This instruction implements and extends the guidance of Air Force Instruction (AFI) 21-101, Aircraft and Equipment Maintenance Management. It provides guidance and procedures to effectively develop and manage a Crashed, Damaged, or Disabled Aircraft Recovery (CDDAR) program, a Tool Control program, a Foreign Object Damage (FOD) prevention program, and a Dropped Object Prevention (DOP) program. This supplement provides procedures governing aerospace equipment maintenance management and applies to all assigned, attached or associated units of Peterson AFB that maintain aircraft, aircraft systems, equipment, support equipment, and components. This publication applies to Air Force Reserve Command (AFRC) Units and does not apply to Air National Guard Units. Tenant units (302 Airlift Wing, 200 Airlift Squadron, and 98 Flying Training Squadron) comply with support agreements as applicable. Refer recommended changes and questions about this publication to the Office of Primary Responsibility (OPR) using the AF 847, Recommendation of Change of Publication; route AF 847s from the field through the appropriate functional chain of command. The authorities to waive wing/unit level requirements in this publication are identified with a Tier (T-3) number following the compliance statement. See AFI 33-360, Publications and Forms Management, for a description of the authorities associated with the Tier numbers. Submit requests for waivers through the chain of command to the appropriate Tier waiver approval authority, or alternately, to the Publication OPR for non-tiered compliance items. Ensure that all records created as a result of processes prescribed in the publication are maintained in accordance with AFMAN 33-
Management of Records and dispose of in accordance with Air Force Records Information Management System (AFRIMS) and the Air Force Records Disposition Schedule. This publication may not be supplemented.

**SUMMARY OF CHANGES**

This document has been substantially revised and needs to be completely reviewed in its entirety. It has been revised in an effort to be more directive in nature providing the user a clear picture of responsibilities.

4.9.5.13.1.2.1. *(Added)* Any transient aircraft requiring maintenance outside the scope of Transient Alert (TA) requires the aircrew to contact their home unit to send a Maintenance Recovery Team.

7.3. *(Added)* The Maintenance Officer/Superintendent, Wing Safety Representative, or a Federal Aviation Administration (FAA) representative would make the determination if the aircraft should be impounded. **IMPORTANT:** No maintenance actions are accomplished without the concurrence of the impoundment official.

7.4. The impoundment official for aircraft not assigned/attached to Peterson AFB is designated from the home station of the aircraft. The impoundment is released to the maintenance team chief of the owning organization upon the team’s arrival.

8.2.1.2. *(Added)* Personnel that use tools/equipment on the flightline, on aircraft, or on Aerospace Ground Equipment (AGE) or maintain support equipment that is used on aircraft or on the flightline are required to use an accountability system IAW chapter 1, chapter 8 and chapter 11 of this instruction.

8.2.1.2.2. *(Added)* Tools, equipment, and CTKs are secured and controlled in a manner as to prevent access or use without proper accountability.

8.2.1.3. *(Added)* Tools are accounted for at all times and secured when not in use. All units that do not utilize an approved tool accountability system are required to develop an Operating Instruction (OI) to account for and control tools used on the flightline or in a maintenance industrial area.

8.2.3.1. Consolidated Tool Kit (CTK) monitor, maintain a list of all warranty tools and ensure broken or damaged warranty tools are isolated and under strict control until replaced.

8.2.3.1.1. *(Added)* Units possessing tools under warranty that were procured from a manufacturer other than Snap-On should contact that manufacturer directly for instructions on replacing unserviceable tools.

8.2.3.1.2. *(Added)* Purchase tools that are covered by a warranty and supports easy replacement at no additional cost to the government.

8.2.4.1. *(Added)* Hazardous material, consumable and expendable items (batteries, safety wire, adhesive, solder, hacksaw blades, drill bits, etc.) may be placed in a CTK, and be added to the Master Inventory List. **Note:** These tools are used to replace broken, worn, or missing tools to prevent unnecessary work delays. Enforce strict control of these items and replace on a one-for-one basis.
8.2.4.2. *(Added)* Expendable hand tools such as blades, apexes, files, and file cleaners consumed during use may be placed on bench stock.

8.2.5.1. Personnel conduct and document a joint inventory of all tools if a transfer is required at the job site.

8.2.6.1. *(Added)* Report missing or lost tools immediately to supervision. Follow and document procedures identified in paragraph 8.9, lost item/tool procedures.

