

**1 NOVEMBER 2007**



**Maintenance**

**RECOVERY OF CRASHED, DAMAGED, OR  
DISABLED AIRCRAFT**

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This instruction provides the basic procedures to be followed for aircraft recovery/removal in the event of a crashed/disabled aircraft after all initial response events have been accomplished. The 15th Airlift Wing provides crash recovery for base-assigned aircraft and contains capabilities for the recovery of crash/disabled US military and military contracted aircraft landing at Hickam AFB or on the island of Oahu in support of the 15th Airlift Wing. Physical aircraft removal procedures will not be implemented until approved by the Safety Investigation Board or Incident Commander (IC). The CRTC (Crash Recovery Team Chief)/CRT (Crash Recovery Team) does not act as the IC. This instruction applies to all personnel assigned to the 15th Airlift Wing and tenant units who have responsibility for the above actions. Ensure that all records created as a result of processes prescribed in this publication are maintained in accordance with AFMAN37-123 (will convert to AFMAN 33-363), *Management of Records*, and disposed of in accordance with the Air Force Records Disposition Schedule (RDS) located at <https://afrims.amc.af.mil/>. Refer recommended changes and questions about this publication to the Office of Primary Responsibility (OPR) using the AF IMT 847, *Recommendation for Change of Publication*.

**SUMMARY OF CHANGES**

Throughout the publication office names have been changed to reflect the partnership with the Hawaii Air National Guard. This revision incorporates significant changes from the previous version. All personnel should read this instruction carefully.

**1. Policy:**

1.1. Hickam Air Force Base will return to operational status as soon as practical after a mishap. The 15th Airlift Wing Commander or designated representative, as stated in AFI 10-2501, *Air Force Emergency Management (EM) Program Planning and Operations*, will determine the degree of emergency and make the decision regarding the speed with which the runway is cleared.

1.2. The Crashed, Damaged, or Disabled Aircraft Recovery (CDDAR) program is established to recover damaged or disabled aircraft in minimum time and consistent with the following considerations:

1.2.1. The requirement to re-open the runway for operational use.

1.2.2. Prevention of secondary damage to the aircraft.

1.2.3. Preservation of evidence for mishap or accident investigations.

1.2.4. Safety of personnel involved with recovery operations.

1.2.5. In accordance with AFI 91-204, *Safety Investigations and Reports*, when an aircraft is under investigation by the Interim Safety Board (ISB) or the Safety Investigation Board (SIB), recovery operations will not proceed until the board president releases the aircraft. Personnel who are not engaged in the investigation will remain outside of the recovery area. The crash recovery team may be called upon to perform tasks as required by the investigation team.

1.3. The CDDAR program instruction is procedural and will not take precedence over aircraft-specific technical data in recovery of crashed, damaged, or disabled aircraft.

**WARNING:** Incidents involving aircraft made up of a composite structure may cause serious injury or death to those in contact with it. T.O. 00-105E-9, *Aerospace Emergency Rescue and Mishap Response Information (Emergency Services)* contains information regarding aircraft-specific composite component locations, and should be consulted when responding to aircraft incidents. Transient aircraft's home base 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 any potentially dangerous situation to the aircraft, support equipment, or personnel, and will remain in an undisturbed state until the aircraft is released to maintenance by the Incident Commander (IC).

## 2. Responsibilities:

2.1. Hickam AFB Fire Chief:

2.1.1. Is the initial Incident Commander (IC) when responding to Hickam AFB aircraft crashes and will coordinate survivor rescue, fire fighting, health hazard assessment, explosive ordnance disposal (if required), and crash site containment prior to releasing the site to the 15 AW/CC or designated IC (15 MSG/CC) IAW *AFI 10-2501* and *15 AW OPlan 91-1*.

2.1.2. Initial Operations to include rescue, fire suppression, securing of weapons, securing the crash site, collateral damage and other immediate actions necessary to prevent loss of life and property will be accomplished IAW *Comprehensive Emergency Management Plan (CEMP) 10-2*, and *15 AW OPlan 91-1*.

2.2. 154th Maintenance Flight (MXS/MXMT) will:

2.2.1. Act as Hickam AFB primary OPR for the 15 AW CDDAR program and maintain crash recovery equipment, specialized tools, and current technical orders/publications to meet potential crash recovery scenarios.

