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Flying Operations

EC-130H OPERATIONS PROCEDURES

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This manual implements Air Force Policy Directive (AFPD) 11-2, *Aircrew Operations* and AFPD 11-4, *Aviation Service*. It establishes operational guidance for all EC-130H COMPASS CALL aircraft and aircrew. This manual applies to all Regular Air Force (RegAF) COMPASS CALL units. This publication does not apply to the Air National Guard (ANG) or Air Force Reserve (AFRC). It is used in conjunction with AFI 11-202V3, *General Flight Rules*, and MAJCOM supplements thereto. This is a specialized publication intended for use by Airmen who have graduated from technical training related to this publication. The use of the name or mark of any specific manufacturer, commercial product, commodity, or service in this publication does not imply endorsement by the Air Force. See **para 1.6** of this publication for guidance on submitting comments and suggesting improvements. This publication may be supplemented at any level, but all supplements must be routed to the OPR of this publication for coordination prior to certification and approval. The authorities to waive wing/unit level requirements in this publication are identified with a Tier ("T-0, T-1, T-2, T-3") number following the compliance statement. See AFI 33-360, *Publications and Forms Management*, for a description of the authorities associated with the Tier numbers. Submit requests for waivers through the chain of command to the appropriate Tier waiver approval authority, or alternately, to the Publication OPR for non-tiered compliance items. See **para 1.3** of this publication for further information on waiver authority. This publication may be supplemented at any level, but all supplements must be routed to the OPR of this publication for coordination prior to certification and approval. Personnel at all echelons are encouraged to submit changes in accordance with AFI 11-215, *USAF Flight Manuals Program (FMP)*. Use an AF Form 847, *Recommendation for Change of Publication*. ACC Standardization/Evaluation offices (HQ ACC/A3TV, 205 Dodd Blvd., Suite 101, Langley AFB, VA 23665-2789) will forward approved

recommendations to HQ USAF/A3O-AT for final approval prior to publication. Ensure that all records created as a result of processes prescribed in this publication are maintained in accordance with Air Force Manual 33-363, *Management of Records*, and disposed of in accordance with the Air Force Records Disposition Schedule located in the Air Force Records Information Management System.

SUMMARY OF CHANGES

This document is substantially revised and must be completely reviewed. Major changes include: Replaced references to ACC/A3I with ACC/A3CR throughout document; replaced references to 8 AF/OV to 25 AF/A3V throughout document; abbreviated Aircraft Commander to AC throughout document; replaced AC with PIC in many (not all) places throughout document; changed ACC Command Center references to ACC Command Post throughout document; removed guidance already present in AFI 11-202V3, as supplemented, and/or AFMAN 11-217 throughout document; replaced "launch" with "takeoff" as appropriate throughout document; updated Reporting Requirements (section 2.5.); updated Pilot terminology throughout **chapter 3**, **para. 3.1.1.2**. Passenger Restriction; **para. 3.2**. Crew Complement; **para. 3.4**. Medication Restrictions; **para. 3.6** updated FDP references, removed CDD/CDT; **para. 3.7.2** crew rest; **para. 3.7.4** established Post-Mission Crew Rest guidance; **para 3.9.3** expanded no-go pill guidance; **para. 3.9.7** updated no-go pill guidance; **Chapter 4** updated Minimum Equipment List guidance; **para. 4.1** eliminated Mission Essential and Mission Contributing guidance; **para. 4.2** updated Minimum Equipment List policy; **para. 4.5.2** maintenance repair capability; **para. 4.6**. Navigation Systems to account for AVP aircraft; **para 4.8** added Gear Down Flight Operations; **Tables 4.1** through **4.16** incorporated AVP systems into MEL and made minor updates to existing guidance for Legacy systems; **para. 5.9** updated Advisory Calls and Interphone guidance and added Touch and Go advisory guidance; **para. 5.13** established Use of Automation; **para. 5.15** updated Runway and Taxiway Requirements; **para 5.17** updated Fuel Jettison guidance; **para. 5.19**. FCF procedures; **para. 5.22**. Reduced Power Operations; **para. 6.1.2.2** updated guidance for Flight Gloves **para 6**; **para 6.2.2** updated passport requirements; **para. 6.5**. Airfield Review; **para 6.11.6** removed SAFE PASSAGE guidance; **para 6.13.3** changed are to is; **para. 6.14.2** IFR Departures; **para. 6.15.1**. Weather Minimums for Takeoff; **para. 6.19**. Adverse Weather; **para. 6.22** updated Aircraft Servicing and Ground Operations; **para. 6.24.1**. Oxygen requirements; **para. 6.24.2**. LPU requirements; **para. 6.26**. Flight Progress; **para. 6.27** deleted MNPS checklist verbiage, updated Navigational Aid Capability; **para. 6.33.1**. Weather Forecasts; **para. 6.34**. Instrument Approach Procedures; **para. 6.36**. Border Clearance; **para. 6.40**. Cockpit Voice Recorder; **para 6.46.3** added provisions for potential future upgrades to Mode 5; **para 6.47** updated Confidence Activities to AMT/FE Confidence Activities; **para. 6.47.3** updated safety observer requirement for confidence activities; **para. 6.47.4** updated restraint harness requirement; **Chapter 7** updated Security references and removed redundant hijacking guidance contained in other regulations; **para. 8.4.2.2.2** updated engine-related conditions requiring an AF Form 711B; **para. 8.5**. AIR card references; old **para 8.6** removed, AF Form 15 (obsolete); **Chapter 10** updated title to Navigation Procedures; **para. 10.1** updated General Instructions; **para. 10.8.1**. Deviation Check Procedures; **para. 10.9.1**. True Airspeed Check Procedures; **para. 11.5** through **11.7** incorporated new information; **para. 11.7.5** removed dual stop-and-go TOLD requirement; **para. 12.1.8** updated AMT PME, AME, and QRC requirement checks; **para. 12.1.9** water

