

**BY ORDER OF THE COMMANDER
502D AIR BASE WING**

**JOINT BASE SAN ANTONIO
INSTRUCTION 21-103**



30 MAY 2025

Maintenance

***FOREIGN OBJECT DAMAGE (FOD),
DROPPED OBJECT PREVENTION
PROGRAM (DOPP), AND TOOLS AND
EQUIPMENT CONTROL PROGRAMS***

COMPLIANCE WITH THIS PUBLICATION IS MANDATORY

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This publication implements Air Force Policy Directives (DAFPD) 21-1, *Maintenance of Military Material*, and guidance contained in Air Force Instruction (DAFI) 21-101, *Aircraft and Equipment Maintenance Management*, and all other applicable Air Force (AF) directives, technical data, and MAJCOM supplements. The purpose of this instruction is to establish roles, responsibilities, policy, and procedures for the Joint Base San Antonio (JBSA) Lackland Foreign Object Damage (FOD) Dropped Object Prevention Program (DOPP), and Tool and Equipment Control Programs applicable to operations conducted on 502d Installation Support Group (ISG) airfield ramps, taxiways, and runways at JBSA Lackland. All personnel (military, civilian, and contractors) working in, on, around, or traveling through areas near aircraft, flightline munitions, Aerospace Ground Equipment (AGE), engines, or components thereof will comply with FOD prevention except when operating in 502 ISG airfield areas outside the distinct boundaries of their respective airfield ramps or otherwise specifically addressed in this instruction. FOD prevention training requirements are outlined in AFI 36-2650, *Maintenance Training*. Ensure all records generated as a result of processes prescribed in this publication adhere to Air Force Instruction (AFI) 33-322, *Records Management and Information Governance Program*, and are disposed in accordance with the Air Force Records Disposition Schedule, which is located in the Air Force Records Information Management System. Refer recommended changes and questions about this publication to the Office of Primary Responsibility (OPR) using the AF Form 847, *Recommendation for Change of Publication*; route AF Forms 847 from the field through the appropriate functional chain of command. This publication may not be supplemented or further implemented or extended.

SUMMARY OF CHANGES

This revision changes the AFI's to DAFI's and updates all other regulations.

1. Responsibilities (All Organizations).

1.1. JBSA Lackland FOD/DOPP Manager. The 502 ISG/CC is delegated as the FOD/DOPP Manager for JBSA Lackland. As such, the 502 ISG/CC ensures effective FOD/DOPP programs are established. The JBSA Lackland FOD/DOPP Manager will:

- 1.1.1. Designate a JBSA Lackland FOD/DOPP Monitor to oversee the JBSA Lackland FOD/DOPP programs.
- 1.1.2. Ensure unit commanders and operations officers actively support JBSA Lackland FOD/DOPP programs.
- 1.1.3. Ensure each FOD mishap is investigated and that actions are taken to determine root causes and initiate actions to prevent recurrence where appropriate.
- 1.1.4. Review all FOD mishap reports to determine if management action is required.
- 1.1.5. Ensure the 502 OSS Airfield Manager and all other agencies consider FOD prevention for construction or other activities on or within proximity of airfield areas.
- 1.1.6. Ensure FOD prevention is inclusive in quality assurance/control (QA/QC) programs and processes.
- 1.1.7. Ensure the 502 OSS Airfield Manager identifies and properly marks FOD check points at all entry points to airfield areas.
- 1.1.8. Ensure tenant units establish their own FOD Prevention Program and participate in the host program and comply with host program requirements.

1.2. JBSA Lackland FOD/DOPP Monitor. The JBSA Lackland FOD/DOPP Monitor is appointed by 502 ISG/CC and must be a TSgt or civilian equivalent. The Monitor must have at least 8 years' experience in the aircraft maintenance field. The JBSA Lackland FOD/DOPP Monitor will:

- 1.2.1. Ensure a visual aid that identifies JBSA Lackland FOD/DOPP Monitor's name, duty phone, work e-mail, and organization location information is in a prominent place within each unit involved in the JBSA Lackland FOD/DOPP program.
- 1.2.2. Inform all JBSA Lackland agencies of FOD hazards.
- 1.2.3. Ensure all FOD monitors perform and document weekly spot checks.

