

**BY ORDER OF THE COMMANDER  
440TH AIRLIFT WING**

**440TH AIRLIFT WING  
INSTRUCTION 21-102**



**24 MAY 2010**

**Maintenance**

**CRASH, DAMAGED, DISABLED  
AIRCRAFT RECOVERY PROGRAM**

**COMPLIANCE WITH THIS PUBLICATION IS MANDATORY**

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(Col Willie W. Cooper II)

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This instruction implements Air Force Policy Directive (AFPD) 21-1, *Air and Space Maintenance* and AFI 21-101, AFRC Sup 1, *Aircraft and Equipment Maintenance Management*, applicable -48 and -91 series AFOSH STDs, Technical Order 00-105E, *Aerospace Emergency Rescue and Mishap Response Information*, AFI 21-103, Equipment Inventory, Status and Utilization Reporting and aircraft specific -2 and -3 series technical orders. It establishes procedures for the recovery of aircraft involved in a ground or air incident/accident and ensures adequate coverage 24 hours a day, 7 days a week. It will be utilized in conjunction with other agency policies and all applicable Technical Orders (TOs) pertaining to the disabled aircraft. It applies to all 440 Maintenance Group personnel. Ensure that all records created as a result of processes prescribed in this publication are maintained in accordance with AFMAN 33-363, *Management of Records*, and disposed of in accordance with the Air Force Records Disposition Schedule (RDS) located at <https://www.my.af.mil/gcss-af61a/afrims/afrims/>. 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*, directly to 440 MXG/CC, 2541 Surveyor Street, Room 101, Pope AFB, NC 28308-2409.

**1. Policy.**

1.1. The crash recovery program is established to recover crashed, damaged and/or disabled aircraft in minimum time consistent with the following considerations:

- 1.1.1. The requirement to open the runway for operational use.
- 1.1.2. Prevention of secondary damage to the aircraft.
- 1.1.3. Preservation of evidence for mishap or accident investigation.

#### 1.1.4. Safety of personnel involved with recovery operation.

**WARNING:** Incidents involving aircraft made up of a composite structure may cause serious injury or death to those in contact with it. Transient aircraft home bases should be contacted to determine composite material risks and requirements for personal protective equipment (PPE).

**CAUTION:** The aircraft and crash site will be disturbed only to the extent required to eliminate an imminently dangerous situation to the aircraft, support equipment, and personnel, and will remain in an undisturbed state until the aircraft is released to maintenance by the on-scene commander (OSC).

## 2. Procedures.

### 2.1. Initial response.

2.1.1. The Crash, Damaged, Disabled Aircraft Recovery team will respond to the designated holding area when called by the production supervisor. The holding area for runway 05 is Silver Ramp and for runway 23 is Papa Row.

2.1.2. The CDDAR team chief will establish radio contact with the senior fire officer for any further instructions and monitor the fire net while maintaining radio contact with the Maintenance Operations Center (MOC) and applicable production superintendent, keeping them updated on the situation.

2.1.3. If additional CDDAR personnel are required to recover the aircraft, the CDDAR Team Chief will notify the MOC and maintenance supervisor of the personnel and/or equipment necessary.

### 2.2. Engine shut-down.

2.2.1. When a disabled aircraft shuts down engines on the runway, the applicable production supervisor will determine the safest course of action to clear the aircraft off the runway.

2.2.2. 440 AMXS will be prepared to tow the aircraft to final parking.

2.2.3. If there is another emergency in progress and/or requires Crash Recovery team response, the production superintendent will coordinate with the MOC to address the situation.

### 2.3. Hot brakes.

2.3.1. When hot brakes are declared, the applicable production superintendent will proceed to the aircraft when directed by the senior fire officer.

2.3.2. The base fire department will approach the wheel from either front or rear, depending on aircraft configuration in order to obtain an accurate temperature reading of the brake assembly.

2.3.3. In accordance with TO 4B-1-1, *Use of Landing Wheel Brakes and Wheels During Ground Operations*, do not attempt to determine brake temperature using mechanical items such as melt sticks or chemical pencils.

2.3.4. There is no identified temperature in tech data for hot brakes, however TO 4W1-4-1013 lists the tire fuse plug melting point at 390 degrees Fahrenheit. The temperature that is considered safe is 350 degrees Fahrenheit or less.

2.3.5. If hot brakes are determined, all non-essential personnel will be withdrawn a minimum of 300 feet and a 30-minute cool down period will begin.