2.2.2. Provide personnel required to perform Crashed, Damaged or Disabled Aircraft Recovery operations.

- 2.2.3. Provide a minimum of two Crash Recovery Team Chiefs (CRTC).
  - 2.2.4. Manage the CDDAR program and ensure personnel are trained in recovery operations.
  - 2.2.5. Conduct Crash Recovery Team (CRT) member training.
    - 2.2.5.1. Selected personnel will be trained for:
      - a. Standard and nonstandard aircraft lifting procedures
      - b. Nonstandard towing procedures
      - c. Wear of personal protective equipment (PPE)
      - d. Broken and fire-damaged composite material containment and handling
  - 2.2.6. Ensure CRT members are trained in the use of respiration protection such as Powered Air Purifying Respirators (PAPR).
  - 2.2.7. Annually review equipment, resources, support agreements, and personnel capabilities for CDDAR ([Attachment 1](#), [Attachment 2](#), [Attachment 3](#), [Attachment 4](#), & [Attachment 5](#)).
  - 2.2.8. Maintain a continuity binder containing at a minimum, the CDDAR recall roster and procedures for recall to include after duty hours, PPE guidelines, crash recovery checklists, event logs, and equipment and tool inventories.
  - 2.2.9. Perform serviceability inspections of equipment per applicable publications during storage or following any recovery effort, training or exercise.
  - 2.2.10. Perform an annual inventory of all equipment and expendable items during storage or following any recovery effort, training, or exercise.
- 2.3. 15 AMXS will:
- 2.3.1. Provide maintenance representatives (crew chiefs and/or specialists) to provide technical advice relative to safety, operation, or environmental hazards, when requested by the CRTC.
  - 2.3.2. Take charge of all emergency tow situations in the event an aircraft without structural damage requires removal from the active runway, to include in-flight emergency situations, hot brakes “*QUICK REACTION CHECKLIST 7*” (QRC 7), and blown or flat tires.
  - 2.3.3. Request assistance from the C-17 Maintenance Flight for emergency tows when additional equipment, personnel or expertise are required.
- 2.4. 15 MXS Aerospace Ground Equipment (AGE) Flight will:
- 2.4.1. AGE will maintain and deliver serviceable MC-7 compressors or other support equipment required to perform CDDAR operations.
- 2.5. 15 MXG Quality Assurance will:
- 2.5.1. Ensure all aircraft AFTO Form 781 series documentation/historical records, servicing equipment, personal training records are impounded upon notification of an accident/mishap.
  - 2.5.2. Inform the Maintenance Operations Center (MOC) or Maintenance Information System (G081) Data Base Manager (DBM) to lock out (isolate) G081 or IMDS on the affected aircraft.
  - 2.5.3. Assist in calculating weight and balance of aircraft if required.

2.6. 15th Civil Engineering Squadron will:

- 2.6.1. Provide emergency crash/fire response, as well as hazardous materials and spill containment capability beyond the scope of the unit spill teams.
- 2.6.2. Provide heavy equipment, i.e., bulldozers, cranes, and dump trucks, as required by the IC.
- 2.6.3. Provide and deliver plywood, shoring, heavy equipment and other necessary supplies needed for recovery/removal actions.

2.7. 15th Security Forces Squadron will:

- 2.7.1. Provide security forces personnel to secure mishap scene and the wreckage assembly point, as directed by the IC.

2.8. 15th Logistics Readiness Squadron will:

- 2.8.1. Provide tractor trailers with driver and forklifts, as necessary, to transport CDDAR support equipment to the mishap site, as well as transport wreckage to the wreckage assembly point. Depending on the mishap site conditions, an all terrain forklift may also be required.
- 2.8.2. Provide maintenance support to heavy equipment participating in the recovery operation, as directed by the IC.
- 2.8.3. Provide on-scene fuel servicing of recovery support equipment, to include AGE and heavy equipment.

2.9. 15th Contracting Squadron (15 CONS) will:

- 2.9.1. Procure equipment, supplies, and/or services essential to operation of the Crash Recovery process.
- 2.9.2. Provide contracting support for specialized equipment as necessary to support recovery operations.