requirements; **para. 14.2** removed crew contact policy; **para 15.2.2** removed references to ACC Air Operations Squadron; **para. 16.2** updated tactical arrivals; **Attachment 1** added definitions for new abbreviations and terms.

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Chapter 1

GENERAL INFORMATION

1.1. General. This directive is for EC-130H COMPASS CALL aircrews. Use it in conjunction with aircraft flight manuals, Flight Information Publication (FLIP) and applicable USAF directives. This volume prescribes procedures for most circumstances, but is not to be used as a substitute for sound judgment or common sense. It is written for normal and contingency operations to reduce procedural changes at the onset of contingencies.

1.1.1. HQ ACC/A3C has overall responsibility for administration of this volume.

1.2. Terms Explained. The terms "Shall, Will, Should, May, Warning, Caution and Note" are defined in the appropriate EC-130H flight manual. Additional terms are defined in **Attachment 1**.

1.3. Deviations and Waivers. Deviations from these procedures require specific approval of HQ ACC/A3 (or other authority specified in this volume), unless an urgent requirement, safety or aircraft emergency dictates otherwise. The PIC is required to take the appropriate action to safely recover the aircraft and is responsible for the action taken.

1.3.1. ACC/A3 is the waiver approving authority for non-tiered requirements in this AFMAN. Forward waiver requests through NAF channels to HQ ACC/A3C for staffing, with informational copies to HQ ACC/A3CR as necessary. When CHOPed to another MAJCOM, forward waiver requests through the chain of command to MAJCOM standardization/evaluation, C/JFACC, or COMAFFOR, as appropriate, with informational copies to HQ ACC/A3, HQ ACC/A3T, and HQ ACC/A3C. Waivers issued by HQ ACC/A3 are effective until the next rewrite of this AFMAN unless stated otherwise in the waiver approval. For waivers issued under other authority specified in this AFMAN, duration of the waiver should be included in the approval. HQ ACC/A3 approves long-term (permanent) waivers. Report deviations (without waiver) that are not pre-approved due to an urgent requirement, safety or aircraft emergency up through channels to HQ ACC/A3C within 48 hours. Units must be prepared to collect background information and submit a follow-up written report upon request. **(T-3).**

1.4. Supplements. This AFMAN provides basic guidance. Each user MAJCOM or operational theater may supplement this AFMAN according to AFPD 11-2, *Aircraft Rules and Procedures*, and AFI 33-360, *Publications and Forms Management*. Stipulate unique MAJCOM procedures (shall not be less restrictive than this basic document) and publish MAJCOM/A3/DO-approved permanent waivers in the MAJCOM supplement.

1.4.1. Coordination Process. Forward proposed MAJCOM, Direct Reporting Unit (DRU), and operational theater supplements to HQ USAF/A3TS for approval prior to publication, through ACC/A3CR. Send one copy of a unit's supplement to this AFMAN (local procedures) to HQ ACC/A3CR and 25 AF/A3V.

1.5. Combined Operations. Use only the basic AFMAN 11-2EC-130HV3 for planning or operations involving forces from other commands. Commanders may use approved MAJCOM supplement procedures with assigned and/or CHOPed forces provided these forces receive appropriate training on the procedures and the duration of their use is specified. Commanders

should not assume or expect aircrews from another command to perform MAJCOM-specific procedures in their supplements unless these provisions are met. Questions by aircrews, planners and staff should be submitted to the OPR via ACC Command Post or ACC Operations Center (see **Chapter 4**).