2.3.6. If the parking brake is set (upon approval from the senior fire officer) ensure the aircraft is sufficiently chocked and release the parking brake. The purpose of this is to prevent the brake from seizing.

2.3.6.1. If at the end of the 30-minute cool down period, the brakes are still hot, an additional 15-minute cool down period will begin until the brakes are determined safe.

2.3.6.2. When the brakes temperature has cooled to safe levels, set the parking brake. After a thorough inspection and the brakes are determined safe, the aircraft can be moved to another location.

#### 2.4. **Blown tire(s).**

2.4.1. In the event one or both main/nose tires are blown on the runway, the Crash Recovery Team will assemble.

2.4.1.1. When directed by the on-scene senior fire officer, install new wheel and tire assemblies.

2.4.1.2. When the aircraft is deemed safe to tow, the Crash Recovery Team will tow the aircraft clear of the runway.

#### 2.5. **Other CDDAR responses.**

2.5.1. Prepare to immediately assemble a tow team if aircraft towing is directed by the OSC to remove surrounding aircraft away from the crash site.

2.5.2. Accomplish applicable checklists (see attachments 5, 6, 7, 8, 9 and 10)

2.6. Safety precautions will not be abandoned to expedite removal of disabled or damaged aircraft.

### 3. **Responsibilities.**

3.1. 440 MXS Aerospace Repair Section will:

3.1.1. Ensure provisions of this instruction are applied and maintained in current status IAW with associated maintenance directives.

3.1.2. Ensure a qualified CDDAR team chief, identified in writing by 440 MXG/CC, is available during all hours of operation.

3.1.3. Be responsible for the overall CDDAR program management and application at Pope AFB.

3.1.4. Coordinate with the MOC regarding any shortages of CDDAR personnel or equipment.

3.1.5. Ensure a sufficient number of personnel are qualified in CDDAR procedures and documented. Training will encompass both academic and hands-on training.

3.1.5.1. Ensure CDDAR team members meet minimum CDDAR training requirements.

3.1.6. Ensure all necessary equipment is maintained and ready for CDDAR operations. All equipment inspections will be accomplished IAW applicable TOs and owner's manuals. Inspections will be tracked and documented in G081.

**NOTE:** Operational risk management is paramount in all decision-making.

MERLE D. HART, Colonel, USAFR  
Commander

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

AFI 21-101, *Aerospace Equipment Maintenance Management*, dated 12 APR 2010  
AFI 21-101 AFRC Sup 1, *Aerospace Equipment Maintenance Management*, dated 3 FEB 2007  
AFMAN 32-4004, *Emergency Response Operations*, dated 1 DEC 1995  
TO 4B-1-1, *Use of Landing Wheel Brakes and Wheels During Ground Operations*  
Applicable Aircraft Technical Orders, dated 31 MAR 1999  
Pope AFB Hazardous Material Emergency Planning and Response Plan, dated 21 JUL 2009  
43 AW Plan 91-202, *Mishap Investigation Response Plan*, dated 15 MAR 2003

***Abbreviations and Acronyms***

**AR**—Aero Repair  
**BEE**—Bioenvironmental Engineering  
**CDDAR**—Crash Damaged and Disabled Aircraft Recovery  
**CRT**—Crash & Recovery Team  
**DCG**—Disaster Control Group  
**HMRT**—Hazardous Material Response Team  
**IAW**—In Accordance With  
**MOC**—Maintenance Operations Center  
**OSC**—On-Scene Commander  
**PPE**—Personal Protective Equipment  
**TO**—Technical Order

***Terms***

**Disabled Aircraft**— an aircraft that cannot or should not be moved using its own motive power, but can be towed using its own serviceable under-carriage.

**Damaged Aircraft**— an aircraft that cannot be moved from the runway using its own motive power or by its own under-carriage.

**Attachment 2****INDIVIDUAL AIRCRAFT CAPABILITIES**

**A2.1.** Primary POC for personnel, parts and equipment is the Tanker Airlift Control Center/Logistics Group Readiness Center (HQ AMC/XOCL), Scott AFB IL, DSN: 779-1963. LGRC will task home station units with CDDAR recovery efforts beyond host-base capabilities upon notification. (see attachment 3 for local capabilities matrix).

