP/FOD awareness and enhance prevention methods for all personnel.
- 1.2. To standardize reporting procedures for all DOP/FOD related incidents to assigned aircraft.
- 1.3. To obtain positive results through an aggressive and functional DOP/FOD control program. Results achieved by all military, civilian and contract personnel supporting operations taking an active role in FOD prevention.

2. Program Responsibilities.

- 2.1. The Wing Vice Commander (CV) is the DOP/FOD Program Manager.
- 2.2. The CV designates in writing a DOP/FOD monitor from the Special Operations Maintenance Group (SOMXG) Quality Assurance (QA) office. The minimum responsibilities are as outlined in AFI 21-101, Chapter 14.

3. Training.

- 3.1. All aircrew and maintenance personnel will be required to initially review this instruction upon entering the unit and annually thereafter.
- 3.2. Maintenance personnel are required to view the DOP/FOD training videos upon entering the unit.
- 3.3. The FOD video must be reviewed annually. All training will be documented in the applicable tracking system.

4. DOP Program.

- 4.1. Responsibilities: The SOMXG QA office is designated as the wing DOP monitor and primary investigating office. Every maintainer and aircrew member will report dropped objects to the production superintendent and Maintenance Operation Control (MOC) when any object is discovered missing before, during or after each flight.
- 4.2. Prevention: Effective prevention begins with supervisors. Ensure all personnel are properly trained in their Air Force Specialty Code (AFSC) of responsibility. Additionally, all maintenance personnel must be knowledgeable of Air Force, Major Command (MAJCOM), and unit requirements to prevent dropped objects from occurring.
- 4.3. Personnel must ensure doors, cowlings, and panels fit properly. Place special emphasis on prime contributors to dropped objects such as; the condition and serviceability of all hinge assemblies, fasteners, nut plates, and latching devices.
- 4.4. Prevention of dropped objects from aircraft is a combined responsibility between operators and maintainers.

4.4.1. Maintainers will:

- 4.4.1.1. Place special emphases on ensuring panels are secure.
- 4.4.1.2. Examine thumb latches for condition and check for wear.
- 4.4.1.3. Replace worn or missing fasteners.
- 4.4.1.4. Repair skin panels where fasteners are wearing through.

4.4.2. Operators will:

- 4.4.2.1. Ensure equipment and loose items are secure before opening any door in flight.
- 4.4.2.2. Ensure panels opened during preflight are securely closed.
- 4.4.2.3. Ensure established airspeed limitations are not exceeded.

5. Investigation: The MXG Quality Assurance office, with the assistance of Flight Safety will, as soon as possible, thoroughly investigate each dropped object after loss is discovered/reported.

6. Reporting: Aircrews and maintenance personnel discovering a dropped object will make an appropriate entry in the aircraft forms.

6.1. Aircrews must notify Command Post and Operations Supervisor (OPS SUP), debrief production superintendent immediately after landing and submit an AFSOC Form 97, *Aircraft Incident Worksheet*.

6.2. Personnel discovering a dropped object during post flight inspections will notify the production superintendent or expeditor and Maintenance Operations Center (MOC) immediately.

6.3. The MOC notifies Quality Assurance and Command Post of the dropped object for investigation and reporting.

6.4. Quality Assurance investigates all dropped objects and prepares a report with emphasis on preventative measures to avoid repeated incidents. MXG QA will initiate a one-time inspection to inspect other aircraft, if necessary.

7. Reporting Off Station:

7.1. Dropped objects discovered off station will be reported to MOC and the 919 Command Post within 24 hours of the loss.

7.2. The senior maintenance representative or aircraft commander will investigate the dropped object to determine cause and prevention measurements.

7.3. The senior maintenance representative or aircraft commander will initiate and complete an AFSOC Form 97, *Aircraft Incident Worksheet*. Forward a copy of this report to the Quality Assurance office within 2 days of reported loss.

8. Foreign Object Damage (FOD) Program.

8.1. The Wing FOD Monitor or designated representative will attend quarterly FOD prevention committee meetings held at the host base.

8.1.1. The CV designates in writing the FOD committee.

8.2. FOD Prevention Program.

8.2.1. Squadron Responsibilities

8.2.1.1. Special Operations (SO) Aircraft Maintenance (AMXS) and SO Maintenance Squadron (MXS) will designate in writing a full time Noncommissioned Officer (NCO), and alternate FOD prevention monitor(s). A copy of the appointment letter will be sent to the wing FOD monitor and updated when primary name changes are made. The minimum responsibilities of the assigned squadron monitors are as follows:

8.2.1.2. Ensure FOD containers are available and marked/stenciled with the word "FOD".

8.2.1.3. Control scheduled organized FOD walks:

8.2.1.3.1. Participants from each work center will assemble at the south end of the flight line and proceed in an organized formation to the North end of the flight line through assigned aircraft.