2.10. 15th Maintenance Operations Center (MOC):

- 2.10.1. Coordinate requests to obtain ground-handling procedures for applicable aircraft from owning command or contractor as required. The owning command or contractor will be responsible for providing personnel, supplies, equipment, and technical expertise as needed to assist the crash recovery team of mishap aircraft IAW AFI 91-204.
- 2.10.2. Coordinate with Base Civil Engineering Squadron for required support equipment and other necessary supplies as requested by the CRT supervisor and IC for the recovery/removal actions. In the event it becomes necessary to immediately clear the runway without consideration of additional damage to the aircraft, MOC will coordinate expediting any additional heavy equipment items.
- 2.10.3. Contact the Crash Recovery Team Chief (CRTC) after normal duty hours.
- 2.10.4. In the event an Emergency Operations Center (EOC) is activated, coordinate with the EOC on responsibilities and authority to prevent confusion.

2.11. 15th Airlift Wing Safety Office (AW/SE) will:

- 2.11.1. Set up the Interim Safety Board (ISB) and activate fund site to support ISB/SIB.

- 2.11.2. Develop a site safety and health plan with the Bioenvironmental Engineering (15 ADS/SGGB).
- 2.12. Bioenvironmental Flight, 15th Aero medical Dental Squadron (15 ADS/SGGB) will:
  - 2.12.1. Assist Wing Safety in preparing a site safety and health plan for the ISB/SIB.
  - 2.12.2. Advise the IC of possible hazards and recommended PPE prior to the CRT accessing the site.
- 2.13. Hawaii Air National Guard (HIANG) 154th Wing will:
  - 2.13.1. Assist with crash recovery support on HIANG assigned aircraft, utilizing HIANG authorized emergency response equipment.
  - 2.13.2. Provide personnel for training and exercises and real world requirements.
  - 2.13.3. Be subject matter experts on CDDAR procedures for F-15 and KC-135 airframes.
  - 2.13.4. Provide F-15 and KC-135 unique CDDAR equipment.
- 2.14. Air Mobility Command (AMC) 735th AMS will:
  - 2.14.1. Provide a minimum of two Crash Recovery Team Leads to coordinate efforts with the CRTC
  - 2.14.2. Take charge of all emergency tow situations in the event an aircraft on an AMC mission without structural damage requires removal from the active runway, to include in-flight emergency situations, hot brakes, and blown or flat tires.
  - 2.14.3. Request assistance from the C-17 Maintenance Flight for emergency tows when additional equipment, personnel or expertise are required.
  - 2.14.4. Provide maintenance representatives (crew chiefs and/or specialists) to provide technical advice relative to safety, operation, or environmental hazards, when requested by the CRTC.
  - 2.14.5. Be subject matter experts on CDDAR procedures for AMC airframes and provide familiarization training on non 15 AW assigned AMC aircraft IAW AFI 21-101.
  - 2.14.6. Provide CDDAR equipment for AMC unique airframes.
  - 2.14.7. Participate in exercises and in real world events with the 15 AW.
  - 2.14.8. As host, 15 AW is responsible for crashed/disabled aircraft IAW 15 AWI 21-107 and will provide 735 AMS personnel in-house CDDAR procedural training.
- 2.15. Contractor Logistics Aircraft (C-37A/B and C-40A/B/C):
  - 2.15.1. Contractor Support will assist/perform crash recovery and salvage operations for C-37A/B and C-40A/B/C aircraft respectively. These operations will be on an over and above contract cost basis. The over and above costs for these operations will be funded as part of the mishap costs.
  - 2.15.2. 15 AW will provide local crash recovery support within its capabilities.
  - 2.15.3. Contractor Support will provide special equipment and technical data as required. Contractors will also provide 15 AW with aircraft familiarization training as required and ensure aircraft and appropriate equipment is available for recovery exercises as required.

### 3. Procedures:

3.1. Upon declaration of a potential or actual major aircraft accident on the runway or in close proximity, the following sequence of events will occur:

3.2. All accident response agencies are notified and follow procedures for response according to *Comprehensive Emergency Management Plan (CEMP) 10-2* and 15 AW OPlan 91-1.