Chapter 2

COMMAND AND CONTROL

2.1. General. The ACC command and control (C2) system is based on the principles of centralized monitoring and decentralized control and execution. The result is a C2 mechanism which keeps the ACC commander informed of the current status of ACC forces while enabling the wing or group commander to exercise control over day-to-day operations. The C2 network consists of theater Air and Space Operations Centers, Contingency Response Groups (CRG), Special Tactics Teams (STT), unit command posts and the ACC command post.

2.2. Detachment Commander (DETCO). When one or more aircraft are deployed to perform missions away from home station, the tasked unit will designate a DETCO to assume responsibility for mission execution, personnel supervision and higher headquarters coordination. **(T-3).**

2.2.1. The DETCO is the final authority responsible for ensuring aircrews have properly coordinated mission details. DETCO duties include, but are not limited to:

2.2.1.1. Ensuring all collocated aircrews complete required mission briefings, including local procedures, Rules of Engagement and Special Instructions.

2.2.1.2. Coordinating with Air Traffic Control (ATC), Combat Control Teams (CCT), STT range control, users and others that may have an impact on the mission.

2.2.1.3. Ensuring both maintenance and operations personnel have adequate billeting, dining and transportation arrangements.

2.2.1.4. Coordinating aircraft and fuel requirements with maintenance supervision.

2.2.1.5. Submitting timely reports on aircraft movements (see **para 2.5**).

2.2.1.6. Other duties as outlined by the squadron commander or operations officer.

2.3. Pilot in Command (PIC) Responsibility and Authority. Flight authorization designates a Pilot in Command (PIC) on all flights, in accordance with AFI 11-401, *Aviation Management*.

2.3.1. PICs are:

2.3.1.1. In command of all persons aboard the aircraft.

2.3.1.2. Responsible for the welfare of the crew.

2.3.1.3. Vested with the authority necessary to manage crew resources in order to safely accomplish the mission. The PIC only flies events authorized in the mission tasking unless in the PIC's judgment an emergency condition demands otherwise.

2.3.1.4. The final authority as to the operation of the aircraft and make decisions not assigned to higher authority.

2.3.1.5. The final authority for requesting or accepting any waivers affecting the crew, aircraft or mission.

2.3.1.6. Charged with keeping the applicable C2 or executing agencies informed concerning mission progress.

2.3.1.7. Responsible for the timely reporting of aircraft movements in the absence of a DETCO (see **para 2.5**).

2.3.2. IAW AFI 11-401, eligible pilots may alternate command responsibility. Ensure all crewmembers are aware of which pilot has Aircraft Commander (AC) responsibility at all times. When an instructor or evaluator pilot is performing Instructor Pilot (IP)/Evaluator Pilot (EP) duties on the mission, but not designated as the pilot in command on the flight authorization, the IP/EP assumes command when safety requirements dictate, or when deviation from this volume is necessary IAW **para 1.3.**

2.4. Mission Monitoring. Except for select, sensitive missions, the ACC Command Post monitors all ACC aircraft that move to, from or between OCONUS locations. Key components of the ACC C2 system are the Global Command and Control System (GCCS) and the various C2 facilities at theater and wing locations. When aircraft are deployed in support of operations and exercises, the Command Center may obtain additional information from situation reports (SITREP) and Deployed Status Reports (DSR). For missions that are not sensitive in nature and have not been CHOPed to another command, the respective squadron operations center or wing command post tracks CONUS movements of their aircraft based on aircrew reports. Information on OCONUS movements of ACC aircraft is relayed to the ACC Command Post (DSN: 574-1555; Commercial: 757-764-1555) via telephone notification from host wing command posts. The host wing command post receives data directly from aircrew or via the enroute facility's local command post. **NOTE:** These procedures may be modified to meet local/contingency requirements.

2.4.1. Missions at Bases with a C2 Facility. DETCOs or PICs ensure that approximately 30 minutes prior to landing, the following information is relayed to the applicable C2 facility: call signs, ETAs, maintenance status and additional service requirements. After landing, the DETCO or AC contact the C2 facility with ground handling requirements and departure information. In addition, CONUS-based crews operating OCONUS keep their home station Squadron Operations Center (SOC)/command post apprised of all actual takeoff and landing times, projected takeoff times and other related information. Home station agencies relay information to the ACC Command Post. These actions keep the ACC commander apprised of the locations and status of OCONUS forces. When forces CHOP to another theater commander, reporting is through theater C2 centers upon arrival in the assigned area of responsibility.