1.2.4. Participate in FOD mishap and DOPP investigations to ensure sound corrective actions are taken.

1.2.5. Monitor and make recommendations to FOD prevention training. Ensure FOD/DOPP awareness and responsibilities are included in applicable newcomer briefings.

1.2.6. Periodically inspect damaged pavement, construction, or other hazards on or in the proximity of aircraft parking areas, taxiways and aprons and report to the Airfield Manager and monitor status to ensure timely repairs.

1.2.7. Obtain training from 502 ABW/SE on mishap reporting procedures and requirements.

1.3. Unit FOD/DOPP Representative. Each organization represented on the FOD Prevention Committee will designate a primary and alternate unit FOD/DOPP representative. Forward appointment memorandums to the JBSA Lackland FOD/DOPP Monitor. As a minimum, include name, rank/grade, organization, office symbol, duty phone, and work e-mail address (if applicable). As a minimum, unit FOD/DOPP representatives will:

1.3.1. Post their name and duty phone number in a prominent location.

1.3.2. Provide and ensure documentation of FOD awareness training for all assigned personnel.

1.3.3. Develop and provide DOPP training to aircraft maintenance personnel involved in on-equipment maintenance relative to unit mission (if applicable).

1.3.4. Attend FOD Prevention Committee meetings.

1.3.5. Report all FOD and DOPP occurrences to the JBSA Lackland FOD/DOPP Monitor.

1.3.6. Participate in investigation and reporting of FOD/DOPP incidents within the representative's area of responsibility.

1.3.7. Report any FOD incident involving aircraft engines, auxiliary power units, or major aircraft systems to applicable organizational safety offices. Provide informational copies to the JBSA Lackland FOD/DOPP Monitor.

1.3.8. Develop procedures to perform and document weekly spot checks of selected areas.

1.3.9. Maintain a continuity book (hard copy or electronic format) of applicable material pertaining to FOD/DOPP responsibilities and any items specified in this instruction.

2. FOD/DOPP Prevention Committee Meeting. The Committee will meet semi-annually in conjunction with the JBSA Combined Airfield Operation Board. If FOD standards are not being met, the 502 OSS representative may recommend a supplemental quarterly meeting chaired by the ISG/CC IAW DAFI 21-101 AETC Sup Par. 11.8.7.

2.1. The committee is composed of representatives from the following organizations:

- 2.1.1. 149th Fighter Wing (149 FW).
- 2.1.2. 433d Airlift Wing (433 AW).
- 2.1.3. Port Authority San Antonio (PASA).
- 2.1.4. 502d Air Base Wing Safety (502 ABW/SE).
- 2.1.5. 559th Aerospace Medicine Squadron (559 AMDS).
- 2.1.6. 502d Civil Engineering Squadron (502 CES).
- 2.1.7. 502d Logistics Readiness Squadron (502 LRS).
- 2.1.8. 502d Operations Support Squadron (502 OSS).
- 2.1.9. 802d Security Forces Squadron (802 SFS).

2.2. The minimum agenda for FOD/DOPP meetings will include:

- 2.2.1. Summary of FOD/DOPP events since the last meeting.
- 2.2.2. New directives, actions, or equipment to prevent FOD/DOPP.
- 2.2.3. Relevant and pertinent cross tell from other organizations to include civilian entities (when available).
- 2.2.4. Review of open action items from prior meetings.
- 2.2.5. 502 CES will provide information on sweeper usage and tasking (total hours per month or quarter) when requested by the JBSA Lackland FOD/DOPP Monitor.
- 2.2.6. The 502 OSS Airfield Manager will provide information on future airfield construction projects that could increase FOD potential, and discuss potential problem areas when special events occur, i.e., air shows.

2.3. Meeting Minutes. The JBSA Lackland FOD/DOPP Monitor will provide and forward copies of meeting minutes to all Unit FOD/DOPP Representatives and other meeting attendees.

3. General FOD Prevention Requirements and Responsibilities:

3.1. FOD Definition. Any damage to an aircraft, engine, aircraft system, component, tire, munitions, or SE caused by a foreign object(s) (FO) which may or may not degrade the required safety and/or operational characteristics of the aforementioned items (reference DAFI 21-101).

