

**BY ORDER OF THE COMMANDER
920TH RESCUE WING**

**920TH RESCUE WING INSTRUCTION
21-144**



22 OCTOBER 2012

Maintenance

**CRASHED, DAMAGED OR DISABLED
AIRCRAFT RECOVERY AND HOT BRAKE
PROCEDURES**

COMPLIANCE WITH THIS PUBLICATION IS MANDATORY

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This instruction implements Air Force Policy Directive (AFPD) 21-1, Air and Space Maintenance. This instruction extends the guidance of Air Force Instruction (AFI) 21-101, Aircraft and Equipment Maintenance Management, AFI 10-2501, Air Force Emergency Management (EM) Program Planning and Operations, Air Force Manual 32-4004, 45th Comprehensive Emergency Management Plan 10-2 AFPD 10-25 Emergency Management, and the 45SW/920th RQW Host/Tenant Support Agreement. It provides guidance and procedures to the 920th Rescue Wing (920RQW) for the Crashed, Damaged or Disabled Aircraft Recovery Program (CDDAR). It applies to 920th RQW PAFB agencies involved with recovery operations will ensure compliance with this instruction to ensure a coordinated response to CDDAR situations. Coordination/approval at the 920 RQW will be accomplished by an electronically signed AF Form 673, *Air Force Publication/Form Action Request* (AF Form 673). Do not use e-mails for final coordination/approval, but all e-mails will be maintained as part of the record set. 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 Form 847s from the field through Major Command (MAJCOM) publications/forms managers. Ensure that all records created as a result of processes prescribed in this publication are maintained in accordance with Air Force Manual (AFMAN) 33-363, *Management of Records*, and disposed of in accordance with Air Force Records Information Management System (AFRIMS) Records Disposition Schedule (RDS) located at <https://www.my.af.mil/afirms/afirms/afirms/rims.cfm>

1. Specific Positions Defined/Responsibilities: Crashed, damaged or disabled aircraft recovery (CDDAR) trained personnel will be identified as Team Chief or Team Member on the crash

recovery recall roster. Team Chiefs will be identified on the special certification roster (SCR) and Integrated Maintenance Data System (IMDS) course code #03840. The 45th Space Wing Transient Alert Flight assumes primary responsibility of crash recovery operations. The on-scene-commander (OSC) may delegate responsibility to the owning unit of aircraft. In the event of a major mishap, additional members may be augmented to assist in CDDAR operations under the direct supervision of the CDDAR Team Chief and team members.

2. CDDAR Team Chief will:

- 2.1. Be appointed in writing, by the 920th Maintenance Group Commander (920MXG/CC), and responsible for the owning aircraft CDDAR program development, implementation and management. Additionally, the Team Chief will ensure that all equipment and personnel protective equipment (PPE) is inspected annually. All PPE has been approved by host Bioenvironmental Engineering (BEE) and review under phase and ISO shop industrial surveys. Ensure all personnel a medically qualified/trained for specialized PPE requirements.
- 2.2. Assign and ensure an adequate number of trained/qualified personnel are assigned to CDDAR team. Determine/assign positions prior to recovery operation (e.g., special vehicle operators, console operators, safety observers, etc).
- 2.3. Coordinate requests for additional personnel and equipment through the 920th Maintenance Operations Flight (920MOF) Maintenance Operations Center (MOC)
- 2.4. Ensure PPE backpacks are maintained in the 920th Maintenance Flight consolidated tool room (CTK).
- 2.5. Coordinate with 920MXG Quality Assurance (QA) Office on all weight and balance or center of balance issues.
- 2.6. Establish a CDDAR continuity book containing at a minimum:
 - 2.6.1. Recall Roster
 - 2.6.2. List of agencies to contact with phone numbers and locations
 - 2.6.3. Training Plan
 - 2.6.4. Checklist (attachments of this OI)
- 2.7. Distribute emergency recall roster with CDDAR team member's information to:
 - 2.7.1. 45th Space Wing agencies:
 - 2.7.1.1. Airfield Operations (45 OSS/OSA)
 - 2.7.1.2. Transient Alert (45 OSS/OSA)
 - 2.7.2. 920th Rescue Wing agencies:
 - 2.7.2.1. Safety (920 RQW/SE)
 - 2.7.2.2. Command Post (920 RQW/CP)
 - 2.7.2.3. Logistics Readiness Function (920 LRF/LGR)
 - 2.7.2.4. Quality Assurance Weight & Balance POC (920 MXG/QA)
 - 2.7.2.5. Maintenance Operations Center (920 MOF/MOC)

2.7.3. Upon notification of an on/off base crash, the CDDAR Team Chief will implement the crash recovery team recall.

2.7.4. Be the single on-scene (OS) focal point for CDDAR operations and reports directly to the On-Scene Commander (OSC). If the operation will be ongoing two CDDAR Team Chiefs will be designated for 24-hour operations. These individuals will be readily identifiable by "Team Chief" marked on their hard hat.

