

**BY ORDER OF THE COMMANDER  
KEESLER AIR FORCE BASE (AETC)**

**KEESLER AIR FORCE BASE  
INSTRUCTION 21-102**



**4 DECEMBER 2024**

***Maintenance***

**CRASHED DAMAGED OR DISABLED  
AIRCRAFT RECOVERY**

**COMPLIANCE WITH THIS PUBLICATION IS MANDATORY**

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OPR: 81 OSF/TA

Certified by: 81 OSF/CC  
(Maj Nicholas Juliano)

Supersedes: Keesler AFBI 21-102, 12 Mar 2008

Pages: 19

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This instruction implements KEESLERAFBI 21-102 *Crashed, Damaged, or Disabled Aircraft Recovery* (CDDAR). This Instruction defines specific responsibilities and procedures for the CDDAR program. It applies to all 81 TRW personnel and requires execution assistance by maintenance personnel from the 403d Maintenance Group. It supplements DAFI 21-101, *Aircraft and Equipment Maintenance Management*, DAFI 21-101 AFRC Sup 1 and the 81TRW/403D Wing Host Tenant Agreement. Ensure all records generated as a result of processes prescribed in this publication adhere to 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. **Attachment 1** is a glossary of references and supporting information. The use of a name or any specific manufacturer, commercial product, commodity, or service in this instruction does not imply endorsement by the USAF

***SUMMARY OF CHANGES***

This publication has been rewritten and needs to be completely reviewed. Major changes include OPR changed from 81 TRW/SE to 81 OSF/TA. Additionally, it provides updated and expanded guidance for execution of the CDDAR program.

## Chapter 1

### GENERAL RESPONSIBILITIES

**1.1. Overview.** The 81 OSF is responsible for overseeing the Crashed Damaged or Disabled Aircraft Recovery (CDDAR) program at Keesler AFB. The CDDAR program applies to all USAF host and tenant organizations and is designed to recover crashed, damaged or disabled aircraft in a minimum time period consistent with the following considerations:

1.1.1. 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 investigations IAW DAFI 91-202, *The Department of the Air Force (DAF) Mishap Prevention Program* and DAFI 91-204, *Safety Investigations and Reports*.

1.1.4. 81 TRW Plan 91-202, *Mishap Response Plan*, provides procedures for tasked organizations in the event of an actual aircraft mishap.

1.1.5. 81 TRW CCSP 64-1, *Contingency Contracting Support Plan*, provides for contracting support to base agencies in the event of local emergencies or other contingencies and lists local vendor information to consider as potential sources for emergency contracting requirements.

1.1.6. Keesler AFB 10-401, *Base Support Plan*, Attachment 6 lists contractors to consider as potential sources for meeting emergency requirements.

**1.2. CDDAR Recommended Composition.** The primary CDDAR team members are from the 81 OSF/OSW to include Transient Alert (TA) and the 403d MXG. Management of the primary CDDAR equipment will be the 81 OSF/OSW with assistance from TA and the 403d MXG. The Mission Design Series (MDS)-specific C-130 aircraft equipment used for CDDAR will be managed by the 403d MXG. The CDDAR team should include personnel assigned to the repair and reclamation section. Duties will include management of crash recovery equipment and the removal of crash/damaged aircraft IAW DAFI 21-101, *Aircraft and Equipment Maintenance Management*.

1.2.1. Augmentee members should consist of personnel that assist the CDDAR Team for the purpose of identifying system components and advising the team chief on system hazards. They also may be required to know basic recovery methods and assist as a general labor source.

1.2.2. When base-assigned C-130 aircraft are involved, augmentee members should be part of the 403d MXG. Maintenance crew chiefs and other maintenance personnel may be needed for technical advice.

1.2.3. Specialized teams are personnel qualified with specific personal protective equipment to secure and contain various hazards associated with recovery operations. These personnel can be identified locally to meet situational needs (i.e.; hydrazine team, composites hazard team).

**1.3. Agencies Involved** . Numerous organizations are involved in planning, managing, and performing recovery operations. This section briefly lists the following organizations outside of aircraft maintenance who may be involved. **Note:** IEMP 10-2 *Installation Emergency Management Plan*, has a listing of organizations.