A2.1.1. KC-10: POC McGuire AFB NJ R&R Shop Crash Recovery, DSN: 650-6133

A2.1.2. C-17: POC Charleston AFB SC R&R Shop Crash Recovery, DSN: 673-7054/7055

A2.1.3. C-5: POC Dover AFB DE R&R Shop Crash Recovery, DSN: 445-5713

A2.1.4. KC-135: POC Fairchild AFB WA R&R Shop Crash Recovery, DSN: 657-5653

A2.1.5. 43 CES Hazardous Material Response Team, DSN: 424-2561, Cell: 910-286-4464

A2.1.6. 43 BEE Bioenvironmental Engineering Team, DSN: 424-2927, Pager: 910-433-8972

**A2.2.** For AMC commercial contract aircraft, any accident/incident must be immediately reported to Tanker Airlift Control Center, Action Cell, Scott AFB IL, DSN: 779-1705/1706 IAW 49 CFR part 830.

## Attachment 3

## 440 MXG/43 AMXS CDDAR CAPABILITY MATRIX

	C-5	C-17	KC-10	KC-135	COM	C-130
Overall Crash Handling	3bde	3bde	4bdeg	4bdge	4bdge	1
Blown Tires	1	1	4bdge	4bdge	4bdge	1
Departing Surfaces	3bde	3bde	4beg	4beg	4beg	1
Gear Collapse	1f	1f	1f	1f	1f	1
Major Fuel Spill	1	1	2be	2be	4bde	1
Tow	1	1	4bcde	4bcde	4bcde	1
Jack	2ce	2ce	4bcde	4bcde	4bcde	1
Brake Change	2d	2d	4bdeg	4bdeg	4bdeg	1

**Capability Key**

1-Full Capability

2-Basic Capability, Minimal Assistance

3-Severely Limited Capability

4-Maintenance Recovery Team

**Limiting Factor Key**

a-Manpower

b-Equipment

c-Facilities

d-Parts

e-Training

f-Wing

g-Tech Data

**Attachment 4****CDDAR EQUIPMENT, OWNING ORGANIZATION**

General purpose radio equipped vehicle w/ hitch – 440 MXS

CDDAR equipment trailer and tractor – 440 MXS

All-terrain fork lift – Contracted

Bulldozer - Contracted

Aircraft tow vehicle – 440 MXG

C-130 tow bar – 440 MXG

Crane - Contracted

Flatbed trailer and tractor – 43 LRS

Light carts – 440 MXS

Air bags – 440 MXS

Slings – 440 MXS

Belly bands – 440 MXS

Chains – 440 MXS

Snatch cables – 440 MXS

Air Cart 440 MXG

Air bag control consoles – 440 MXS

Hard hats – 440 MXS

Reflective Vests – 440 MXS

Reflective Belts – 440 MXS

Whistles – 440 MXS

Work Gloves – 440 MXS

Tyvex Suits w/ booties – 440 MXS

Full-face Respirators – 440 MXS

**REMARKS:** Each crash accident must be evaluated individually, and any list cannot address every CDDAR scenario.

**Attachment 5****INITIAL CRASH RESPONSE CHECKLIST****A5.1. Assemble Crash Recovery Team.**

**A5.2.** Brief the team on the current situation using the Pre-Response Briefing Checklist (attachment 6)

**A5.3. Check equipment and make preparations for transportation to crash site.**

**A5.4.** Once authorization is given to access the crash site, use the Aircraft/Site Data Checklist (attachment 7) to gather as much data as possible (i.e. aircraft weight, cargo, structural damage).

**A5.5. Use the Hazard Checklist (attachment 8) to identify what hazards exist.**

**A5.6.** Using data from the Aircraft/Site Data Checklist and the Hazard Checklist, accomplish a risk assessment using operational risk management (ORM).

**A5.7. Develop a recovery plan and assign duties, using the following factors:**

A5.7.1. Aircraft condition (i.e. structural damage, gear up/down, weight, etc.).

A5.7.2. Terrain (i.e. level, sloped, muddy, snow, etc.).

A5.7.3. Weather.

A5.7.4. Personnel and equipment available.

A5.7.5. Hazards identified using ORM.

A5.7.6. Urgency of recovery (i.e. runway out of commission).

A5.7.7. Brainstorm all problems, and encourage input from all personnel.