2.7.5. Evaluate the situation and coordinate with the OSC to formulate a recovery plan. Ensure the OSC has released the aircraft before recovery actions begin.

2.7.6. Consult with the OSC and BEE prior to beginning crash recovery operations, to determine what PPE will be required. BEE will ensure all members are aware of hazardous materials present on the incident aircraft and, to the extent possible, prevent spills and contain hazardous material during the recovery operation.

2.7.7. Plan for minimal secondary damage to the aircraft during recovery operations. Ensure the preservation of evidence for mishap or accident investigations IAW AFI 91-202 and AFI 91-204.

2.7.8. Contact the 920 MOF/MOC and or 920 RQW/CP for an emergency recall roster during an afterhours (1530-0700) response.

2.7.9. Aircraft that are damaged/disabled and declare an In-Flight Emergency (IFE)/Ground Emergency (GE). No lower than Production Superintendent will make the determination on whether to pre-position a CDDAR team and or tow crew. Any damaged aircraft that cannot be towed by normal means will be removed from the runway area by Crash Recovery team as determined by the Production Superintendent. All other aircraft IFE's that can be moved by normal means of towing will remain the responsibility of the AMXS and moved according to tech data.

2.7.10. Assemble a team to respond to a Hot Brakes condition.

2.7.10.1. CDDAR Team Chief or assigned technical expert will be notified of Hot Brake condition by the 920 MOF/MOC advised of location and tail number of aircraft.

2.7.10.2. CDDAR Team Chief or assigned technical expert will evaluate Hot Brakes. Nonessential personnel will evacuate the area to a minimum of 300 feet from the aircraft.

2.7.10.3. Hot brake areas are designated as runway 11/29 Short Takeoff and Landing (STOL), and taxiway J, and B south warm-up.

2.7.10.4. CDDAR Team Chief or assigned technical expert verifies the severity of the braking action visually and physically (after a minimum 30-minute cool down period), or by consulting with the aircraft crew, the applicable Technical Data, and determines if any maintenance action is required.

3. CDDAR Team Members will:

3.1. Work directly for and report to CDDAR Team Chief. Team members must be trained in basic CDDAR operations and Hot Brakes procedures. Augmentees can be assigned as required and briefed on duties by Team Chief

3.2. Respond to all accidents/incidents involving unit owned aircraft at Patrick AFB. CDDAR Team will assemble at location to be determined and remain in place, awaiting instructions from the Fire Chief/OSC. Other accident/incident responses off station will be on an as needed basis.

3.3. Provide immediate response during normal duty hours (0700-1530). For after hour's response, the CDDAR Team Chief will notify the CDDAR Team Members utilizing the emergency recall accessed by the MOC or CP

4. 920th Maintenance Squadron (920 MXS) will:

4.1. Establish and maintain the CDDAR Team primarily from members of the Maintenance Flight.

4.2. AGE Section will provide AGE to support the recovery effort as requested by OSC and or CDDAR Team Chief.

4.3. Avionics Flight will provide support to remove all classified equipment.

4.4. Weapons section will provide support to remove weapons and munitions loaded on the aircraft.

5. 920th Aircraft Maintenance Squadron (920 AMXS) will:

5.1. If assistance is required notify 920th Maintenance Squadron (920MXS) Maintenance Flight CDDAR Team Chief to evaluate IFE, C-130 unsafe gear indications, hot brakes and all abnormal towing operations.

5.2. If the aircraft can be towed normally in a power on/off situation, the 920 AMXS will be responsible for assembling a tow team and removing the aircraft from runways and taxiways.