8.2.8. All individual Personal Protective Equipment (e.g., ear protectors, reflective belts, and headsets) are controlled and marked with an identifier that easily distinguishes the owner to include first name initial, last name, and employee number (if applicable).

8.2.9.3.1. *(Added)* Rags that leave the CTK area are controlled at all times. *Note*: Issue rags on a one-for-one swap or in pre-packaged containers with the number of rags clearly marked on each container.

8.2.10. The number of personnel authorized to procure tools are kept to a minimum (i.e., a primary and alternate).

8.2.11. Local manufactured or developed tools are marked and controlled in the same manner as any other tool in the CTK.

8.2.12. Depot field teams, field service representatives, and contract field teams need to be monitored to ensure positive tool accountability when working on equipment within the unit.

8.2.14. Emergency response equipment (e.g., CDDAR and hydrazine response equipment) that is stored outside of the controlled tool room is kept secured and issued when needed.

8.2.15.2. *(Added)* All CTKs are required to have a second party signature when signing a CTK back into the tool room.

8.2.16. Access to tool rooms is kept to a minimum *(Note)*: (i.e., only individuals required/authorized to issue/turn-in or inspect equipment).

8.2.17. *(Added)* Personal electronic devices are permitted only for the purpose of conducting official business when on the flightline.

11.8.3. *(Added)* Personnel that work in, on, around, or travel through areas near aircraft or AGE are required to comply with FOD prevention measures.

11.8.3.6.1.1. *(Added)* Remove and secure Restricted Area Badges (RAB)/pass when within 25 feet of operating engine(s). Line badges/passes completely secured inside of an armband pouch do not need to be removed.

11.8.3.6.6. *(Added)* Personnel can wear hats on the flightline, but remove them when aircraft are operating in close proximity. During cold weather, the black watch cap/ski mask and ABU watch cap or micro fleece hats are authorized. These hats can be worn within 50 feet of running engines ONLY if secured by ear defenders or a ground communication headset.

11.8.3.6.6.1.2. *(Added)* Security Forces personnel while performing official duties may wear the beret without insignia attached; however, when they are within 50 feet of an operating aircraft removed and secured berets. *(Note)*: If Security Forces are wearing Kevlar helmets, the chinstraps needs be secured.
11.8.3.8.1. (Added) All flightline vehicles are required to be equipped with a suitable covered FOD container. Note: Storage containers on tugs and in tractors may be used in place of self-closing containers. Secure containers so as not to tip over when vehicle is in motion.

11.8.3.8.2. (Added) Airfield Management ensure flightline driver’s training program stresses the importance of FOD prevention, control of vehicles on the flightline, and precautions to be taken prior to driving onto the airfield hard surfaces from unpaved areas.

11.8.3.8.3. (Added) Vehicle operators (including contractors) inspect the cab interior, cargo bed area, and tires prior to use and remove all foreign material that could inadvertently fall on the airfield, creating a potential FOD hazard.

11.8.3.8.4. (Added) Vehicle operators attempt to enter the military aircraft-parking ramp via paved surfaces using flightline gate entrances.

11.8.3.8.5. (Added) All vehicles should only be driven on clean, paved surfaces. If a vehicle is forced to depart the paved surface for any reason, perform a FOD check before entering the flight line to ensure no foreign objects (i.e. rocks or stones, etc.) are tracked onto the ramp.

11.8.3.8.6. (Added) Emergency response vehicles responding to an In Flight Emergency (IFE)/Ground Emergency perform a vehicle FOD inspection as time permits.

11.8.3.8.7. (Added) If a FOD check was not accomplished prior to entering the flight line, accomplished at the predetermined staging area. Once staged and time permitting, all vehicles perform a tire rollover check. Note: If time does not permit (i.e., aircraft has already landed) a FOD check is then accomplished after IFE terminates and before returning to station.

11.8.3.11.1.1. (Added) Airfield Management coordinate with 21 CES (Civil Engineer Squadron) and 21 CONS on areas where construction is in progress and confirm requests for sweeper operations by contractors promptly during operating hours.

11.8.3.11.1.2. (Added) Coordinate with Airfield Management for areas identified for cleaning/problem areas of the apron.