3.2.1. Upon notification of an aircraft mishap requiring recovery of a damaged or disabled aircraft, 15 MOC will:

3.2.1.1. Notify the Crash Recovery Team Chief (CRTC) of the requirement to recall and assemble the CRT at a designated point. Provide CRTC with the Aircraft type and tail number, Location of incident, extent of damage if known, and any other known information.

3.2.1.2. Ensure the first maintenance responders to the aircraft pull the cockpit voice recorder circuit breakers.

3.2.1.3. Upon request of the IC or maintenance, contact the transient aircraft home base and request Technical Order (TO) guidance for aircraft recovery operations. Headquarters AMC transient aircraft must contact home base through HQ/AMC/XOCL at DSN 779-0363.

3.2.1.4. The IC will coordinate and request the 15 MOC to dispatch the CRT team via a designated safe route to the accident scene.

3.2.1.5. In the event that an aircraft recovery requires movement of cargo by normal or alternate means, contact ATOC Squadron Ops Officer and 15 OG/OGV Standardization & Evaluation.

3.2.1.6. Contact Flight Records to impound aircraft records.

3.2.2. The Crash Recovery Team Chief (CRTC) will:

3.2.2.1. Execute the CDDAR team recall procedures and pass along all known information (See [Attachment 3](#)).

3.2.2.2. Assemble CRT at a designated meeting area.

3.2.2.3. Notify MOC of assembly completion time.

3.2.2.4. Notify Vehicle Management Flight Dispatch Office of possible requirements for CDDAR equipment transportation.

3.2.2.5. Brief the CRT on the situation, required actions, and known safety hazards.

3.2.2.6. Monitor the designated crash net, review safety procedures and aircraft TOs, and stand by until requested by the IC to proceed to the accident scene.

3.2.2.7. Respond to the accident scene when requested, assess the situation and plan for aircraft recovery.

### 4. Crash Recovery Team (CRT) Requirements:

4.1. The CRTC provides initial response and determines required personnel based on scenario. The CRTC will take into account the need for the following certifications: flight line driver's license forklift driver, and trained in carbon fiber containment.

4.2. The recovery team, at a minimum, will consist of the CRTC and a team of personnel based upon the following recovery actions, keep in mind all recovery actions are not identical.

4.2.1. Aircraft tow, using tow bridle will consist of supervisor, UKE driver, brake operator, and four tow team qualified team personnel.

4.2.2. Aircraft lift, using aircraft jacks will consist of supervisor, manifold operator, plumb bob monitor, and one person per aircraft jack.

4.2.3. Aircraft lift, using airbags will consist of supervisor, manifold operator, plumb bob monitor, and one person per airbag station.

## **5. Capabilities:**

5.1. Hickam AFB CDDAR program is designed to recover a crashed/damaged or disabled aircraft from an open runway while preventing secondary damage to the aircraft and preserving evidence for any potential investigation.

## **6. Public Affairs:**

6.1. Missile and Space Accidents--Non-nuclear Initial News Release. Write a news release within an hour after notification of an accident, following guidelines in AFI 35-101. The news release should be sent to SAF/PA and Air Force News Service ([news@afnews.af.mil](mailto:news@afnews.af.mil)) in addition to local and regional media.

JOHN J. TORRES, Colonel, USAF  
Commander, 15th Airlift Wing

## Attachment 1

### GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION

#### ***References***

AFI 10-2501, “*Air Force Emergency Management (EM) Program Planning and Operations*”  
 AFOSHSTD91-100, “*Aircraft Flight Line Ground Operations and Activities*”  
 AFOSHSTD91-501, “*Air Force Consolidated Occupational Safety Standard*”  
 TO 00-105E-9, “*Aerospace Emergency Rescue and Mishap Response Information (Emergency Services)*”  
 TO 1C-17A-3-8, “*Disabled Aircraft and Special Maintenance*”  
 TO -2 and -3, “*MDS specific series Technical Orders*”  
 AFI 10-2501, “*Air Force Emergency Management (EM) Program Planning and Operations*”  
 AFI 21-101, “*Aerospace Equipment Maintenance Management*”  
 AFI 21-103, “*Equipment Inventory, Status and Utilization Reporting*”  
 AFI 51-503, “*Aerospace Accident Investigations*”  
 AFI 91-204, “*Safety Investigations and Reports*”  
 Comprehensive Emergency Management Plan (CEMP) 10-2”  
 15 AW OPlan 91-1, “*Mishap Response Plan*”