5.3. Provide assistance with crash recovery operations as requested by the OSC or CDDAR Team Chief.

6. 920th Maintenance Operations Flight (920 MOF) Maintenance Operations Center (MOC) will:

6.1. Maintain and initiate Ground Emergency/Crash Recovery checklists for aircraft mishap and notify all supporting agencies.

6.2. Ensure radio traffic is held to essential transmissions during emergencies and enforce radio discipline during the recovery operation.

6.3. Assist as necessary obtaining clearance from the control tower for maintenance vehicles to cross the active runway or taxiways to reach the recovery site.

6.4. Coordinate with for CDDAR or Hot Brakes support from base organizations per Ground Emergency/Crash Recovery.

7. Training/Equipment:

7.1. CDDAR Team Chief will:

7.1.1. Ensure that annual CDDAR training is accomplished for all team members using lesson plans, applicable directives, Mission Design Series (MDS) unique tools and technical orders. Initial training will consist of academic and hands-on to include an actual aircraft lift. Lift to be accomplished every 3 years at command directed training

course. CDDAR team members will participate in training exercises with host base as required. Training will be updated in IMDS using course code #3840 team chief, #16010 Team member, #16015 lift bags and training records documented as applicable.

7.1.2. Ensure accomplishment of required inspections of owning unit CDDAR equipment at prescribed intervals or at least annually. Joint inspections will be documented on Air Force Technical Order (AFTO) Form 244, Industrial/Support Equipment Record, and updated in IMDS. All 920MXG equipment will be loaded in TC Max (tool accountability system) and will be used when available. Utilize Air Force Reserve Command (AFRC) Form 177 Consolidated Tool Kit Inventory and Control Log, when TC Max is not available. Identify any equipment short falls immediately to the 920MXG/CC.

7.1.3. Upon notification of mobility and or deployment all equipment requirements will be worked by CDDAR team leads through 920th supervision, HHQ and or gaining command to determine any CDDAR needs.

8. Coordination. Base support requirements for crash recovery operations are coordinated through the 45 SW Transient Alert Flight according to AFI 25-201, Support Agreements Procedures, AFI 32-4001, Disaster Preparedness Planning and Operations, 45 SWI 25-203, 45th Space Wing Agreements Program, 45 SW/920 RQW Support Agreement, and applicable base directives.

JEFFERY L. MACRANDER, Col, USAFR
Commander

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

AFI 25-201, *Support Agreements Procedures*

AFI 32-4001, *Disaster Preparedness Planning and Operations*

AFPD 21-1, *Air & Space Maintenance*

AFPD 32-40, *Disaster Preparedness*

AFI 21-101, *Aircraft and Equipment Maintenance Management*

TO 00-80C-3, *Aircraft Crash Procedures*

TO 00-105E-9, *Aircraft Emergency Rescue Information*

TO 1C-130A-3, *Structural Repair Instructions*

TO 1C-130H-2-00GE-00-1 *General Equipment Maintenance*

TO 1H-60(H) G-2-1, *Organizational and Intermediate Maintenance, Aircraft General Information Manual*

45th Space Wing, *920th Rescue Wing Support Agreement*

45 SWI 25-203, *45th Space Wing Agreements Program*

Adopted Forms

AF Form 847, *Recommendation for Change of Publication*

AFTO Form 244, *Industrial/Support Equipment Record*

AFRC Form 177, *Consolidated Tool Kit Inventory and Control Log*

Abbreviations and Acronyms

AFI—Air Force Instruction

AFPD—Air Force Policy Directive

AGE—Aerospace Ground Equipment

Bldg—Building

CDDAR—Crashed, Damaged or Disabled Aircraft Repair

ISO—Isochronal

MLG—Main Landing Gear

MOC—Maintenance Operation Center

MXS—Maintenance Squadron

NLG—Nose Landing Gear

OIC—Officer in Charge

OSC—On-Scene Commander

PE—Periodic

PPE—Personal Protective Equipment

RQW—Rescue Wing

STOL—Short Takeoff and Landing

SW—Space Wing

SWI—Space Wing Instruction

TA—Transient Alert

Terms

Damaged Aircraft—An aircraft that cannot be removed from the runway under its own power or by towing on its own undercarriage without sustaining considerable secondary damage.

Disabled Aircraft—For the purpose of this instruction, a disabled aircraft is an aircraft on the runway that cannot or should not be moved under its own power, but can be towed using its own undercarriage.