2.4.2. Missions at Bases without a C2 Facility. DETCOs or PICs report, as soon as possible, actual takeoff and landing times, maintenance status, projected takeoff times, and other pertinent data to the host wing command post or command/operations center. Methods of communicating this information include HF phone patch, SATCOM radio, DSN, and commercial telephone. Accomplish movement reporting as soon as possible after the event, when crew duties and safety permit. If unable to contact host wing command post or command/operations center, retain information for submission when contact is re-established. Report communication difficulties through the chain of command. Refer to the FLIP, Flight Information Handbook, USAF HF/SSB Airways and Command and Control Station section for guidance on mission reporting. Restrict HF transmission to operational traffic, such as movement reporting, itinerary revisions, maintenance status, flight plan information, aircraft emergencies, or other important flight information.

2.4.3. Enroute Reporting. Enroute reports are required only when specified in an Operation Order (OPORD)/Operation Plan (OPLAN) or other mission directive.

2.4.3.1. Contact the destination IAW the Flight Information Handbook/Enroute Supplement. Upon initial contact, confirm your arrival message has been received and update your ETA. If your arrival message has not been received, transmit information to the destination as necessary. When within UHF/VHF range, contact the appropriate destination agency (command post, SOC, etc.) with the following information, unless previously transmitted:

2.4.3.1.1. ETA.

2.4.3.1.2. VIP code and requirements (if applicable).

2.4.3.1.3. Any additional servicing requirements.

2.4.4. Sensitive Missions. Command and control procedures for these missions are outlined in the tasking directive.

2.5. Mission Clearance Decision. The final decision to delay a mission may be made either by the agency with OPCON or the PIC when, in the opinion of either, conditions are not safe to start or continue a mission. Final responsibility for the safe conduct of the mission rests with the PIC. If the PIC refuses a mission, it does not depart until the conditions have been corrected or improved so that the mission can operate safely. Another PIC and aircrew are not alerted to take the same mission under the same conditions.

2.5.1. Diverting or rerouting a mission must be authorized by the commander with OPCON, except in an emergency or when required by enroute or terminal weather conditions or facilities. **(T-3).** In the event of an emergency, weather-related divert or change in routing, the DETCO or AC must notify the controlling authority as soon as possible. **(T-3).**

2.5.1.1. The controlling agency directing the change in routing or diversion is responsible for ensuring destination requirements or facilities are adequate for the aircraft.

2.5.1.2. The AC will notify the controlling agency of any aircraft or aircrew limitations that may preclude diverting or rerouting the mission. **(T-3).**

2.5.2. When directing an aircraft to an alternate airfield, the C2 agency will normally ensure the AC is provided existing and forecast weather for the alternate, notices to airmen (NOTAMs), bird hazard (BASH), and appropriate airfield information from the Airfield Suitability and Restrictions Report (ASRR). If the planned alternate becomes unsuitable while enroute, the AC should coordinate with the C2 agency for other suitable alternates. The C2 agency should coordinate with customs and ground service agencies to prepare for arrival. The PIC is final authority on selecting a suitable alternate.

Chapter 3

CREW COMPLEMENT

3.1. Aircrew Qualification. Primary aircrew members, or those occupying a primary position during flight, are required to be qualified or in training for qualification in that crew position, mission and aircraft. If non-current or in training for a particular event, the aircrew member must be under the supervision of an instructor while accomplishing that event (direct supervision for critical phases of flight, as defined in **Attachment 1** of this volume). **(T-3).**

3.1.1. Pilots:

3.1.1.1. Qualification Requirements.

3.1.1.1.1. The term pilot applies to any C-130 qualified pilot who may or may not be certified as an AC.

3.1.1.1.2. Any qualified pilot may occupy the copilot seat.

3.1.1.1.3. An AC certified pilot is any pilot trained and certified to command the aircraft. The AC upgrade program is outlined in AFI/AFMAN 11-2EC-130HV1, *EC-130H Aircrew Training*.

3.1.1.2. Passenger Restrictions. Do not perform touch and go landings or simulated emergency procedures with passengers on board. **NOTE:** Touch and go landings may be performed with Additional Crew Members (ACM) or Mission Essential Personnel (MEP) onboard. Only a pilot that is qualified (current and valid AF Form 8, *Certificate of Aircrew Qualification*, for the C-130 and occupied position), and current IAW AFI/AFMAN 11-2EC-130HV1, will occupy a pilot's seat with passengers on board the aircraft. **(T-3). EXCEPTION:** A qualified pilot regaining currency under direct IP supervision may also fly with passengers on board. Guidance for orientation, incentive and familiarization flights can be found in AFI 11-401, *Aviation Management*.