- 1.3.1. Crash Firefighting and Rescue (CFR) Unit.
- 1.3.2. Explosive Ordnance Disposal (EOD) Unit (if applicable).
- 1.3.3. 81 SFS.
- 1.3.4. 81 TRW/JA.
- 1.3.5. 81 CONS.
- 1.3.6. 81 SUPS.
- 1.3.7. BOS Contractor/CE.
- 1.3.8. Gulfport air traffic control tower (if applicable).
- 1.3.9. Incident Commander.
- 1.3.10. Bioenvironmental.
- 1.3.11. 81 TRW/SE.
- 1.3.12. 81 LRS.

**1.4. Recovery Program Responsibilities** . The 81 TRW and 403 MXG share responsibilities in executing this program.

1.4.1. TRW Responsibilities.

- 1.4.1.1. 81 TRW/CC is responsible for implementing policy, plans, and agreements to ensure compliance with established recovery programs.
- 1.4.1.2. The 81 OSF is responsible for the contents, responsibilities, and procedures regarding CDDAR in this instruction.
- 1.4.1.3. The 81 TRW will provide a fully trained and qualified CDDAR Team Chief who will work in concert with the 403 WG CDDAR Team Chief.
- 1.4.1.4. The 81 TRW will coordinate with the 403 WG and CDDAR team on emergency response of all 403 WG assigned aircraft requiring initiation of CDDAR capabilities.
- 1.4.1.5. When responding to an aircraft mishap, the 81 OSF/OSW will coordinate with 81 OSF/TA the 403 WG CDDAR team on the usage of the 81 TRW Safety vehicles. If the safety vehicles are not available, the 81 TRW/SE in conjunction with the 403D/MXG will coordinate with 81 LRS for proper vehicle support.

1.4.2. **403 MXG Responsibilities. The 4.3 MXG will:**

- 1.4.2.1. Coordinate with the 81 OSF/TA on the contents and responsibilities addressed in this instruction.
- 1.4.2.2. Establish numbers and positions of team members assigned within the 403d MXG.

1.4.2.3. Assist host recovery team with technical expertise, technical data, and C-130 aircraft MDS specific tools/equipment.

1.4.2.4. Provide a Point of Contact (POC) for Support Agreements in relation to supporting the CDDAR program.

1.4.2.5. Coordinate with 81 OSF/TA on scheduling of annual training exercises and provide input on training plans.

1.4.2.6. Assist the 81 OSF/TA in identifying and inventory of C-130 specific equipment on hand.

1.4.2.7. Assist in preparation of lift exercises with team members, equipment and tools as needed.

### **1.5. CDDAR Team Chiefs ( 81 OSF/TA and 403 MXG):**

1.5.1. Implement the requirements of the CDDAR program.

1.5.2. Assign specific CDDAR positions to the CDDAR team (i.e., Team Chief, member).

1.5.3. Ensure applicable course codes for initial and annual crash recovery training is loaded in the MIS for all assigned team members .

1.5.4. Review support agreements and the base disaster response plan annually and provide inputs for changes as required.

1.5.5. Ensure CDDAR procedures are coordinated with Fire Department, 81 OSF, the current BOS contractor, EOD, 81 SFS, 81 CONS, Bioenvironmental, Airfield Manager and on/off base agencies as required.

1.5.6. Ensure sufficient personnel/teams are trained to support CDDAR operations to include:

1.5.6.1. Familiarization of basic equipment operation (i.e., light carts, generators, etc.).

1.5.6.2. Familiarization with unique characteristics/hazards/materials for assigned aircraft (i.e., C-130 ballast depleted uranium, explosive loaded aircraft, chaff/flare).

1.5.6.3. Proper use of personnel protection equipment (PPE) as determined by the technical data and the base Bioenvironmental Engineer (BEE).

1.5.6.4. Ensure special qualifications for personnel are identified and documented (i.e., towing, jacking control console).

1.5.6.5. Ensure adequate tools and support equipment for recovery operations is serviceable and available.

1.5.6.6. Conduct annual crash recovery training and participate in base training exercises.

1.5.6.7. Ensure support and recall procedures are established for after-hour operations via Keesler Command Post.

1.5.6.8. Coordinate with 403d Wing Quality Assurance (QA) when weight and balance center of gravity conditions are unknown on base-assigned C-130 aircraft.