#### ***Abbreviations and Acronyms***

**ADS**—Aeromedical Dental Squadron  
**AFI**—Air Force Instruction  
**AFTO**—Air Force Technical Order  
**AGE**—Aerospace Ground Equipment  
**AMC**—Air Mobility Command  
**AMS**—Air Mobility Squadron  
**AMXS**—Aircraft Maintenance Squadron  
**ATOC**—Air Transportation Operations Center  
**AW**—Airlift Wing  
**AWI**—Airlift Wing Instruction  
**CAMS**—Core Automated Maintenance System  
**CDDAR**—Crashed, Damaged, or Disabled Aircraft Recovery  
**CES**—Civil Engineering Squadron  
**CONS**—Contracting Squadron

**CRT**—Crash Recovery Team  
**CRTC**—Crash Recovery Team Chief  
**DBM**—Data Base Manager  
**EOC**—Emergency Operations Center  
**HIANG**—Hawaii Air National Guard  
**IAW**—In Accordance With  
**IC**—Incident Commander  
**IMDS**—Integrated Maintenance Data System  
**ISB**—Interim Safety Board  
**LRS**—Logistics Readiness Squadron  
**MOC**—Maintenance Operations Center  
**MSG**—Mission Support Group  
**MXS**—Maintenance Squadron  
**OG**—Operations Group  
**OPLAN**—Operation Plan  
**OPR**—Office of Primary Responsibility  
**PAPR**—Powered Air Purifying Respirator  
**PPE**—Personal Protective Equipment  
**QRC**—Quick Reaction Checklist  
**SFS**—Security Forces Squadron  
**SIB**—Safety Investigation Board  
**TO**—Technical Order

## Attachment 2

### MATRIX OF CDDAR EQUIPMENT, RESOURCES, AND PERSONNEL CAPABILITIES

**A2.1.** CDDAR personnel capabilities: The following will be considered common CDDAR requirements; all other scenarios will be assessed on the spot to determine whether additional support or equipment will be needed. All technical order deviations will be approved prior to implementation.

**Table A2.1. CDDAR Equipment:**

Nomenclature	Use	Quantity
Trailer, 20 Foot	Transport CDDAR Equipment	1 EA
Tow Bridle, C-5/C-17	Tow C-17 by MLG	2 EA
Tow Adapters	Adapt Tow Bridles to C-17A	2 EA
Airbag 26 Ton	Lift Aircraft	8 EA
Airbag 15 Ton	Lift Aircraft	6 EA
Control Console, Airbag	Control/Inflate Airbag	14 EA
Mooring Adapters	Moor C-17 During Airbag Lift	4 EA
Recovery Adapters, Jack	Moor C-17 During Airbag Lift	4 EA
Tensiometer	Monitor Tension During Lift	2 EA

A2.1.1. Standard & Nonstandard towing procedures.

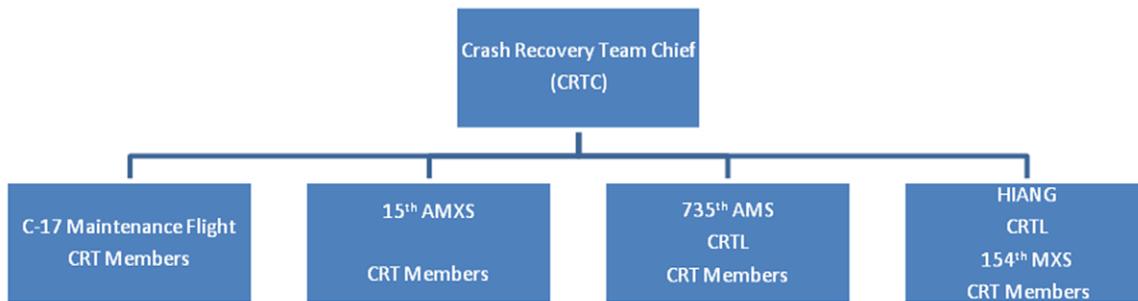
A2.1.2. Alternate lifting procedures: using airbags.