11.8.3.11.1.3. (Added) Aircraft launch and recovery crews are responsible for keeping their operating areas free of debris.

11.8.3.11.1.4. (Added) FOD maintenance of tie down and grounding points is the responsibility of individual flying unit FOD programs. Contact 21 CES for assistance in removing excessive debris or when unable to remove.

11.8.3.11.1.5. (Added) Perform a FOD walk before aircraft operations and after aircraft movement. Continually monitor these areas for FOD.

11.8.3.11.1.6. (Added) All personnel take an active part in daily policing to effectively reduce the potential of FOD. Note: Special attention particularly towards cleaning of cracks and expansion seams in hard surfaced areas where engines are operated.

11.8.3.11.1.7. (Added) Peterson AFB ramp. Each unit is responsible for their aircraft parking area, the adjacent portions of the access road, and their assigned hangar space. EXCEPTION: Arrival/Departure Airfield Control Group transient parking area is the responsibility of TA personnel.
11.8.3.11.1.8. (Added) Facilities adjacent to aircraft parking ramps, taxiways, or engine run areas, as well as any shops or hangars used for aircraft/component maintenance are supervised by the owning organization and particularly paying attention to the closing of dumpster lids during high winds and be addressed by each facility manager.

11.8.3.11.1.9. (Added) Personnel pay special attention to small items of debris, such as safety wire, bolts, nuts, screws, etc. Loose materials of this kind are placed in FOD containers during the normal course of job performance.

11.8.3.11.1.10. (Added) Aircraft 781 forms/weapons safety pins are not to be left unsecured on aircraft parking ramps/movement areas at any time.

11.8.3.11.1.11. (Added) Refreshments (coffee, soda, etc.) may be consumed inside vehicles provided the empty containers are disposed of properly. Glass bottles are prohibited on the flight line, with the exception of maintenance sampling kits.

11.8.4.2.2.1. (Added) Colorado Springs Aviation Division is responsible for all runway and taxiway inspections. Reports of foreign object on the runways or taxiways by military aircraft are informed to Airfield Management, who in turn notifies the city.

11.8.4.2.2.1.1 (Added) Civilian aircraft that are owned or operated by the Air Force falls under the control of the FAA and the National Transportation Safety Board (NTSB). The Air Force works with the FAA and the NTSB during investigation to ensure safety and liability issues are resolved.

11.8.5. (Added) Units appoint a local FOD monitor to administer the FOD program, conduct FOD investigations and report to the Wing FOD Prevention monitor (Wing POC is located in Building 122, Maintenance Flight).

11.8.5.4.2. (Added) Newcomers’ FOD briefing is documented by the responsible organization.

11.8.6.1. (Added) Any aircraft maintenance activity discovering FOD to any aircraft/engine report findings to its Maintenance Officer/Supervisor and Wing FOD Prevention NCO representative.

11.8.6.2. (Added) The Wing prevention FOD NCO and a representative from Wing Safety jointly investigate FOD damage on all military aircraft.

11.8.7.1.1. The Wing FOD Prevention NCO develop the FOD Prevention Committee meeting agenda and brief the committee at the quarterly Airfield Operations Board. (T-3).

11.8.7.1.1.1. (Added) Appointed Chairperson monitor all phases of the program implementation within the wing to ensure FOD incidents are thoroughly investigated and adequate corrective action is taken.

11.9.2.1.1. (Added) Local DOP monitors investigate and report incidents to the Wing DOP monitor and home station DOP monitor of incident aircraft. Note: Wing POC is located in Building 122, Maintenance Flight.

11.28.2.4.1. The 21 SW Commander or designated representative and Colorado Springs Airport implement procedures, plans, and agreements to ensure compliance with established recovery programs:

11.28.2.4.1.1. **(Added)** Provide personnel/equipment/funds required to perform CDDAR operations. This includes funds to pay for any overtime that may be incurred by other DoD organizations such as Air Force Reserve personnel or contracted operations.

11.28.2.4.1.2. **(Added)** Maintain overall responsibility for recovery of host/tenant crashed, damaged, or disabled aircraft.

11.28.2.4.1.3. **(Added)** The 21 SW designated representative or On-scene commander (OSC) maintains command until restoration of the site is complete. *Note:* The CDDAR program falls under phase IV (Recovery and Restoration) of the PAFB Mishap Response Plan 91-204.