1.5.6.9. Coordinate with 81 LRS, current BOS contractor, and off-base contractors as needed to identify vehicle/equipment requirements and 24-hour availability. Vehicle and equipment items may include:

- 1.5.6.9.1. General purpose truck.
- 1.5.6.9.2. All terrain forklift.
- 1.5.6.9.3. Bulldozer.
- 1.5.6.9.4. Crane (20 to 50 ton as applicable).
- 1.5.6.9.5. Tractor to pull crash recovery trailer to crash site.
- 1.5.6.9.6. Flatbed trailer and tractor for recovery operations.
- 1.5.6.9.7. Crash trailer with equipment items.
- 1.5.6.9.8. Aircraft tow vehicle.
- 1.5.6.9.9. Tow bars (C-130 specific and universal).
- 1.5.6.9.10. Aircraft jacks.

**1.6. Inspection and Inventory .** Inspect all crash recovery equipment to include: airbags, control consoles, and other equipment items before and after each exercise or use. Periodic inspections on equipment shall be conducted as established by Technical Order (TO) or, as a minimum, annually.

1.6.1. An inventory of all crash recovery equipment will be conducted annually. Document inspections and inventories in Maintenance Information System (MIS) and on the crash recovery master inventory log. The Air Force Technical Order (AFTO) Form 244, *Industrial/Support Equipment Record*, or Major Command (MAJCOM) approved form will be used to document large equipment items (airbag, manifold, etc.).

1.6.2. Inform 81 OSF/OSW in writing of equipment shortages/serviceability that hinders CDDAR support. Maintain a current listing of vendors/suppliers in the local area that lease heavy equipment, vehicles or other items that are not available on base and may be required.

### **1.7. Training Requirements.**

1.7.1. All team members must be trained in recovery procedures IAW DAFI 21-101, AFI 21-101AETCSUP, *Aircraft and Equipment Maintenance Management* and AFI 21-101AFRCSUP, *Aircraft and Equipment Maintenance Management*.

## Chapter 2

### CDDAR TEAM

**2.1. Purpose.** The purpose of this guide is to assist leaders and members of the CDDAR team, to plan for and conduct successful recovery operations. It is intended to promote ideas for various techniques, which can be used. Any effective variations of these techniques, new techniques developed, or available new equipment identified should be submitted to the MAJCOM for evaluation.

**2.2. Mishap/Accident Investigations.** Virtually every aircraft, which requires recovery, has been involved in a mishap. Certain conditions require the investigating commander to convene accident and safety investigations. CDDAR leaders and planners should be familiar with these procedures and know the precedence of such investigations over recovery efforts.

**2.3. Responsibilities .** When a mishap occurs on or near a base, the nearest Air Force Base commander is responsible for providing Crash, Fire-fighting and Rescue (CFR), and EOD support. He or she also must secure and preserve any evidence or wreckage. Before beginning any recovery operation, the CDDAR team chief must obtain approval from the incident commander (IC), the EOD team chief (when applicable) and the investigating commander. The IC should identify any real or potential hazards to personnel.

**2.4. Urgency of Recovery.** [Chapter 5](#) covers methods of aircraft removal for truly urgent situations. This type of recovery places both assets and personnel at risk and is to be avoided except during times of tension or war.

**2.5. Recovery .** Even normal safe recovery procedures can be executed at an increased pace if conditions warrant. In such cases, techniques may be used which risk additional damage to the aircraft. The following factors should be considered to determine how great the need is for rapid recovery. The IC will determine urgency.

2.5.1. Availability of alternate taxiways.

2.5.2. Availability of alternate airports.

2.5.3. Position of disabled aircraft relative to aircraft movement areas.

2.5.4. Cost of diversions/loss of operations.

2.5.5. Military alert commitments.

## Chapter 3

### RISK MANAGEMENT (RM)

**3.1. Situation Evaluation.** The first task at an aircraft recovery site is to gather information and evaluate the situation. The initial response team will be able to gather much of this data and initiate requests for additional information from appropriate sources. This section provides sample checklists for gathering essential data. Having all this information on a single clipboard will make it easier to answer questions. Once all necessary information has been gathered it can and should be used to accomplish a risk assessment.

3.1.1. Safety, definitions, purpose, scope, and using RM is the common sense approach to making calculated decisions on human material and environmental factors. It enables those in charge to maximize operational capabilities while minimizing risks at all levels, preserving assets, and safeguarding health and welfare. The most important aspect of RM is to accept no unnecessary risk.