Hot Brake Condition—A suspected, potential, or actual hazardous situation, attributed to overheating of the wheel brake system.

Attachment 2

LOCATION OF CRASH RECOVERY EQUIPMENT

Figure A2.1. Location Of Crash Recovery Equipment.

LOCATION OF CRASH RECOVERY EQUIPMENT		
All crash recovery equipment including airlifting bags, pumps, shoring, and basic Crash Recovery equipment, is located at Bldg. 651 and in a CONEX near the Transient Alert Flight. Items that the 920 th RQW is responsible for are listed below and are controlled through the 920 th MXS Inspection Section Tool Room TCMax program.		
C-130 Special Equipment	Storage Area	Controlled by
Tow Vehicle with Tow Bar	Flightline	C-130 Flightline
35-Ton Axle Jack	Bldg 630	C-130 ISO Dock
Built-up MLG/NLG Wheel/Tire	Bldg 630	Wheel and Tire Shop
Tire Dolly/Tire Change Tools	Bldg 630	C-130 ISO Dock
Wing and Fuselage Jacks	Bldg 630	C-130 ISO Dock
Spill Containment Kit	Bldg 630	C-130 ISO Dock
Lifting Bags (mobility)	Bldg 651	C-130 ISO Dock
Bag Console (mobility)	Bldg 651	C-130 ISO Dock
H-60 Special Equipment	Storage Area	Controlled by
Tow Vehicle with Tow Bar	Flightline	H-60 Flightline
Built-up Wheel/Tire	Bldg 630	Wheel and Tire Shop
10-Ton Jacks	Bldg 751	H-60 PE Inspection Section
Spill Containment Kit	Bldg 751	H-60 PE Inspection Section

Attachment 3

CRASH / DISABLED AIRCRAFT RECOVERY MAIN CHECKLIST**Figure A3.1. Crash / Disabled Aircraft Recovery Main Checklist.**

CRASH / DISABLED AIRCRAFT RECOVERY MAIN CHECKLIST
(THIS WILL BE ACCOMPLISHED BEFORE AIRCRAFT IS MOVED/LIFTED)
CRASH RECOVERY TEAM CHIEF WILL ENSURE:
1. _____ Assemble Crash Recovery Team.
2. _____ Brief the team on the current situation using the Pre-Response Briefing Checklist.
3. _____ Check equipment and make preparation for transportation to crash site.
4. _____ Once authorization is given to access the crash site, use the Aircraft Data Checklist to gather as much data as possible (i.e. aircraft weight, cargo, structural damage, etc)
5. _____ Use the Hazard Checklist to identify what hazards exist.
6. _____ Using data from the Aircraft Data Checklist and the Hazard Checklist, accomplish a risk assessment using Operational Risk Management (ORM).
ID Risk. Identify the hazards.
Assess the Risk. Risk is the probability and severity of loss linked to the hazard.
Analyze Risk Control Measures. Investigate specific strategies and tools that reduce or eliminate risk.
Make Control Decisions. Deal with risk by accepting, avoiding, reducing, spreading, or transferring it.
Risk Control Implementation. Develop implementation strategy.
Supervise and review. Once controls are in place, then the process must be scrutinized to determine its effectiveness.
7. _____ Develop a recovery plan and assign duties, using the following factors:
Aircraft condition (i.e. structural damage, gear up/down, weight, etc)
Terrain (i.e. level, sloped, muddy, snow, etc)
Weather (i.e. rain, wind, cold, etc)
Personnel and equipment available.
Hazards identified using ORM
Urgency of recovery (i.e. runway out of commission)
Brainstorm all problems, and encourage input from all personnel.
8. _____ Before commencing with the recovery, give a safety briefing using the Safety Briefing Checklist.
9. _____ Fill out the Key Personnel Contact Information sheet.

Attachment 4

CRASH / DISABLED AIRCRAFT

Figure A4.1. Crash / Disabled Aircraft.

CRASH / DISABLED AIRCRAFT	
PRE-RESPONSE BRIEFING CHECKLIST	
1. _____	Initial information on crash/mishap. What facts are known at present time.
2. _____	Introduce all members of the team and what their specialty or expertise is.
3. _____	Brief the sequence of events that will normally take place.
4. _____	Name of the On Scene Commander
5. _____	Name of the Maintenance Superintendent/Representative
6. _____	Name of the Crash Recovery Team Chief
7. _____	Await authorization from OSC or Maintenance Rep to proceed to crash/mishap site.