11.28.2.4.1.4. **(Added)** In accordance with AFI 91-204, *Safety Investigations and Reports*, when an aircraft is under investigation by the Interim Safety Board, recovery operations are not proceed until the board president or OSC releases the aircraft.

11.28.2.4.1.4.1. **(Added)** Personnel who are not engaged in the investigation remain outside of the recovery area.

11.28.2.4.1.4.2. **(Added)** The Crash Recovery Team (CRT) may be called upon to perform tasks as required by the investigation team.

11.28.2.4.1.5. **(Added)** The aircraft and crash site are disturbed only to the extent required to eliminate a dangerous situation to the aircraft, support equipment, and personnel.

11.28.2.4.1.5.1. **(Added)** Keep area in an undisturbed state until the aircraft is released to maintenance by the OSC.

11.28.2.5.8. **(Added)** 21 OG/CC or equivalent:

11.28.2.5.8.1. **(Added)** Establish a CDDAR capability for Peterson AFB.

11.28.2.5.8.2. **(Added)** Provide personnel/equipment required to perform CDDAR operations.

11.28.2.5.8.3. **(Added)** Provide a CDDAR POC to oversee CDDAR operations. This person is the appointed wing liaison to the Crash Recovery Team Chief (CRTC).

11.28.2.5.8.4. **(Added)** The CDDAR POC responsibility includes:

11.28.2.5.8.4.1. **(Added)** Respond to CRTC requests and coordinate equipment/additional personnel/information to support the operation.

11.28.2.5.8.4.2. **(Added)** Ensure AGE assets are serviceable and available for use when requested.

11.28.2.5.8.4.3. **(Added)** Determine and provide vehicle/equipment requirements and also, ensure 24-hour availability of personnel.

11.28.2.5.8.5. **(Added)** Annually review the matrix of equipment, resources, and personnel capabilities for CDDAR (Attachment 7).

11.28.2.5.9. **(Added)** 302 MXG:
11.28.2.5.9.1. **(Added)** Provide personnel/equipment required to perform CDDAR operations in accordance with, Support Agreement #FB2500-15348-315. **NOTE:** Notice of possible overtime pay is given to the OSC during the initial response to ensure continuous operations.

11.28.2.5.9.2. **(Added)** Respond, when requested, to all crashed/disabled aircraft in the area of responsibility as outlined in the Peterson AFB IEMP 10-2P.

11.28.2.5.9.3. **(Added)** Maintain a crash recovery trailer with an inventory of specialized crash recovery tools, equipment, and current Technical Orders (TO) to meet expected crash recovery operations.

11.28.2.5.9.4. **(Added)** Provide primary and alternate Crash Recovery Team Chiefs (CRTC).

11.28.2.5.9.5. **(Added)** Ensure 302 ARC personnel are trained annually in recovery operations. Trained personnel are to participate in at least one exercise or practice per year. **(T-3)**

11.28.2.5.9.6. **(Added)** Annually review the matrix of equipment, resources, and personnel capabilities for CDDAR (Attachment 7).

11.28.2.5.10. **(Added)** Tenant aircraft units, to include the Aero Club:

11.28.2.5.10.1. **(Added)** Provide technical expertise/data, Mission Design Series (MDS)-unique tools/special equipment and airframe/system familiarization.

11.28.2.5.10.2. **(Added)** Provide a POC to the CDDAR team chief.

11.28.2.5.10.3. **(Added)** Respond to and provide personnel/equipment to support CDDAR operations on their MDS specific aircraft when required (See Attachment 8, CDDAR Team Recall Procedures).

11.28.2.5.11. **(Added)** 21 CES:

11.28.2.5.11.1. **(Added)** Provide emergency crash/fire response, as well as hazardous materials and spill containment capability beyond the scope of the unit spill teams.

11.28.2.5.11.2. **(Added)** Provide heavy equipment (i.e., bulldozers, cranes, and dump trucks) as required by the CRTC.

11.28.2.5.11.3. **(Added)** Procure additional heavy equipment from local off-base agencies through lease agreements if required.