**3.2. Environmental, Safety, and Health Hazards** . The key to developing a safe and effective CDDAR program is communication and coordination. The CDDAR office of primary responsibility (OPR) must ensure the BEE is consulted and directly involved in determining personnel health hazards, training required, and appropriate levels of Personal Protective Equipment (PPE). **Note:** There are two distinct phases of an aircraft mishap--initial response and recovery. Initial response teams face the probability of an aircraft fire. As the composite material burns, gases, vapors and solid particles are released into the smoke plume. Recovery team members may be exposed to fibers and dusts as aircraft parts are moved, modified by cutting, breaking, twisting, or hammering. Personnel tasked to participate in crash or post-crash response, recovery, maintenance, and/or clean up operations must be aware of and briefed on all possible health issues involved. Units must ensure local policies and procedures for handling crash damaged composites are addressed; to include training and PPE.

3.2.1. Each organization involved in CDDAR must develop a respiratory protection program for proper respirator use IAW AFI 48-137, *Respiratory Protection Program*.

## Chapter 4

### EQUIPMENT

**4.1. Overall Equipment Planning** . This chapter deals with equipment commonly used for Aircraft Recovery. The CDDAR team will be cognizant of the following requirements:

- 4.1.1. What equipment is available (inventory).
- 4.1.2. The types and capacities of available equipment (cranes, dozers, etc.).
- 4.1.3. Contractual arrangements necessary for additional equipment required (Government Purchase Card, base contracting, agreements etc.).

**4.2. Other Factors.** Other factors to be considered are:

- 4.2.1. Terrain in the region of responsibilities (woods, hills, water, urban areas, etc.).
- 4.2.2. Climate extremes.
- 4.2.3. Type and frequency of flying operations.
- 4.2.4. On/off-base, public/private land considerations.

**4.3. Crash Recovery Trailer** . Standard equipment in the crash recovery trailer should include:

- 4.3.1. Slings, dollies, tow bridles, etc. for aircraft assigned to that base.
- 4.3.2. Ropes, cables, pulleys, chains, etc.
- 4.3.3. Empty sandbags, timbers, shoring material.
- 4.3.4. Pneumatic lifting bags, hoses, control consoles.
- 4.3.5. Plywood sheets.
- 4.3.6. Steel plates, pierced steel planking.
- 4.3.7. Picks, shovels, sledge hammers, crowbars.
- 4.3.8. Grounding rod and grounding cables.
- 4.3.9. Gloves, coveralls, hard-hats, body harness, hearing protectors, goggles, etc.
- 4.3.10. Fluid sample kits for fuel, oil, and hydraulic fluid.
- 4.3.11. Communication headsets and ground cords.
- 4.3.12. First aid kits.
- 4.3.13. Step ladders and step stands.

**4.4. Diversified Base Assets.** Aircraft recoveries will generally require assets from numerous base organizations. Aircraft maintenance shops provide both specialized equipment and personnel trained in its use. Aerospace Ground Equipment (AGE) shops will be called upon to provide a great deal of support equipment. Organizations such as Civil Engineer frequently have items and equipment necessary for recovery operations.

**4.5. Common Support Items** . Equipment which must be collected from various base locations may include:

- 4.5.1. Maintenance stands and other non-powered AGE.
- 4.5.2. Air compressors, generators, lighting, heaters, air conditioners, and other powered AGE.
- 4.5.3. Mobile Command Post.
- 4.5.4. Communications equipment.
- 4.5.5. Earth moving equipment.
- 4.5.6. Tow vehicles, de-fueling trucks, etc.
- 4.5.7. Mechanics tools.
- 4.5.8. Sand, gravel, cement, timbers, lumber.
- 4.5.9. Cables, chains, hooks, clamps, hand winches.
- 4.5.10. Metal cutting saws, bolt cutters.
- 4.5.11. Cranes, winch trucks.
- 4.5.12. Food, water, coffee, etc. (for recovery personnel).
- 4.5.13. Standby medical and fire support.
- 4.5.14. Portable temporary shelters.