3.2. 502 CES sweepers will sweep active ramps and taxiways Monday through Friday, excluding federal holidays, or as needed.

3.3. FOD walks are mandatory to remove FO from ramps, runways, maintenance areas and access roads. Aircraft maintenance activities, to include Transient Aircraft/Alert (TA) contract services, will conduct FOD walks on active ramp parking areas prior to the first flight of the day (as a minimum, this means the rows and taxi lanes that will be used that day). Launch and recovery crews will perform FOD walk inspections of the parking spots and taxi lanes they will use prior to launch and recovery of aircraft.

3.4. Tenant (military and civil) organizations will follow their commands or civil FOD directives. Each FOD/DOPP representative's continuity book will have areas of responsibility maps.

3.5. Do not wear hats, caps, and/or wigs within the danger area of operating engines as defined in the applicable aircraft specific technical order (TO) and DAFMAN 91-203, *Air Force Occupational Safety, Fire, and Health Standards*.

3.6. Restricted area badges, as well as other types of identification badges, must be secured with a subdued non-metallic cord or plastic armband when worn on the flightline.

3.7. Metal shoe cleats and taps pose spark and FOD hazards and will not be worn on the flightline.

3.8. Personnel performing work on flightline/airfield areas will not wear metal insignia/badges, metal hair fasteners/items, earrings, or any other jewelry/loose items that might fall off without notice on flightline/airfield areas.

3.9. Escorts for personnel visiting airfield areas will ensure FOD prevention measures are adhered to.

3.10. All maintenance production areas must have FO containers readily accessible.

3.11. All vehicles primarily driven on the flightline must be equipped with secured and lidded FO containers which will be emptied daily or when full. **Note:** Permanently affixed FO containers must be approved by Vehicle Management prior to installation IAW AFI 24-302, *Vehicle Management*.

3.12. Special emphasis is required for items such as: remove before flight streamer attachment, safety pin condition, hinge pin security, dust and FO prevention cover condition/security, and aircraft forms binder condition. All efforts must be made to avoid loose trash in truck beds to include construction/packing materials and food/drinks. Periodically check these types of items for FO prevention compliance.

3.13. Vehicle operators will stop and perform a visual FOD inspection on all equipment and tires IAW DAFMAN 91-203, prior to entering the flight line areas. Avoid driving off paved surfaces to keep aircraft taxiways, parking ramps and runway free of mud/rocks. If unavoidable contact 502 OSS Airfield Management Operations to contact sweeper. This includes truck beds and trailers.

3.14. Remove all support equipment to include Aerospace Ground Equipment (AGE) and fire extinguishers from airfield areas when not required for use.

4. FOD/DOPP Investigating and Reporting (All Organizations). In addition, and complement to the specific procedures in DAFI 21-101 and Air Education and Training Command (AETC) Supplement (SUP), the following applies:

4.1. FOD. When FOD is suspected or confirmed, the discovering individual(s) will immediately up channel the information to appropriate management and leadership authorities to include the maintenance operations center (MOC) (if assigned), quality assurance (QA), wing safety, and appropriate squadron and group commander(s). If the FOD incident occurs on a transient aircraft, the host FOD monitor or aircrew must notify the owning organization **within 24 hours**. An informational copy of the FOD report must be provided to the owning organization's safety office/FOD monitor to ensure compliance with DAFI 91-204, *Safety Investigations and Reports*. Along with the specific procedures outlined in DAFI 21-101 and AETC SUP, the following procedures apply:

4.1.1. Impound aircraft and/or aircraft engines sustaining FOD pending formal investigation. This includes aircraft/equipment forms and support equipment involved in the FOD incident.

4.1.2. The group or squadron commander responsible for the aircraft is responsible for chartering a team to conduct an investigation. **Note:** This investigation is secondary to a formal safety investigation called for by DAFI 91-204.