11.28.2.5.12. **(Added)** 21 SFS:

11.28.2.5.12.1. **(Added)** Provide security forces personnel to secure mishap scene and cordon off the area, as directed by the OSC and required by AFI 33-101, Integrated Defense. **Note:** In addition, off-base incidents may require Security Forces to establish a National Defense Area.

11.28.2.5.13. **(Added)** 21 LRS:

11.28.2.5.13.1. **(Added)** Provide a qualified driver, a vehicle capable of moving the 53-foot crash recovery trailer and any other necessary equipment within 30 minutes of notification.

11.28.2.5.13.2. **(Added)** Provide tractor trailers and forklifts, as necessary, to transport CDDAR support equipment to the mishap site. **Note:** Depending on the mishap site conditions, an all-terrain forklift may also be required.
11.28.2.5.13.3. **(Added)** Provide maintenance support to heavy equipment participating in the recovery operation as directed by the OSC.

11.28.2.5.13.4. **(Added)** Provide on-scene fuel servicing of recovery support equipment.

11.28.2.5.13.5. **(Added)** Provide aircraft defuel capability, fuel recovery, and transport for fuel analysis to assist CRT.

11.28.2.5.13.6. **(Added)** Maintain a crash sampling kit per TO 42B-1-1. Obtain, package, and submit fuel and/or oil samples from crashed aircraft per TO 42B-1-1.

11.28.2.5.14. **(Added) 21 CONS:** 11.28.2.5.14.1 **(Added)** 21 CONS provide contracting support for specialized equipment as necessary to support aircraft recovery operations, to include geographically separated units where 21 CONS provides support.

11.28.2.5.15. **(Added) 21 OSS/OSA:**

11.28.2.5.15.1. **(Added)** Serve as the focal point for all non-radio equipped vehicles requesting access to or from the accident site when on the airport movement areas.  
**Note:** Movement areas are defined as runways and taxiways.

11.28.2.5.16. **(Added) Colorado Springs Regional Command Post:**

11.28.2.5.16.1. **(Added)** Notification covered in on-base or off-base aircraft accident checklists.

11.28.2.6.2. **(Added) The Crash Recovery Team Chief (CRTC):**

11.28.2.6.2.1. **(Added)** When requested, respond to aircraft incidents involving military aircraft on Peterson AFB and Colorado Springs Airport taxi/runways.

11.28.2.6.2.2. **(Added)** Assess the need to assemble the CRT or turn the recovery effort over to TA personnel (blown tire, hot brake tow, etc.).

11.28.2.6.2.3. **(Added)** Assemble CRT at a designated meeting area with immediate response trailer.

11.28.2.6.2.4. **(Added)** Brief the CRT on the situation, required actions, and known safety hazards.

11.28.2.6.2.5. **(Added)** Coordinate with Bio-Environmental Engineering to ensure authorization and proper use of Personal Protective Equipment (PPE) and ensure respiratory equipment checks are conducted prior to the wear of any type of respiratory protection.

11.28.2.6.2.6. **(Added)** Use all available technical expertise to develop a plan and recover aircraft.

11.28.2.6.2.7. **(Added)** Ensure qualified personnel respond to handle special tasks such as aircrew life support or egress systems and complete a Safety Investigations Report to ensure preservation of evidence for safety and/or accident investigation boards IAW AFI 91-202, *The US Air Force Mishap Prevention Program* and AFI 91-204, *Safety Investigation and Report*.

DOUGLASS A. SCHIESS, Colonel, USAF
Commander
Attachment 1

GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION

References
302 MXG OI 21-129 CDDAR Procedures
AFI 91-204, Safety Investigations and Reports, 12 February 2014
Peterson AFB CEMP Plan 10-2P
Peterson AFB Mishap Response Plan 91-204
Support Agreement # FB2500-00068-315 (21 SW & 302 AW)
Support Agreement # FB2500-430 (21 SW & Colorado Springs Airport)