3.1.2. Senior leaders.

3.1.2.1. Senior leaders who complete a Senior Staff Qualification course (restricted AF Form 8) or orientation for a Senior Staff Familiarization flight may occupy a primary crew position when under direct instructor supervision.

3.1.2.2. Crew members who complete the Senior Staff Qualification Course are required to log FP/FN for Flight Authorization Duty code on the AFTO Form 781, *ARMS Aircrew/Mission Flight Data Document.*

3.1.2.3. Crew members who complete a Senior Staff Familiarization flight are required to log OP/ON/OE for Flight Authorization Duty Code on the AFTO Form 781.

3.2. Crew Complement.

3.2.1. Minimum basic crew is defined as one AC, one pilot, one navigator, one flight engineer and one airborne maintenance technician (AMT). Group commander, squadron commanders, operations officers, DETCOs, or operation supervisors may authorize flights without a navigator when not required for mission accomplishment. **NOTE:** A navigator is needed on missions with reported or forecasted thunderstorms or as deemed necessary by the

aforementioned approving officials. Units will post procedures regarding the use of navigators on proficiency trainers in the supplement to this volume. **(T-3).**

3.2.1.1. A navigator is required when the sortie involves a mission orbit, air refueling, or for proficiency training sorties outside the local area as defined via FCIF, local supplement to this AFMAN, local instructions, or other official stan/eval guidance.

3.2.2. Augmented Crew is defined as basic crew plus an additional AC-certified pilot, navigator, flight engineer and AMT.

3.2.3. Mission crew is defined as basic crew plus minimum mission crew, which is at least one EWO, one MCS, two ANOs and one AO. The ECG/CC, or equivalent, or designated representative may authorize adjustments to the minimum mission crew based on mission requirements.

3.2.4. The PIC maintains ultimate responsibility of overall conduct of the mission. However, qualified aircrew in their respective seats, when the PIC is not at the controls, maintain responsibility for the actions they take. Transfer of duties between certified ACs will be briefed to the crew. **(T-3).**

3.3. Mission Essential Personnel (MEP). Eligibility and authority for granting MEP status is specified in AFI 11-401.

3.4. Scheduling Restrictions. Refer to AFI 11-202V3, for further guidance. **NOTE:** Do not takeoff early (before scheduled departure time) if the early takeoff time would violate the following restrictions. In addition to restrictions outlined in AFI 11-202V3, aircrew members are not scheduled to fly, nor will they perform crew duties:

3.4.1. When the maximum flying time limitations of AFI 11-202V3 are exceeded.

3.4.2. Within the 12-hour period prior to assuming standby force duty.

3.4.3. When taking oral or injected medication unless individual medical waiver has been granted by the Flight Surgeon. Aircrew members may not self-medicate except as noted in AFI 48-123, *Medical Examinations and Standards*, and AFI11-202V3, ACC Supplement.

3.4.4. Within 30 minutes of accomplishing ground pressurization checks of less than 10 minutes (restricted from flying).

3.5. Interfly. Squadron operations officers may authorize interfly of ACC aircrews and ACC aircraft in specific operations, exercises or under special circumstances. In all cases, the crew will be qualified in the aircraft MDS as well as any systems required to fly the mission. HQ ACC/A3 is the approval authority for command-to-command interfly.

3.6. Flight Duty Period (FDP). FDP begins at scheduled or established show time. For aircrew members performing other duties prior to flight-related duties, FDP begins when reporting for other duties. For Alpha Standby, FDP begins when the crew is told to takeoff. For Bravo Standby, FDP begins when the crew shows for duty. FDP ends at final engine shutdown. Waiver authority is IAW AFI 11-202V3 and this paragraph. **NOTE:** The following paragraphs supplement AFI 11-202V3, for EC-130H aircraft.

3.6.1. Basic FDP is 16 hours, provided no flight crew members perform proficiency training (multiple approaches/landings at practice airfields), air-to-air refueling training, Functional Check Flights (FCF), or Operational Check Flights (OCF) after 12 hours. Mission crew

members past 12-hour FDP do not restrict performance of flight crew training. If the autopilot is not operational or its use is denied for more than 4 hours, FDP is 12 hours (unless the pilot position is augmented). Waiver authority for contingencies is C/JFACC or MAJCOM/A3 of the agency with OPCON. Preflight FDP is the same as a flight crew and is outlined in AFI 11-202V3. **NOTE:** If the autopilot fails after 12 hours, the PIC should exercise judgment in coordination with the crew to determine the best course of action, considering mission requirements, crew fatigue, remaining transit time to landing point, weather and other applicable factors.