**A5.8.** Perform safety briefing checklist (attachment 9) before commencing with the recovery.

**A5.9. Fill out the Key Personnel Contact Information Worksheet (attachment 10).**

**Attachment 6****CRASHED, DAMAGED/DISABLED AIRCRAFT PRE-RESPONSE BRIEFING  
CHECKLIST**

- A6.1. Initial information on crash/mishap.** What facts are known at the present time?
- A6.2.** Introduce all members of the team and what their specialty or expertise is.
- A6.3. Brief the sequence of events that will normally take place.**
- A6.4.** Name of the on-scene commander
- A6.5.** Name of the Disaster Control Group Representative
- A6.6.** Name of the Crash Recovery Team Chief
- A6.7.** Await authorization from OSC or DCG Representative to proceed to crash/mishap site.

**Attachment 7**

**AIRCRAFT/SITE DATA CHECKLIST**

**A7.1. Aircraft Information**

A7.1.1. Type and Model: \_\_\_\_\_

A7.1.2. Mishap Date: \_\_\_\_\_

A7.1.3. Time: \_\_\_\_\_

A7.1.4. Tail Number: \_\_\_\_\_

A7.1.5. Empty Weight: \_\_\_\_\_

A7.1.6. Total Fuel Load (current): \_\_\_\_\_

A7.1.7. Fuel Load by Tank: \_\_\_\_\_

A7.1.8. Cargo Load (weight): \_\_\_\_\_

A7.1.9. Cargo Type (pallets, rolling stock, vehicles, etc.): \_\_\_\_\_

A7.1.10. Munitions on board: \_\_\_\_\_

A7.1.11. Major Structure Condition: \_\_\_\_\_

A7.1.12. Is Landing Gear Intact? \_\_\_\_\_

A7.1.13. Additional Information or comments: \_\_\_\_\_

\_\_\_\_\_

**A7.2. Site Information**

A7.2.1. General Location: \_\_\_\_\_

A7.2.2. Exact Position: \_\_\_\_\_

A7.2.3. Type terrain: \_\_\_\_\_

A7.2.4. Temperature: \_\_\_\_\_

A7.2.5. Weather: \_\_\_\_\_

A7.2.6. Wind Speed and Direction: \_\_\_\_\_

A7.2.7. Weather Forecast: \_\_\_\_\_

A7.2.8. Additional Information or Comments: \_\_\_\_\_

## Attachment 8

**HAZARD IDENTIFICATION CHECKLIST**

- A8.1.** Explosives/Ammunition/Flares \_\_\_\_\_
- A8.2.** Bio Hazard (Blood, remains, etc) \_\_\_\_\_
- A8.3.** Fuel \_\_\_\_\_
- A8.4.** Poisonous gases \_\_\_\_\_
- A8.5.** Toxic Chemicals \_\_\_\_\_
- A8.6.** High pressure cylinders \_\_\_\_\_
- A8.7.** Corrosive Agents \_\_\_\_\_
- A8.8.** Ejection Seats \_\_\_\_\_
- A8.9.** Ejection Hatches \_\_\_\_\_
- A8.10.** Batteries \_\_\_\_\_
- A8.11.** Damaged Tires \_\_\_\_\_
- A8.12.** Composites \_\_\_\_\_
- A8.13. Review T.O.** 00-105E-9 \_\_\_\_\_

**Attachment 9****CRASH RECOVERY SAFETY BRIEFING CHECKLIST**

**A9.1.** All personnel involved with the recovery operation must have the following Personal Protective Equipment (PPE): steel toed boots, eye protection, ear protection, hard hat, safety vest, leather work gloves, reflective belt, whistle, dressed for weather conditions (i.e. cold, hot, rain, etc.)

**A9.2.** Except for an emergency, no team member will move any portion of the aircraft unless it has been cleared by the On-Scene Commander (OSC) or the Team Chief. Each member will do only those tasks he/she was directed to do by the OSC or the Team Chief. Team members will do assigned tasks until relieved by another team member.

**A9.3. IF FOR ANY REASON,** a team member cannot safely do his/her assigned tasks (too dangerous or too many people in the area), it is his/her responsibility to notify the team chief.

**A9.4. Use spotters when backing the crash trailer, vehicles and equipment.**

**A9.5.** Any team member can halt the lift/recovery operation if an unsafe condition is noticed. Methods of halting operations will be by radios or whistles.

**A9.6.** Be familiar where all emergency equipment is located at the site, such as: fire extinguishers, eye wash stations, first aid kit, MSDS's.

**A9.7.** Establish a crash site evacuation plan in the event of a fire or other emergency.

**A9.8.** Establish procedures and lines of communication to various departments (i.e. fire dept, MOC, Safety, etc.) to assist in the event of an accident or injury.