**4.6. Recovery Teams.** Commanders will consider recovery teams to be emergency operations and will allow recovery crews access to disaster preparedness and other emergency assets. The CDDAR team chief will know what is available from such stores. Emergency stocks may include mobility assets such as:

- 4.6.1. Hand-held radios.
- 4.6.2. Mobile communications vans.

**4.7. Local Contractor Equipment.** CDDAR efforts commonly require items and/or equipment not available on base. Due to the serious nature of recovery work, funding is usually made available to purchase or rent local equipment. Local plans should address funding sources and identify contractual methods to be used. Frequently required items include:

- 4.7.1. Large cranes (with highly skilled operators).
- 4.7.2. Earth moving equipment.
- 4.7.3. Timbers, gravel, etc. (in large quantities).

## Chapter 5

### AIRCRAFT REMOVAL

**5.1. Urgent Removal.** Depending on the circumstance, a crash, damaged or disabled aircraft will require immediate removal. This is to be accomplished despite certain additional damage to the aircraft. **Note:** Urgent removal scenarios are not usually applicable to most stateside bases.

5.1.1. An aircraft removed by conventional methods (slings, bags, jacks) will require less time to complete damage repairs in comparison to one removed by urgent removal techniques (dozer). This difference in repair times may justify use of conventional recovery methods despite increased recovery times. Joint decisions of the aircraft owning and base operating commands are required.

**5.2. Evaluation of Damage:** Unless the recovery team chief does not possess significant knowledge regarding the aircraft type, it is not likely that an accurate damage evaluation can be made. Where a team chief may see a pile of scrap metal, a mechanic for that aircraft may see numerous high value spare parts or even a repairable airframe. When possible, type-experienced maintenance personnel should be called to assist in removals. Thus, damage to critical parts may be avoided.

**5.3. Pulling vs. Pushing:** There usually isn't a need to push an aircraft from a runway or operational area; pulling is always preferable. Some advantages are as follows:

5.3.1. Safety: Pulling can be accomplished from a safe distance away from the aircraft. In urgent removal situations there will likely be unexploded ordnance, fuel fires, dangerous chemicals and/or other hazards to personnel. Removal operations are best conducted away from the aircraft.

5.3.2. Traction: Vehicles used to pull the aircraft can be positioned where traction is better than that around the aircraft. Pulling may be done by winch from anchored positions.

5.3.3. Damage: Pulling usually results in less airframe damage than pushing.

**5.4. Pulling Techniques:** Winching is a preferred method since it is more controllable. If an aircraft must be pulled on an arcing path, winching from changing anchor positions is preferred if terrain allows. Pulling is broken into two parts: cable attachment and airframe sliding procedures. Sliding procedures applicable to pushing as well as pulling airframes are generally illustrated in applicable aircraft -3 aircraft structural technical order manuals.

**5.5. Cable Attachment:** Structural manuals list cable attachment points for various aircraft types in order to accomplish removal. Generally, landing gear trunnion points, landing gear, major bulkheads, longerons and wing spar attachment points are used. It may be faster and safer to use heavy chains with hooks to attach cables with prepared loops to the airframe.

5.5.1. The attachment should be made at the lowest possible point so that pulling results in slight upward lift of the airframe. Attachment is also to be at the airframe points closest to the pulling vehicles to avoid downward loading on forward Center of Gravity (CG) points.

**5.6. Recovery Methods.** Aircraft recovery usually involves seven general steps. The extent of these tasks will depend upon the size and type of aircraft and the general situation. Recovery team

members must be familiar with all parts of this section and should consider which techniques are most likely to be used at their location. Recovery tasks:

- 5.6.1. Overall assessment, analysis, planning, and briefings.
- 5.6.2. Alteration of weight and CG.
- 5.6.3. Functional and structural assessment of the aircraft.
- 5.6.4. Lifting the aircraft.
- 5.6.5. Providing portability to the airframe.
- 5.6.6. Lowering the aircraft.
- 5.6.7. Movement of the aircraft.

**5.7. Briefings.** As soon as the initial planning step has been completed, a briefing should be conducted by the CDDAR team chief for all involved parties. Comments and critique are encouraged to allow pooling of everyone's expertise. The briefing should address the next step (alteration of weight and CG) in detail. A tentative plan to accomplish the remaining recovery steps should be briefed in general terms. This will allow all involved to begin thinking of various possible hazards and ways to minimize them. Detailed briefings are best broken down into several distinct tasks and one person appointed to be responsible for each task. Each task leader must fully understand their responsibilities and how they interface with others. Task leaders are expected to brief all other personnel involved in their tasks.