4.1.3. The investigation will include all necessary measures to determine the cause of the FOD and contributing factors.

4.1.4. The JBSA Lackland FOD Monitor will report all FOD incidents to the 19AF/A4 FOD Monitor via SharePoint at the following link: <https://usaf.dps.mil/sites/aetc-19af/lg/fod/sitepages/home.aspx> using AETC Form 199, *Foreign Object Damage (FOD) Incident Investigation*, **no later than 24 hours** after an occurrence. Coordinate this report through appropriate chain of command and concurrence by 502 ISG/CC is required before sending forward.

4.2. DOPP. Unit DOPP Representatives will have primary responsibility for investigation with assistance and coordination from the JBSA Lackland FOD/DOPP Monitor unless a formal safety investigation is called for IAW DAFI 91-204, in which case the safety investigation will have priority. Along with the specific procedures outlined in DAFI 21-101 and AETC SUP, the following applies:

4.2.1. Report dropped objects to the JBSA Lackland FOD/DOPP Monitor immediately. If the JBSA Lackland FOD/DOPP Monitor cannot be reached, contact the 502 OSS Commander or Director of Operations through the 502 ABW Command Post.

4.2.2. The JBSA Lackland FOD/DOPP Monitor will ensure 502 ABW/SE is notified of all dropped objects.

4.2.3. AETC units will provide an initial report for dropped objects **within 3 hours** to HQ 19AF/A4 via SharePoint at the following link: <https://usaf.dps.mil/sites/aetc-19af/lg/fod/sitepages/home.aspx>. Tenant units will ensure the applicable major command reporting requirements are met per their directives.

4.2.4. All units will provide follow-up formal reports to their respective major command DOPP office **within 3 duty days** following an occurrence. Provide copies to the JBSA Lackland FOD/DOPP Monitor. Reporting format will meet the specific elements outlined in DAFI 21-101, as a minimum.

4.2.5. The JBSA Lackland FOD/DOPP Monitor will be responsible to investigate dropped objects from transient aircraft. The JBSA Lackland FOD/DOPP Monitor is responsible for ensuring home station organizations are notified of dropped objects on transient aircraft. The JBSA Lackland FOD/DOPP Monitor will contact the base command post and ask for the organization's DOPP representative. If there is difficulty in contacting the unit, the JBSA Lackland FOD/DOPP Monitor will ensure the aircraft commander is contacted and tasked to provide information to home station.

5. Tool and Equipment Management in Airfield Areas (All Organizations). The objectives of the Tool and Equipment Management Program are to prevent and eliminate FOD to aircraft, engines, missiles, training and support equipment, and to reduce costs through strict effective control and accountability of assets. The following procedures apply to activities and tenant organization (military, civilian, and contractors) that utilize or transport tools and equipment on to 502 ISG airfield ramps, taxiways, and the runway at JBSA Lackland. These are minimum requirements and they are in addition to any specific requirements levied by DAFI 21-101 AETC SUP.

5.1. Tool Accountability, Control, and Security. Account for all tools and equipment item transported to or used on airfield ramps, taxiways, and the runway before entering airfield areas and before beginning work.

5.1.1. A Master Inventory List (MIL) will be required for each consolidated tool kit (CTK) or series of identical CTKs.

5.1.2. Users will perform a visual inventory, control, and account for all dispatchable/decentralized tools and equipment items, when issued for use, during work, at the completion of each job or task (done at the job site), before exiting airfield areas, and when returned to the tool storage facility.

5.1.3. Users will accomplish a CTK inventory prior to operation of any aircraft or equipment when maintenance actions are performed (e.g., engine run, landing gear retraction, flight control operational checks).

5.1.4. Users will secure unattended tools, equipment items, electronic tools (eTools), technical orders, portable radios, and CTKs in a way and location that does not impede or pose a risk for aircraft or vehicles utilizing the airfield.

5.1.5. Tools not controlled through CTK procedures are NOT authorized on the flightline, or in any maintenance area (e.g., personal Mini Maglite® flashlights, Leatherman® tools, Buck Knives® accessories, etc.).

5.2. On-Site Tool/Equipment Transfers. Procedures for transfer of tools/CTKs at the job site (on-site transfers). Ensure tool accountability and control is maintained when transfer occurs between the individuals. As a minimum the individuals involved in the transfer will accomplish a joint inventory and document accordingly. The TA services contractor assigned to the 502 OSS will follow any additional procedures required by contract and/or internal directives.