8.2.1.3.2. Special emphasis will be placed on deteriorating parking ramp and taxi ways.

8.2.1.3.3. Recovered items will be placed in a single bag along with the participant sign-up sheet and brought to the wing FOD monitor in the Quality Assurance office for review, action, and filing.

8.2.1.4. Disseminate FOD awareness and information throughout areas of responsibility.

8.2.1.5. Notify the wing FOD monitor of any FOD issues or concerns.

8.2.2. Unit Responsibilities.

8.2.2.1. All vehicles must stop at the approved perimeter road entry control points adjacent to the flight line to inspect vehicle and any towed equipment tires for foreign objects. This inspection will consist of a visual look at the complete circumference of the tires. The only exception will be vehicles responding to an emergency and lightning within 5 miles.

8.2.2.1.1. If a tire debris removal tool is used it must be attached to the key ring and marked IAW AFI 21-101.

8.2.2.1.2. Paved access roads will be used for all vehicles transitioning to and from the flight line and perimeter road. If vehicle has been driven off the paved surface, a FOD check of tires must be accomplished prior to proceeding onto the flight line or perimeter road.

8.2.2.2. All personnel who enter the flight line (includes maintenance, aircrew, petroleum oil and lubricant (POL), security forces, aerial delivery, contractors, etc.) are responsible for ensuring area cleanliness and removing any foreign objects they encounter. Keeping the flight line foreign-object free is everyone's responsibility.

8.2.2.3. Flight crews will be responsible for keeping their aircraft areas clean, and free of foreign objects between and after their flight.

8.2.2.4. Hangars, shades, back shops, vehicles and support equipment will remain FOD-free. The organization using a hangar or shade will be responsible for ensuring it is FOD-free. The organization performing maintenance in a hangar or shade will accomplish a FOD walk immediately following the removal of the aircraft/equipment.

8.2.2.5. The “CLEAN AS YOU GO” concept will be strictly enforced as maintenance is performed. On the flight line, in hangars, shades and in back shops, it is important to stress that proactive housekeeping procedures are included as a step in every task.

8.2.2.6. When door/panels are removed to facilitate other maintenance, they will be stored on a padded panel rack or in the aircraft when parked on the flight line.

8.2.2.7. During maintenance, reusable items such as nuts, bolts, washers, panel fasteners, and so forth will be placed in a cloth or plastic screw bag identified to end item. The bag will be secured to the panel or major component in such a way as to make it visible, thus preventing it from becoming a FOD potential.

8.2.2.7.1. In the event the items are too large for a standard screw bag, they will be placed in a suitable container that can be sealed and tagged.

8.2.2.7.2. Used hardware not intended for reuse will be properly disposed of or placed inside a FOD container.

8.2.2.7.3. Hardware and expendables will be limited to the amount necessary to accomplish the specific task. Bench stocks will be strictly controlled and monitored in a secure area to prevent personnel from taking excess quantities into work areas.

8.2.2.7.4. Items needing to be kept on the aircraft such as brooms, dust pans, spare bulbs, cleaning supplies, roller hardware, etc. must have a designated location and marked with the aircraft tail number as applicable. These items must be uniform between the airplanes, approved and a list filed with the quality assurance office indicating nomenclature, quantities and location.

8.2.2.8. All Composite Took Kits (CTKs) will be inspected and free of all FOD prior to turn in. ETools will be inspected prior to turn in for any obvious missing items such as hardware, screws or protective covers.

8.2.3. Flight Line Clothing Policy.

8.2.3.1. Airman Battle Uniform (ABU)/Civilian hats are authorized on the flight line at Duke Field with two exceptions: No hats with metal emblems/insignias and no hats within 50 feet of a running aircraft engine.

8.2.3.2. All loose items will be removed when within 25 feet of aircraft with engine(s) operating.

8.2.3.3. Only a net or rubber band style hair fastener with no metal, plastic or leather parts is authorized on the flight line.

8.2.3.4. Line badges will be secured to uniforms using lanyards or armbands that also conform to Dress and Personal Appearance of Air Force Personnel if applicable.

Lanyards used around the neck will be of a breakaway style and must NOT be able to support the weight of the individual.