**5.8. Briefing Content.** Briefings should cover the following topics:

- 5.8.1. The tasks to be accomplished (what).
- 5.8.2. The intended purpose of each task (why).
- 5.8.3. The sequence of the tasks (when).
- 5.8.4. Responsibility for each task (who).
- 5.8.5. Coordination of the task (how).
- 5.8.6. Any known hazards involved.
- 5.8.7. Evacuation procedures.

**5.9. Evacuation Procedures.** Due to the many unknown (as well as known) hazards involved in an aircraft recovery, an evacuation plan is essential. Every individual involved in the recovery operation must be informed of evacuation procedures. During extended recovery efforts, shift changes and the arrival of various specialists must be considered. Plans should be established by the CDDAR team chief to ensure that everyone entering the security perimeter is advised of evacuation procedures.

- 5.9.1. Three key elements of an evacuation plan are:
  - 5.9.1.1. Alarm. How an alarm will be sounded if a serious hazard is seen.
  - 5.9.1.2. Recognition of Alarm. What the alarm/signal will be for recognition and response purposes.
  - 5.9.1.3. Response. What the appropriate response will be upon receiving the alarm/signal.

**5.10. Evacuation Signals.** Noise level is the primary factor to consider in devising an evacuation signal. Recovery operations are frequently very noisy in themselves. Often nearby aircraft operations are still being conducted. Visual, as well as audio warnings, should be considered. Portable air horns, large spotlights, whistles, and megaphones can also be used as signals. Consider the frequency of the ambient noise and try to use audio signals with different and/or varying frequencies.

**5.11. Alteration of Weight and CG.** Prior to lifting an aircraft, especially large aircraft, the weight is generally reduced as much as possible. In some cases, adding or shifting weight to selected points may aid recovery by changing the CG.

5.11.1. Before beginning any weight or CG changes, the existing aircraft weight and CG must be determined as closely as possible. Flight crew members, crew chiefs, and aircraft tech orders are all good sources for this data. The -3 aircraft structural technical order manuals contain a large amount of standard aircraft data.

**5.12. CG Transfer.** In the event that only a portion of the aircraft must be lifted (e.g. single point landing gear collapse), much work can be saved by shifting the aircraft CG away from the portion to be lifted. This may actually be more beneficial than reducing the aircraft weight. For example, if the nose wheel is collapsed, shifting weight (and thus CG) rearward can reduce effective nose weight until one man can lift it. Several precautions must be taken to control such operations to avoid overstressing the airframe or causing additional damage.

5.12.1. The following examples are methods of CG transfer:

- 5.12.1.1. CG movement by fuel transfer.
- 5.12.1.2. CG movement by cargo transfer.
- 5.12.1.3. CG movement by weight addition.
- 5.12.1.4. CG movement by weight reduction.
- 5.12.1.5. Weight transfer by lifting.
- 5.12.1.6. Munitions removal.
- 5.12.1.7. Fuel removal.
- 5.12.1.8. Engine removal.
- 5.12.1.9. Component removal.

## Chapter 6

### TRAINING

**6.1. Aircraft Recovery Training General.** The CDDAR Team Chiefs will establish a training program for assigned weapons systems. This program will require the identification of essential personnel to implement procedures outlined in DAFI 21-101, and *Crashed, Damaged, Disabled Aircraft Recovery Manual* T.O. 00-80C-1. Training objectives will incorporate knowledge, understanding, and hands-on usage, utilizing classroom and application training.

**6.2. Recovery Team Qualifications.** All team members must be qualified in basic CDDAR operations. All qualifications are recorded in the Career Field Education and Training Plan (CFETP), AF Form 797, *Job Qualification Standard Continuation/Command JQS*, or Maintenance Information Systems (MIS) as applicable.

6.2.1. Qualification Training Requirements. All team members must be trained and qualified in recovery procedures IAW DAFI 21-101, Mission Design Series (MDS) specific technical data, other applicable AF and MAJCOM directives and unit-developed training guides.

6.2.2. All recovery team members must receive annual qualification training following initial training comprised of both academic and hands on training/exercises. Ensure all qualification training is documented.