Prescribed Forms
None

Adopted Forms
AF 847, Recommendation for Change of Publication

Abbreviations and Acronyms
ARC—Air Reserve Component
AFRIMS—Air Force Records Information Management System
AFI—Air Force Instruction
AGE—Aerospace Ground Equipment
CDDAR—Crashed, Damaged, or Disabled Aircraft Recovery
CES—Civil Engineering Squadron
CONS—Contracting Squadron
CRT—Crash Recovery Team
CRTC—Crash Recovery Team Chief
CTK—Consolidated Tool Kit
DOP—Dropped Object Prevention
EID—Equipment Identification Designator
FAA—Federal Aviation Administration
FOD—Foreign Object Damage
IAW—In Accordance With
IFE—In Flight Emergency
LRS—Logistics Readiness Squadron
MDS—Mission Design Series
MOC—Maintenance Operations Center
MXG—Maintenance Group
OG/CC—Operations Group Commander
OI—Operating instruction
OPR—Office of Primary Responsibility
OSA—Operations Support Airfield
OSC—On-Scene Commander
OSS—Operations Support Squadron
POC—Point of Contact
PPE—Personal Protective Equipment
RAB—Restricted Area Badge
RDS—Records Disposition Schedule
SFS—Security Forces Squadron
SW—Space Wing
TA—Transient Alert
TO—Technical Order
Attachment 7 (Added)

MATRIX OF CDDAR EQUIPMENT, RESOURCES, AND PERSONNEL

A7.1. CDDAR Personnel Capabilities: The following will be considered common CDDAR requirements; all scenarios will be assessed on the spot to determine whether additional support or equipment will be needed. All TO deviations will be approved prior to implementation. CDDAR equipment listing can be found in Table A below.

A7.1.1. Nonconventional aircraft tow from a non-hardened surface onto a taxiway.

A7.1.2. Primary lifting procedures should be using jacks. Alternate lifting procedures include the use of airbags or weight rated straps.

A7.1.3. Advanced composite fiber containment and clean-up. PPE will be used prior to entering the area and handling composite material.

Table A7.1. Crashed, Damaged, or Disabled Aircraft Recovery Equipment Listing.

<table>
<thead>
<tr>
<th>CDDAR Equipment Listing (Not inclusive):Quantity</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trailer, Utility Transport CDDAR Equipment (First Response)</td>
<td>1 EA</td>
</tr>
<tr>
<td>Kit, Pneumatic Bag 26 ton</td>
<td>8EA</td>
</tr>
<tr>
<td>Console, Air Gauge</td>
<td>8 EA</td>
</tr>
<tr>
<td>Storage Container</td>
<td>8 EA</td>
</tr>
<tr>
<td>KC/RC-135, E-8 Sling/Spreader Bar</td>
<td>1 EA</td>
</tr>
<tr>
<td>6” Lifting Strap, SlingMax</td>
<td>1 EA</td>
</tr>
<tr>
<td>12” Lifting Strap</td>
<td>1 EA</td>
</tr>
<tr>
<td>C-130 NLG Sling</td>
<td>1 EA</td>
</tr>
<tr>
<td>Tirfor Winch &amp; 45’ Cable</td>
<td>6 EA</td>
</tr>
<tr>
<td>Tirfor Ground Anchor Set</td>
<td>6 EA</td>
</tr>
<tr>
<td>Personal Gear Pack</td>
<td>10 EA</td>
</tr>
<tr>
<td>Back Pack Sprayer</td>
<td>5 EA</td>
</tr>
<tr>
<td>Safety Helmet</td>
<td>10 EA</td>
</tr>
<tr>
<td>Kevlar Gloves</td>
<td>10 EA</td>
</tr>
<tr>
<td>Steel Toe Knee Boots</td>
<td>10 EA</td>
</tr>
<tr>
<td>Tyvek Suits</td>
<td>10 EA</td>
</tr>
<tr>
<td>Respirator Mask</td>
<td>10 EA</td>
</tr>
<tr>
<td>Floodlight Set</td>
<td>4 EA</td>
</tr>
<tr>
<td>Flashlight</td>
<td>10 EA</td>
</tr>
<tr>
<td>Ground Rod Driver</td>
<td>10 EA</td>
</tr>
<tr>
<td>Infrared Thermometer</td>
<td>1 EA</td>
</tr>
<tr>
<td>Safety Vest</td>
<td>10 EA</td>
</tr>
<tr>
<td>First Aid Kit</td>
<td>1 EA</td>
</tr>
</tbody>
</table>
Attachment 8 (Added)

CRASHED, DAMAGED, DISABLED AIRCRAFT RECOVERY (CDDAR) RECALL PROCEDURES

Figure A8.1. CDDAR Team Recall Procedures.