3.6.2. Augmented FDP is 20 hours with adequate in-flight crew rest facilities available (determined by the PIC), provided no pilot proficiency training, air refueling training, FCFs, or OCFs are accomplished after 16 hours. If the autopilot is not operational or its use is denied for more than 8 hours, FDP is 16 hours. Basic crews are not augmented after crew duty has started. Waiver authority for contingencies is C/JFACC or MAJCOM/A3 of the agency with OPCON.

3.6.2.1. Crew changes should not be made immediately prior to performing critical phases of flight. Normally 30 minutes prior to initiating the checklist for an event allows the new crew member time to get acclimated. See **NOTE** in **para 3.6.1** if applicable.

3.6.3. FDP for flight examiners administering flight evaluations cannot exceed augmented FDP.

3.6.4. FDP may be extended IAW AFI 11-202V3. MAJCOM/A3 or equivalent for the agency with OPCON of the aircraft is waiver authority for maximum FDP. Coordinate with C2 agencies so that downstream activities are not adversely affected. Under no circumstances should missions be scheduled to exceed the maximum FDP above without appropriate waiver.

3.6.4.1. ECG/CC (or equivalent) may approve up to 2-hour extensions to FDP in order to compensate for mission delays on a case by case basis.

3.7. Crew Rest. Crew rest policy is IAW AFI 11-202V3 and this paragraph.

3.7.1. Home-Station Pre-Departure Crew Rest. All primary aircrew members should enter crew rest 24 hours prior to show time for missions scheduled away from home station for more than 16 hours. The first 12 hours are not considered crew rest but are designed to allow crew members time to resolve personal affairs. During these first 12 hours, crew members may perform limited non-flying duties, including mission planning. The ECG/CC is the waiver authority for the first 12 hours of pre-departure crew rest if flight related duties are required during this period. Aircrew members cannot be manifested as passengers to reduce or eliminate crew rest requirements.

3.7.2. Enroute Ground Time and Crew Rest. Minimum planned ground time is 16 hours between engine shutdown and mission takeoff, unless extended post-flight duties are anticipated. Crew rest normally begins 45 minutes after final engine shutdown. The 45-minute time period is intended to provide crews with time to complete normal post-flight duties. These duties include, but are not limited to, refueling, securing classified material, performing maintenance or completing mission debriefings. **NOTE:** Crew rest does not begin until all crewmembers have completed post-flight duties, to include any duty requiring an aircrew member to stay at the aircraft past the 45-minute period.

3.7.2.1. Minimum crew rest period is 12 hours, unless exceptions per AFI11-202V3 are met.

3.7.2.2. Crews re-enter crew rest if their aircraft or mission is not capable of departure within 4 hours of scheduled takeoff time. Exceptions may be made by the Sq/DO or above, but require the concurrence of the PIC. Refer to AFI/AFMAN 11-2EC-130HV1 for additional restrictions on training missions.

3.7.2.3. FDP may be further limited for crews in Individual Protective Equipment (IPE) such as the Aircrew Chemical Defense Ensemble (ACDE) due to heightened ORM concerns. Aircrew members in IPE may experience a degradation in flight duty performance due to increased fatigue and restrictions in situational awareness. PICs should work closely with command and control personnel to ensure appropriate FDP are established when mission segments require IPE. See **Chapter 9** for additional guidance.

3.7.2.4. Mission planners should construct mission itineraries with enroute ground times longer than 16 hours to afford aircrew members opportunities to recover from the cumulative effects of fatigue caused by flying on several consecutive days or due to transiting several time zones. If practical, schedule up to 36 hours enroute ground time after three consecutive near-maximum FDPs.

3.7.3. Crew Chief/MEP Maintenance Technician Work and Rest Plan. These personnel are responsible to the PIC. The PIC, in conjunction with the enroute station chief of maintenance, determines how long they can safely perform aircraft recovery actions. They must have the opportunity to sleep 8 hours of each 24-hour period. See AFI 21-101, *Aircraft and Equipment Maintenance Management*, for detailed guidance.

3.7.4. Post-Mission Crew Rest (PMCR). SQ/CCs shall grant aircrew members returning to home base sufficient time to recover from cumulative effects of the mission and tend to personal needs. **(T-3).** PMCR begins upon mission termination.