**6.3. Scenarios.** Scenarios are ideal training situations. They enhance real world recovery requirements. The CDDAR team chief should develop scenarios and incorporate them with hands-on training.

**6.4. Recovery Team Qualification Training.** IAW DAFI 21-101, all recovery team members must receive initial training comprised of both academic and hands-on training/exercises. Ensure all training is documented in myTraining, AF Form 797, or MIS as applicable.

6.4.1. Conduct a crash recovery lift exercise annually for C-130 aircraft consisting of either lifting devices positioning, sling hookup, and mock hoisting. IAW DAFI 21-101 and AFI 21-101 AFRC Sup and T.O. 00-80C-1. Do not use operational aircraft for actual aircraft lifts in a training environment. If the unit does not possess training assets suitable for exercises, units demonstrate capability by completing all steps but stopping short of actually lifting an operational aircraft. **Note:** The actual recovery of an aircraft performed by a unit satisfies the annual requirement when it meets all aspects of a crash recovery exercise.

## Chapter 7

### MISCELLANEOUS

**7.1. Briefings.** Briefings will be accomplished by the CDDAR team chief prior to training on actual aircraft recovery operations. Keep in mind not all situations are common. Performing operations safely IAW technical data and safety and health guidance will minimize risks. When hazards cannot be completely eliminated, consider RM analysis. Below are suggested topics:

- 7.1.1. Personal issues, potential mishap or hazards including PPE.
- 7.1.2. Can workers be struck by or contacted by anything?
- 7.1.3. Can workers strike against or come in contact with any item which can cause injury?
- 7.1.4. Can workers be caught in or between anything?
- 7.1.5. Can workers fall?
- 7.1.6. Can workers overexert?
- 7.1.7. Are workers required to do repetitive lifting or heavy lifting?
- 7.1.8. Are workers exposed to potential hazards such as toxic gases, chemicals, radiation, or noise?

**7.2. Safety Assessments .** The following are additional personnel and safety assessments pertaining to aircraft recovery:

- 7.2.1. Are workers wearing required PPE (safety toe shoes, hearing protection, gloves, and safety goggles)?
- 7.2.2. Are workers aware of avoiding suspended loads when lifting items?
- 7.2.3. Are workers aware of lifting cable limitations?
- 7.2.4. Is on scene supervision assessing the risks in climbing operations?
- 7.2.5. Is the crash site area assessed for slip and fall potential?

**7.3. Environmental.** Aircraft crashes may involve issues and situations that have both before and after environmental repercussions. Survey assessment and correction of initial environmental impacts need to be resolved immediately, such as fluid or gas leakage, cargo spillage and physical damage to include fire. These items should already be analyzed but may require technical expertise from the recovery team specialties or base functions. Additional information may need to be solicited from bioenvironmental and base safety prior to entering a recovery site. **Note:** Environmental issues are enforced by federal, state, and local laws. Proper authority must be involved prior to closure of any aircraft incident.

BILLY E. POPE, JR, Colonel, USAF  
Commander, 81st Training Wing

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

AFI 21-101, AETCSUP, *Aircraft and Equipment Maintenance Management*, 09 August 2020  
AFI 21-101 AFRCSUP, *Aircraft and Equipment Maintenance Management*, 13 August 2020  
AFI 36-2650\_AETCSUP, *Maintenance Training*, 13 July 2023  
AFI 33-322, *Records Management and Information Governance Program*, 23 March 2020  
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DAFI 36-2670, *Total Force Development*, 25 June 2020  
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DAFI 91-202, *The US Air Force Mishap Prevention Program*, 12 March 2020  
DAFI 91-204, *Safety Investigations and Reports*, 10 March 2021  
Keesler IEMP 10-2, *Installation Emergency Management Plan*, 9 March 2022  
Keesler 10-401, *Base Support Plan*, 11 March 2021  
T.O. 00-80C-1 *Crash, Damaged, Disabled Aircraft Recovery Manual*, 17 November 2020  
T.O. 00-105-E-6, *Aerospace Emergency Rescue and Mishap Response Information (Emergency Services)*, 06 July 2023  
81 TRW Plan 91-202, *Mishap Response Plan*, 4 October 2021  
81 TRW/403D *Wing Host Tenant Agreement*