5.3. Personal Protective Equipment (PPE). Procedures for issue, marking, and control of PPE, tools or equipment (e.g., hearing protectors, reflective belts, headsets, etc.) assigned/issued to individuals. Account for, control and secure personal protective equipment the same as tools and equipment when transported to airfield ramps, taxiways, parking areas, and the runway.

5.4. Rag Control. Procedures to ensure positive accountability and control of rags. Count rags (paper, cloth, etc.) brought on to airfield taxiways, parking ramps, or the runway before entering the area(s) and reconcile before leaving as well as before and after each job or task.

5.5. Control and Management of Replacement, Expendable, and Consumable Hand Tools, Hazardous Materials (HAZMAT), and Other Items Contained in Tool Kits. Consumables may be placed in CTKs. If so, they are identified on the tool or equipment inventory listing and identified as consumables. Examples of consumables include safety wire, adhesive, wire bundle lacing, solder, etc. Do not include common hardware items, such as, bolts, nuts, and/or screws unless they are required as tools.

If HAZMAT materials are included as part of the tool or equipment kit that is dispatched for use on flightline/airfield areas the Safety Data Sheet (SDS) must accompany it.

5.6. Tool and Equipment Marking and Identification. Assign Equipment Identification Designators (EID) for CTKs, non-CA/CRL equipment, and assignment of CTK numbers for tools. 502 ISG organizations will develop a standardized identification system for all tools and equipment used on airfield ramps, taxiways and the runway. Etch or permanently affix the EID to the tools and equipment.

5.7. Locally Manufactured, Developed, or Modified Tools and Equipment. All locally manufactured, developed, or modified tools used on aircraft, aircraft-related trainers or aircraft support equipment will be approved using the specific procedures in DAFI 21-101, Tool and Equipment Management chapter. Tools or equipment altered from their original design will be treated as locally manufactured, developed or modified tools and equipment.

5.8. Tool Room/Storage Area Operations and Security. Access to tool rooms/storage areas must be kept to the minimum personnel required to manage and operate tool storage areas. All aircraft, support equipment and aircraft-related trainer maintenance activities will adhere to the policies and procedures required in DAFI 21-101 AETCSUP, Tool and Equipment Management chapter.

5.9. Depot, Factory, or Contract Field Teams. The sponsoring squadron commander or director is responsible for ensuring that teams working in or around airfield areas, on aircraft, aircraft support equipment, or aircraft-related trainers have an acceptable tool and equipment control process that meets the requirements of and intent of this directive.

5.10. Airfield Maintenance Teams. Commanders or Directors of organizations contracting construction crews and workers working on or near taxiways, ramps and the runway will ensure work statements include requirements for control and accountability that meet the requirements and intent of this directive.

5.11. Lost Item/Tool Procedures. Procedures for lost or missing items or tools. Supervisors will ensure all assigned personnel are familiar with lost tool procedures. If a tool, equipment item, rag, or a portion of a broken tool is discovered missing in an airfield area or aircraft maintenance industrial shop, the following procedures apply:

5.11.1. The person identifying the lost or missing tool/item will search the immediate work area. If the tool/item is not found, the individual will notify their supervisor or someone in their supervisory chain, who in-turn, will notify the 502 OSS Airfield Manager and 502 OSS Director of Operations (DO). If TA contract related, the TA services contractor assigned to the 502 OSS will contact the 502 OSS Contracting Officer's Representative (COR) office and the 502 OSS/DO. If related to external contractors/vendors working on airfield areas must immediately contact the government oversight representative, normally a COR assigned to that contract, who in-turn, will

notify the 502 OSS Airfield Manager and 502 OSS/DO.

5.11.2. Place a Red X in the aircraft or support equipment forms of all affected aircraft or support equipment with a description of the item and a specific, last known location.

5.11.3. Ensure all appropriate management and leadership entities are informed of the lost item and the ongoing investigation.

5.11.4. The on-scene supervisor will initiate a thorough search for the item. If the item is not found, the person issued the item/tool will initiate a lost tool report.

5.11.5. Consider impounding aircraft and/or pausing aircraft activities on taxiways, taxi lanes, or parking ramps when appropriate.