**A9.9. Be aware of your surroundings and the various hazards:**

A9.9.1. Never be under an aircraft while it is being lifted unless manning a jack.

A9.9.2. Stay clear of guide/tow cables, chains or straps under tension.

A9.9.3. Take precautions to prevent falls from elevated areas (aircraft, stands, etc.)

A9.9.4. Wear the appropriate PPE at all times.

A9.9.5. Use proper lifting techniques.

A9.9.6. Take measures to avoid heat stroke, dehydration, sun burn, frost bite, etc. (drink plenty of water)

**A9.10. Ask all team members for any additional suggestions or inputs.**

Attachment 10

KEY PERSONNEL CONTACT INFORMATION WORKSHEET

A10.1. ON-SCENE COMMANDER (OSC): \_\_\_\_\_

A10.1.1. DUTY PHONE: \_\_\_\_\_

A10.1.2. CELL PHONE: \_\_\_\_\_

A10.2. DISASTER CONTROL GROUP (DCG)  
REPRESENTATIVE: \_\_\_\_\_

A10.2.1. DUTY PHONE: \_\_\_\_\_

A10.2.2. CELL PHONE: \_\_\_\_\_

A10.3. CRASH RECOVERY TEAM CHIEF

A10.3.1. DUTY PHONE: \_\_\_\_\_

A10.3.2. CELL PHONE: \_\_\_\_\_

A10.4. SHOP NUMBERS:

A10.4.1. ELECTRO-ENVIRONMENTAL SECTION.....4-5410

A10.4.2. PROPULSION SECTION.....4-6145

A10.4.3. FLIGHT LINE.....4-6969

A10.4.4. INSPECTION SECTION.....4-5585

A10.4.5. HYDRAULICS SECTION.....4-6610

A10.4.6. FUELS SECTION.....4-6702

A10.4.7. STRUCTURAL MAINTENANCE SECTION.....4-4931

A10.4.8. AVIONICS SECTION.....4-6183

A10.4.9. GUIDANCE AND CONTROL SECTION.....4-5986

A10.4.10. ECM SECTION.....4-6289

A10.4.11. MUNITIONS SECTION.....4-6182

A10.4.12. METALS TECHNOLOGY SECTION.....4-6622

A10.5. OTHER KEY NUMBERS:

A10.5.1. MAINTENANCE OPERATIONS CENTER.....4-9021

A10.5.2. WING SAFETY OFFICE.....4-8370

A10.5.3. FIRE DEPARTMENT.....4-2464

## Attachment 11

### CDDAR TEAM POSITIONS, RESPONSIBLE UNIT AND JOB DESCRIPTIONS

**A11.1.** Crash Crew personnel assignments with current home telephone numbers will be maintained in the MOC. A copy will be provided to Disaster Preparedness for use by the OSC.

**A11.2. Team chief is the maintenance flight chief.**

A11.2.1. Directs all actions required for CDDAR recovery.

**A11.3.** Alternate team chief is the aero repair shop chief.

A11.3.1. Assists with CDDAR procedures under direction of the team chief.

A11.3.1.1. Supervises CDDAR operations during the team chief's absence.

**A11.4. Tow Teams:**

A11.4.1. Provided by AMXS. AMXS ensures tow team personnel are qualified.

A11.4.1.1. Remove disabled aircraft from active runways and taxiways when tow bar and tow vehicle are sufficient.

**A11.5. CDDAR Team:**

A11.5.1. Will, at a minimum, consist of the following sections that are listed below. Other sections may be tasked at the discretion of the CDDAR team chief.

A11.5.1.1. Aero Repair (IAW CDDAR team appointment letter).

A11.5.1.2. Aero Repair Section: Supervises the installation and use of CDDAR equipment (i.e. slings, hardhats, aircraft jacks, etc) as well as assist with CDDAR procedures under direction of the team chief and/or alternate.

A11.5.1.3. Aerospace Ground Equipment Flight: Provides, operates and maintains all powered and non-powered support equipment necessary for CDDAR operations as well as assist with CDDAR procedures under direction of the team chief and/or alternate.

A11.5.1.4. Structural Maintenance: Evaluates damage and assists with CDDAR procedures under direction of the team chief and/or alternate.

A11.5.1.5. Aircraft Maintenance Squadron: Assists with CDDAR procedures under direction of the team chief and/or alternate.