***Prescribed Forms***

No prescribed forms

***Adopted Forms***

AFTO Form 244, *Industrial/Support Equipment Record*  
DAF Form 797, *Job Qualification Standard Continuation/Command JQS*  
DAF Form 847, *Recommendation for Change of Publication*

***Abbreviations and Acronyms***

**AFOSH**—Air Force Occupational Safety and Health  
**AGE**—Aerospace Ground Equipment  
**AFTO**—Air Force Technical Order  
**BEE**—Bioenvironmental Engineer

**BOS**—Base Operations Support (contractor)  
**CDDAR**—Crashed Damaged, Disabled Aircraft Recovery  
**CFR**—Crash, Fire-fighting and Rescue  
**CG**—Center of Gravity  
**EOD**—Explosive Ordnance Disposal  
**IC**—Incident Commander  
**MAJCOM**—Major Command  
**MDS**—Mission Design Series  
**MIS**—Maintenance Information Systems  
**MSD**—Material Support Division  
**MTF**—Maintenance Training Flight  
**OPR**—Office of Primary Responsibility  
**RM**—Risk Management  
**POC**—Point of Contact  
**PPE**—Personal Protective Equipment  
**QA**—Quality Assurance  
**TA**—Transient Alert

*Office Symbols*

**81 CES**—Civil Engineer Squadron  
**81 CES/FD**—Fire Department, Civil Engineer Squadron  
**81 CONS**—Contracting  
**81 LRS**—Logistics Readiness Squadron  
**403 MXG**—Maintenance Group  
**81 OSF/CC**—Commander, Operations Support Flight  
**81 OSF/OSA**—Airfield Operations, Operations Support Flight  
**81 OSF/OSW**—Weather Operations, Operations Support Flight  
**81 SE**—Safety  
**81 SFS**—Security Forces Squadron  
**81 TRW/JA**—Judge Advocate, Training Wing

## Attachment 2

## CDDAR DATA WORKSHEET (SAMPLE)

Table A2.1. CDDAR Worksheet.

<b><u>AIRCRAFT INFORMATION</u></b>			
1.	Type and Model	Date	Time
2.	Tail Number		
3.	Empty Weight		
4.	Total Fuel Load (current)		
5.	Fuel Load by Tank		
6.	Cargo Load/Munitions		
7.	Classified Item/ Marking		
8.	Major Structure Condition		
9.	Landing Gear Intact?		
<b><u>SITE INFORMATION</u></b>			
1.	General Location		
2.	Exact Position		
3.	Type Terrain		
4.	Temperature		
5.	Weather (Rain, Fog, etc.)		
6.	Wind Speed & Direction		
7.	Weather Forecast		
8.	Identification of Any Hazards		

Attachment 3

SAMPLE HAZARDS CHECKLIST

Table A3.1. Hazards Checklist.

<b>TYPE HAZARD</b>	<b>YES</b>	<b>NO</b>	<b>NA</b>	<b>COMMENTS</b>
Nuclear Weapons				
Conventional Weapons				
Bombs				
Missiles				
Ammunition				
Fuel				
Toxic Chemicals				
High Pressure Cylinders				
Ejection Seats				
Ejection Hatches				
Corrosive Agents				
Batteries				
Damaged Tires				
Personnel Hazards (TO 00-105E-9)				
Composites				
MSD (As Required)				
<b>ADDITIONAL HAZARDS (LIST)</b>				

## Attachment 4

## PLANNING AND PREPARATION CHECKLISTS

Table A4.1. List of Planning and Preparation Checklists T.O. 00-80C-1.

Checklist Number	Checklist Title	Page
OPNAVINST	Risk Management Worksheet - Deliberate Risk Assessment	A-23
CDDAR - 1	CDDAR Planning Checklist	A-26
CDDAR - 2	CDDAR Preparation Checklist - Personnel Needs	A-28
CDDAR - 3	CDDAR Preparation Checklist - Site Preparation	A-29
CDDAR - 4	CDDAR Preparation Checklist - Aircraft Preparation	A-30
CDDAR - 5	CDDAR Preparation Checklist – Equipment	A-31
CDDAR - 6	CDDAR Debog Planning Checklist	A-32
CDDAR - 7	CDDAR Pneumatic (Air) Bag Lift Worksheet	A-34
CDDAR - 8	Generic Make Safe For Maintenance Procedures	A-35