Attachment 5

AIRCRAFT / SITE DATA CHECKLIST

Figure A5.1. Aircraft / Site Data Checklist.

AIRCRAFT / SITE DATA CHECKLIST
AIRCRAFT INFORMATION
Type and Model
Mishap Date
Time
Tail Number
Empty Weight
Total Fuel Load (current)
Fuel Load by Tank
Cargo Load (weight)
Cargo Type (pallets, rolling stock, vehicles, etc)
Munitions On Board
Major Structure Condition
Landing Gear Intact?
Additional aircraft information or comments:
SITE INFORMATION
General Location
Exact Position
Type Terrain
Temperature
Weather (Rain, snow, fog, etc.)
Wind Speed and Direction
Weather Forecast
Additional site information of comments

Attachment 6

HAZARD IDENTIFICATION CHECKLIST**Figure A6.1. Hazard Identification Checklist.**

HAZARD IDENTIFICATION CHECKLIST	
Yes/No	Comments
	Explosives/Ammunition/Flares
	Bio hazard (blood/remains etc.)
	Fuel
	Poisonous gases
	Toxic Chemicals
	High Pressure Cylinders
	Corrosive Agents
	Batteries
	Damaged Tires
	Composites
	Review T.O. 00-105E-9

Attachment 7

CRASH / DISABLED AIRCRAFT RECOVERY SAFETY BRIEFING CHECKLIST**Figure A7.1. Crash / Disabled Aircraft Recovery Safety Briefing Checklist.**

CRASH / DISABLED AIRCRAFT RECOVERY SAFETY BRIEFING CHECKLIST	
1. _____	All personnel involved with the recovery operation must have the following Personnel Protective Equipment (PPE).
	Steel toe 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.)
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 <u>only</u> 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.
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.
4. _____	Use spotters when backing the crash trailer, vehicles and equipment.
5. _____	Any team member can halt the lifting/recovery operation if an unsafe condition is noticed. Methods of alerting of unsafe conditions will be by radios or whistles.
6. _____	Be familiar where all emergency equipment is located at the site, such as: fire extinguishers, eye wash, first aid kit, MSDS's.
7. _____	Establish a crash site evacuation plan in the event of a fire or other emergency.
8. _____	Establish procedures and lines of communication to various departments (fire dept, MOC, Safety, etc.) to assist in the event of an accident or injury.
9. _____	Be aware of your surrounding and the various hazards:
	Never be under an aircraft while it's being lifted unless manning a jack.
	Stay clear of guide/tow cables, chains or straps under tension.
	Take precautions to prevent falls from elevated areas (aircraft, stands, etc.)
	Wear the appropriate PPE at all times
	Use proper lifting techniques
	Take measures to avoid heat stroke, dehydration, sun burn, frost bite, etc (drink plenty of water)
10. _____	Ask all team members for any additional suggestions or input.

Attachment 8

KEY PERSONNEL CONTACT INFORMATION

A8.1. “This publication requires the collection and or maintenance of information protected by the Privacy Act of 1974 authorized by RQWI 21-144. ”

Figure A8.1. Key Personnel Contact Information.

KEY PERSONNEL CONTACT INFORMATION	
1. ON SCENE COMMANDER (OSC)	
DUTY PHONE	
HOME PHONE	
2. MAINTENANCE SUPERINTENDENT/REPRESENTATIVE	
DUTY PHONE	
HOME PHONE	
3. CRASH RECOVERY TEAM CHIEF	
DUTY PHONE	
HOME PHONE	
4. SHOP NUMBERS:	
ELECTRIC ENVIRONMENTAL SHOP	7251/7252
ENGINE SHOP	8663/7517
FLIGHT LINE	3193/7132
INSPECTION SECTION	4122/2308
HYDRAULIC SHOP	6606/7960
FUEL SHOP	8407/8406
STRUCTURAL/CORROSION	6331/6332
AVIONICS	7980/2369
GUIDANCE & CONTROL	7981/2368
ECM	2881/7981
MUNITIONS	3715/3714
METALS TECH	5191
MAINTENANCE CONTROL	2261/2262
WING SAFETY OFFICE	1245/3215/3219
QUALITY ASSURANCE	7463/7838
FIRE DEPARTMENT 911 Non Emergency	7462