5.11.6. AETC organizations will use AETC Form 138, *Lost Tool or Item Investigation Record*, to document the investigation and final determination. Other units will use the appropriate form relative to their organization. All organizations will route the report through appropriate supervision and management entities (includes CORs for contract activities) and the report will be filed by respective quality assurance functions. A copy will be provided to the 502 OSS Airfield Manager if the item was lost in an airfield area.

5.11.7. The 502 OSS/CC is the sole decision authority for terminating an investigation in which a tool or item cannot be located on 502 ISG airfield areas. The 149 and 433 MXG/CCs terminate lost tool investigations initiated in their specific ramps for assigned aircraft. Final reports will be forwarded to the 502 OSS/CC for review. The respective commander's signature on the investigation form will document this decision.

5.11.8. Limit authorization to clear aircraft and equipment Red X symbols when a tool/item cannot be located to no lower than squadron commander, deputy, or operations officer equivalent.

5.11.9. When it is suspected that the item may be located in an inaccessible or unobservable aircraft area, perform a non-destructive inspection or use bore-scope equipment to aid in locating the item.

5.11.10. If the item is in an inaccessible area that poses no FOD threat and the action is to leave the item in place, maintain the x-ray (or equivalent) with the identification of the exact tool location and copies of all information concerning the lost tool/item in the aircraft historical file until the tool/item is recovered. The Commander of the organization to which the aircraft is assigned must approve the decision.

5.11.11. If the aircraft is a transient aircraft, the 502 OSS TA services contractor will ensure the pilot and the home station command post are notified and inform the 502 OSS COR office, 502 OSS Airfield Manager, and 502 OSS/DO of the same.

RANDY P. OAKLAND, Brigadier General, USAF
Commander

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

DAFPD 21-1, *Maintenance of Military Material*, 21 February 2024

DAFI 21-101, *Aircraft and Equipment Maintenance Management*, 16 January 2020

AFI 24-302, *Vehicle Management*, 21 February 2020

AFI 36-2650, *Maintenance Training*, 22 June 2022

DAFMAN 91-203, *Air Force Occupational Safety, Fire, and Health Standards*, 25 March 2022

DAFI 91-204, *Safety Investigations and Reports*, 10 March 2021

DAFI 21-101 AETC SUP, *Aircraft and Equipment Maintenance Management*, 8 October 2024

Adopted Forms

DAF Form 847, *Recommendation for Change of Publication*

AETC Form 138, *Lost Tool or Item Investigation Record*

AETC Form 199, *Foreign Object Damage (FOD) Incident Investigation*

Prescribed Forms

None

Abbreviations and Acronyms

AETC - Air Education and Training Command

AFI - Air Force Instruction

AGE - Aerospace Ground Equipment

COR - Contracting Officer's Representative

CTK - Consolidated Tool Kit

DAFI- Department of the Air Force Instruction

DO - Director of Operations

DOPP - Dropped Object Prevention Program

EID - Equipment Identification Designators

eTools - Electronic tools

FO - Foreign Object

FOD - Foreign Object Damage

HAZMAT - Hazardous Materials

IAW - In Accordance With

ISG - Installation Support Group

JBSA - Joint Base San Antonio

MIL - Master Inventory List

MOC - Maintenance Operations Center

OPR - Office of Primary Responsibility

OSS - Operations Support Squadron

PPE - Personal Protective Equipment

QA - Quality Assurance

QC - Quality Control

SDS - Safety Data Sheet

SUP - Supplement

TA - Transient Aircraft or Transient Alert

TO - Technical Order

Office Symbols

502 ISG/CC - 502 ISG Commander

502 ABW/SE- 502 ABW Safety Office

502 OSS – 502 Operations Support Squadron

502 CES- 502 Civil Engineer Squadron

433 MXG/CC- 433 Maintenance Group Commander

Terms

Dropped Object - A dropped object is any aircraft part, component, surface, LO coating exceeding 8 inches in any dimension or other item lost during aircrew operations (unless intentionally jettisoned) from engine start to engine shutdown. Inadvertently released munitions are not considered dropped objects and will be reported IAW DAFI 91-204. **Note:** Missing Chaff/Flare/Decoy end-caps are not reportable dropped objects.

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