3.7.4.1. ECG/CC (or equivalent) is the PMCR waiver authority.

3.7.4.2. For missions that keep an aircrew off station 16 or more hours, the SQ/CC shall provide 1 hour (up to 24 hours) PMCR for each 3 hours off-station. **(T-3).** SQ/CCs may extend PMCR at their discretion. Do not enter aircrew members in pre-departure crew rest until the PMCR period expires.

3.7.4.3. PMCR is not applicable to continuing missions.

3.8. Standby Force Procedures . **NOTE:** Contingency operations may require modification of the following Standby Force Procedures. The squadron commander or operations officer will approve any modification of these procedures. **(T-3).**

3.8.1. Crew Management. Except as noted below, commanders will not use a standby crew to perform any non-mission duties or duties not related to their standby status. **(T-3).** Standby crews will not preflight any aircraft other than their standby aircraft. **(T-3).**

3.8.2. ALPHA Standby Force. An aircraft and aircrew capable of taking off in 1 hour. Aircrew members are given 12 hours of pre-standby crew rest before or after aircraft preflight. Aircrews must complete all preflight duties within 6 hours of crew show time. **(T-3).** An additional 12-hour pre-standby crew rest is required when preflight time exceeds 6 hours and crew rest was given before the preflight. Once an ALPHA force is formed,

additional pre- flights may be necessary to maintain the ALPHA aircraft. Additional pre-flights done during normal waking hours do not interrupt crew rest. A crew will not stay on ALPHA standby duty for more than 48 hours. **(T-3).** After 48 hours, the crew must takeoff, be released, or be entered into pre-departure crew rest. **(T-3).** FDP begins when the crew is told to takeoff.

3.8.2.1. Aircraft Security. Each unit will complete a maintenance and aircrew preflight inspection when they put an aircraft on ALPHA standby status. **(T-3).** The ALPHA Standby PIC will ensure the aircraft is sealed after preflight. **(T-3).** Secure all hatches and doors to prevent unauthorized entry. Close and lock the crew entrance door with a controllable device, which prevents entry without damage to the door or lock. The command post, squadron commander, or DETCO must grant permission prior to persons, other than the ALPHA Standby crew, entering an aircraft once the plane is sealed. **(T-3).** Ensure standby aircraft is resealed any time the aircraft has been opened. The ALPHA Standby PIC or designated representative must be present if access to the assigned aircraft is required. **(T-3)**.

3.8.3. BRAVO Standby Force. An aircraft or aircrew capable of taking off in 3 hours (from the time the crew is told to takeoff, or alerted). Aircrew members are given 12 hours of pre-standby crew rest. Crews are legal for alert after pre-standby crew rest. Preflight duties, if required, interrupt crew rest. A crew cannot stay on BRAVO standby duty for more than 48 hours. After 48 hours, the crew must takeoff, be released, or be entered into pre-departure crew rest. FDP begins when the crew shows for duty. If a BRAVO standby crew is alerted for any duty (takeoff, preflight, mission planning), and the unit is subsequently tasked to launch the mission, FDP is calculated from when the crew first reported for that duty.

3.8.4. CHARLIE Standby Force. An identified aircrew capable of entering crew rest within 2 hours (after their controlling unit is notified). This aircrew becomes legal for alert 12 hours after entering crew rest. CHARLIE Standby cannot exceed 72 hours. After 72 hours, the crew will be released. **(T-3).** Afford a minimum of 12 hours before resuming CHARLIE Standby duty, entering crew rest for a mission, or entering pre-standby crew rest for ALPHA or BRAVO Standby.

3.9. Counter-Fatigue Management Program.

3.9.1. Aircrew may use medications with prior approval (on a voluntary basis following ground testing) that enhance natural rest during off-cycle crew rest periods. This section provides guidance for the use of no-go pills (prescription medications) that help aircrew initiate and maintain restful sleep during off-cycle (desynchronosis) crew rest periods. Fliers on augmented aircrews shall not use no-go pills in flight. **(T-1).**

3.9.2. It is USAF policy that aircrew shall never use no-go pills as a first choice counter-fatigue management tool. **(T-1).**

3.9.3. Responsibility for counter-fatigue management of aircrew medicinal products rests with the home station Flight Surgeon (FS), ECG/CC (may delegate to but no lower than squadron commander), and with each individual aircrew member. During deployments, aircrew members only obtain no-go pills from a flight surgeon after review with a USAF flight surgeon.

3.9.4. Unit Operational Risk Management (ORM) programs include use of no-go medication with ECG/CC and FS oversight.

3.9.5. Home station or deployed flight surgeon is the point of contact for no-go prescription. Upon request, the FS advises/assists the local ECG/CC to identify missions that may impair crew rest caused by duty day length, departure and arrival times and other mission timelines.