A2.1.3. Primary lifting procedures: using jacks.

**Attachment 3**

**CDDAR TEAM RECALL PROCEDURES**

**Figure A3.1.**



## Attachment 4

## CDDAR SUPPORT AGREEMENTS &amp; MEMORANDUMS OF UNDERSTANDING

SA/MOU NO.	RECEIVER NAME	AIRCRAFT TYPE & MANUFACTURER
FB5260-05322-0163	US ARMY PRIORITY AIR TRANSPORT (USAPAT) OFFICE# 448-4424 PACIFIC FLT. DET./COMM (703) 602-8400	GULFSTREAM GIV (C-20F)
FB5260-05322-0177	MISSILE DEFENSE AGENCY (MDA) DSN 268-8328 (WASP) & (HALO) AIRCRAFT	BOEING (WASP) DC-10 GULFSTREAM (HALO I) GIIB GULFSTREAM (HALO II) GIIB
FB5260-03077-0194	USN COMSTRATCOMMWG ONE (CTF-124) DSN 339-3456	BOEING 707 (E-6B)
FB5260-05270-0195	USN NAVAL AIR SYSTEMS COMMAND (PMA-207) DSN 757-3705	BOEING 707 (OMEGA TANKER)
FB5260-06300-0196	USN NAVAL TEST WING PACIFIC (VX-30) DSN 351-1627	LOCKHEED (NP-3D)
FB5260-06030-0508	154TH WING HAWAII AIR NATIONAL GUARD 154 LRS/LGRR 448-7347	BOEING (F-15A/B/C/D) EAGLE BOEING (KC-135R) STRATOTANKER
FB5260-05322-0525	9TH RECONNAISSANCE WING (9 RW) DSN 368-9485	LOCKHEED (U-2)
FB5260-06300-0533	735TH AIR MOBILITY SQUADRON (735 AMS) COMM 448-0624 (715 AMOG)	LOCKHEED (C-5A/B) GALAXY BOEING (C-17A) GLOBEMASTER III BOEING (KC-10) EXTENDER BOEING (KC-135E/R/T) STRATOTANKER LOCKHEED (C-130) HERCULES CONTRACT (AMC) AIRCRAFT

SA/MOU NO.	RECEIVER NAME	AIRCRAFT TYPE & MANUFACTURER
FB5260- 00284-536	AERONAUTICAL SYSTEMS CENTER (ASC) COMM 449-1116 (USCINCPAC) & (COMPACAF) 15 ABW	BOEING 737 (C-40B)
FB5260- 01102-537	AERONAUTICAL SYSTEMS CENTER (ASC) COMM 449-1116 (USCINCPAC) & (COMPACAF) 15 ABW	GULFSTREAM (C-37A) SABRELINER GV (BLUE & WHITE) GULFSTREAM (C-37B) SABRELINER GV
FB5260- 04166-0900	HONOLULU INTERNATIONAL AIRPORT STATE OF HAWAII DEPARTMENT OF TRANSPORTATION AIRPORTS DIVISION OAHU AIRPORT MANAGER	ALL TYPES COMMERCIAL OR MILITARY

**Attachment 5**

**CRASH RELEASE CERTIFICATE**

KNOW ALL MEN BY THESE PRESENTS:

That in consideration for the use of United States Air Force equipment and personnel, the receipt of which is hereby acknowledged, I, (1) \_\_\_\_\_, as agent of (2) \_\_\_\_\_, agree to release, acquit, and forever discharge the United States, its officers, agents, and employees, for all liability arising out of or connected with the use of United States equipment or personnel for fire control, crash, and rescue activities at or in the vicinity of \_\_\_\_\_, and I, (1) \_\_\_\_\_, as agent of (2) \_\_\_\_\_, further agree, to the full extent permitted by law, to indemnify, defend, and hold harmless the United States, its officers, agents, and employees against any and all claims, of whatever description, arising out of or connected with such use of United States equipment or personnel.

SIGNATURE \_\_\_\_\_

WITNESSED DATE/ SIGNED BY DATE

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

- (1) The aircraft owner or operator's authorized representative
  
- (2) The owner's or carrier's name