8.2.4. Aircraft Engine Operation.

8.2.4.1. Prior to engine start, clear area of any obstructions by checking the pavement from the rear of the engine up to 25 feet in front of the engine, including test cell runs.

8.2.4.2. Intake and exhaust inspections will be accomplished and documented as follows:

8.2.4.2.1. Immediately after each engine run, taxi and/or flight, if aircraft has been released to Maintenance by Operations (OPS).

8.2.4.2.2. Immediately at the beginning of the next duty day for aircraft that land after 2130, providing 24 hour coverage is not available.

8.2.4.2.3. When aircraft are away from home station and maintenance personnel are unavailable, Flight Crew will perform and document this inspection.

8.2.5. Use of Protective Covers.

8.2.5.1. Engine air inlet covers will be utilized to the maximum extent as possible and installed when there is no intent to operate engines following guidelines of applicable maintenance manual.

8.2.5.2. Install tailpipe covers in accordance with applicable maintenance manual and when performing maintenance around the tail pipe area.

8.2.5.3. Engine controls will be covered when maintenance is being accomplished on, around, or over to prevent items from falling into the quadrant.

8.2.6. Keep the Flight Line Foreign Object Free.

8.2.6.1. Everyone is responsible for picking up foreign objects around the aircraft or work area after completion of maintenance.

8.2.6.2. Aircraft parking ramp, ramp grounding points, and access roads will be cleaned as frequently as required to remove debris. Thorough cleaning will be accomplished utilizing mobile vacuums and hand policing. Ramp sweepers are scheduled to clean the flight line daily. When sweepers are not operational, the Maintenance Operations Center (MOC) notifies the Wing FOD monitor for determination of increased FOD walks.

8.2.6.3. Production will conduct a daily FOD inspection of aircraft parking area, record findings on FOD inspection form then forward to the wing FOD monitor.

8.2.6.4. Production or FOD monitors can call for an organized FOD walk at any time if required.

8.2.7. Inspections.

8.2.7.1. Maintenance personnel inspect the area in and around their aircraft prior to launch, after launch, and prior to recovery for the presence of foreign objects. Take prompt action to remove any found foreign objects.

8.2.7.2. Each work center conducts a weekly foreign object prevention inspection in their areas of responsibility. This inspection will be documented on a weekly FOD report and emailed to the wing FOD monitor at the end of each month.

8.2.7.3. MXG QA will monitor FOD conditions during all inspections in order to determine the degree of compliance with FOD prevention program. MXG QA will perform random spot inspections of each shop, to verify integrity of the weekly foreign object prevention inspection.

8.2.8. Reporting.

8.2.8.1. Bird Strikes without damage.

8.2.8.1.1. Immediately notify MOC once a bird strike has been identified.

8.2.8.1.2. Production Super/Expediter will forward completed bird strike report to MOC.

8.2.8.1.3. MOC will forward bird strike report to the following offices: QA, Command Post, Air Field Management, and Safety.

8.2.8.2. Procedures for reporting damage.

8.2.8.2.1. Follow the no damage reporting procedures then QA will notify MAJCOM by telephone/e-mail no later than next duty day.

8.2.8.2.2. Shop(s) performing repairs will forward the following information to QA:

8.2.8.2.2.1. Man hours, national stock number, part number, serial number.

8.2.8.2.2.2. Part exchange cost.

8.2.8.2.2.3. Cost of repair materials and hardware.

8.2.8.2.2.4. Any other associated expenses.

8.2.8.2.2.5. QA will complete Mishap Investigation Check Sheet, in Qanttas and report IAW AFI 91-204. A copy will be forwarded via e-mail to 919 SOW/Commander (CC)/Vice Commander (CV)/Command Post (CP)/Safety (SE)/and SOMXG/CC once all data has been received and all totals have been computed.

8.2.8.2.2.6. Bird/wildlife pieces/parts will be retained in a zip lock bag by appropriate maintenance work center and turned over to wing safety.

8.2.8.2.2.7. Safety office representative will perform snarge sampling.

8.2.9. Engine FOD.

8.2.9.1. No maintenance actions will be attempted on engines/propellers with evidence of FOD until authorized by Wing Safety or investigation official.

8.2.9.2. Each case of FOD will be investigated using expertise in maintenance, safety, and other staff agencies as needed to determine the cause. If the aircraft is impounded, proper procedures will be strictly adhered to.

8.2.9.3. All mishaps will be reported IAW AFI 91-204.

8.2.10. Jewelry.

8.2.10.1. Jewelry will be removed prior to start of shift for individuals that work on the flight line and/or in industrial areas to include aircraft hangars and sun shades where aircraft could potentially be parked.

8.2.10.2. Maintenance group personnel and visitors that enter into areas considered industrial will remove jewelry for the duration of their visit. It will be the work centers responsibility to inform visitors of this policy.

8.2.10.3. Jewelry will be removed prior to start of FOD walks.

8.2.11. Incentive Program.

8.2.11.1. The following outlines the FOD award programs. The intent of this program is to increase FOD and lost tool awareness and reward the contributions made by Duke Field personnel toward prevention.

8.2.11.2. Quarterly FOD Prevention Poster. Entries will contain name, unit, and duty phone. Entries are submitted to the wing FOD program monitor in the QA office no later than the last day of the quarter.

8.2.11.3. Golden Bolt Award. The golden bolt will be controlled through the QA CTK program and will remain under constant observation if it is placed or hidden.

8.2.11.4. Quarterly FOD prevention award.

8.2.11.4.1. Management/ supervision must submit nominations for the FOD Prevention Award to the Wing FOD monitor located in the QA office no later than the last day of the quarter.

8.2.11.4.2. As a minimum the following criteria will be used to select award winners:

8.2.11.4.2.1. Maximum participation in FOD walks.

8.2.11.4.2.2. No FOD findings for the quarter.

8.2.11.4.2.3. Identify potential FOD hazard and submit recommended fix.

8.2.11.4.2.4. Design and submit electronic FOD awareness poster.

8.2.11.5. The incentive program applies to all Duke Field personnel, awards will be equivalent throughout the wing.

JAMES W PHILLIPS, Col, USAFR
Commander

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

AFPD 21-1, *Managing Aerospace Equipment Maintenance*, 25 February 2003
AFI 21-101/AFSOC Sup 1, *Aircraft and Equipment Maintenance Management*, 5 OCT 2011
AFMAN, 33-363 *Management of Records*, 01 Mar 2008
AFI 91-202, *The US Air Force Mishap Prevention Program*, 5 Aug 2011
AFI 91-202/919AFSOC Sup 1, *The USAF Mishap Prevention Program*, 9 JULY 2013
AFI 91-203 *Air Force Consolidated Occupational Safety Instruction*, 15 June 2012
AFI 91-204, *Safety Investigations and Reports*, 12 Feb 2014

Adopted Forms

AF Forms 847, *Recommendation for Change of Publication*
AFSOC Form 97, *Aircraft Incident Worksheet*

Abbreviations and Acronyms

ABU—Airman Battle uniform
AF—Air Force
AFI—Air Force Instruction
AFMAN—Air Force Manual
AFPD—Air Force Policy Directive
AFRIMS—Air Force Records Information Management System
AFSC—Air Force Specialty Code
AFTO—Air Force Technical Order
CC—Commander
CP—Command Post
CTK—Composite Tool Kits
CV—Vice Commander
DOP—Dropped Object Prevention
FOD—Foreign Object Damage
IAW—in accordance with
MAJCOM—Major Command
MOC—Maintenance Operation Center
MXG—Maintenance Group

NAF—Numbered Air Force
NCO—Noncommissioned Officer
NDI—Nondestructive Inspection
OPR—Office of Primary Responsibility
OPS—Operations
OPS SUP—(Operations Supervisor)
POL—Petroleum, Oil, lubrication
QA—Quality Assurance
RDS—Records Disposition Schedule
SE—Safety Office
SO—Special Operations
SOAMXS—Special Operations Aircraft Maintenance Squadron
SOMXS—Special Operations Maintenance Squadron
SOSMXG—Special Operations Maintenance Group
SOS—Special Operation Squadron
SOW—Special Operation Wing
TO—Technical Order

Terms

Adopted Form—A form referenced in a publication other than the prescribing directive.

Prescribed Form— A form designed to support the implementation of requirements in an instruction. Use and purpose of the form must be contained in the publication it supports

FOD—Any damage to an aircraft, engine, aircraft system, component, tire, munitions, or SE caused by a foreign object(s) which may or may not degrade the required safety and/or operational characteristics of the aforementioned items.

Jewelry—Items worn that create a potential for catching, snagging, pulling, tearing or possible falling off without notice, such as: finger rings of any sort or material, necklaces, bracelets, earrings, chains, etc.

Snarge—The residue smeared on an airplane after a bird/plane collision.