3.9.6. The ECG/CC shall establish a system to inform the FS when missions fall into any of the following categories (may cause sleep disruptions and are therefore candidates for no-go medications): **(T-3).**

3.9.6.1. Home station night launch missions greater than four hours duration.

3.9.6.2. Crew rest facilities lacking an optimal sleeping environment (quiet, climate controlled and darkened).

3.9.6.3. Off-station missions that are four or more time zones from home station.

3.9.6.4. Rotating schedules (stair-stepped flying schedules) with greater than 6-hour flight time duration.

3.9.6.5. Missions that run consistently near a 14-hour (or greater) duty day.

3.9.7. Crew members cannot consume a no-go pill on a timeline where they would be under the effect of the medication while they perform aircrew duties, or are on ALPHA/BRAVO status (use mission report or legal for alert time to determine latest time to take no-go medication). Adhere to guidance below, unless superseded by updated MAJCOM or HAF direction.

3.9.7.1. Temazepam (Restoril). A dose of 15-30 mg is to be taken with a minimum DNIF period of 12 hours before resuming duties.

3.9.7.2. Zolpidem (Ambien). A dose of 5-10 mg is to be taken with a minimum DNIF period of 6 hours before resuming duties.

3.9.7.3. Zaleplon (Sonata). A dose of 10 mg is to be taken with a minimum DNIF period of 4 hours before resuming duties.

3.9.8. Aircrew member’s responsibilities:

3.9.8.1. Complete ground testing for no-go pills and receive flight surgeon clearance prior to using no-go pills in the operational environment.

3.9.8.2. Cannot operate equipment within the DNIF periods for each of the no-go pills as specified in **para 3.9.7** of this manual.

3.9.8.3. Cannot take no-go-pills within 12 hours of consuming alcohol.

3.9.8.4. Inform the FS of any other medications (including nutritional supplements and over the counter medications) they are taking so the FS can evaluate potential interactions.

3.9.8.5. Limit use of Restoril and Ambien to a maximum of seven consecutive days and no more than 20 days in a 60-day period.

3.9.8.6. Limit use of Sonata to a maximum of 10 consecutive days and no more than 28 days in a 60-day period.

Chapter 4

AIRCRAFT OPERATING RESTRICTIONS

4.1. Objective. This chapter applies to accepting an aircraft from maintenance prior to takeoff. The ultimate objective of the aircraft maintenance team is to provide an aircraft ready for flight with all equipment operational (Fully Mission Capable, FMC). Manpower limitations, skills, and spare part availability have a negative and direct impact on mission accomplishment. However, under specific circumstances, some missions can be safely operated without all equipment being operational. Using the following policies, the PIC is the final authority in determining an overall suitability of an aircraft. Use the following maintenance identifiers and **Table 4.1** through **Table 4.16** to effectively communicate the status of an aircraft and to determine whether an aircraft is airworthy and able to perform the scheduled mission.

4.2. Minimum Equipment List (MEL) Policy. It would be impractical to prepare a list that would anticipate all possible combinations of equipment malfunction and contingent circumstances. This chapter lists the minimum equipment and systems considered essential for routine as well as contingency operations. The list does not necessarily include all equipment or systems essential to airworthiness (e.g., rudder, ailerons, elevators, flaps, tires). Those items which state a minimum requirement and have no listed exceptions ground the aircraft.

4.2.1. The PIC is responsible for exercising the necessary judgment to ensure no aircraft is flown with multiple items inoperative that may result in an unsafe degradation and/or an undue increase in crew workload. The possibility of additional failures during continued operation with inoperative systems or components are also to be considered. This chapter is not intended to allow for continued operation of the aircraft for an indefinite period with systems/subsystems inoperative. The Minimum Equipment List (MEL) cannot direct deviation from the aircraft flight manual limitations, emergency procedures, or USAF/ACC directives. PICs should be aware that the MEL is an operational tool, and serves a different purpose than the maintenance Minimum Essential Subsystem List (MESL).

4.2.2. If, after exploring all options, a PIC determines a safe takeoff is possible with a required MEL item inoperable (beyond a particular restriction) the PIC shall request a waiver. **(T-3)**. Plan a minimum 12-hour response to the waiver request. If an item is needed to be operational according to the maintenance MESL, the PIC may still opt to accept the aircraft without waiver. Safety of flight is paramount.

4.2.3. All emergency equipment will be installed and fully operational unless not required in support of mission requirements. **(T-3)**.

4.3. Waiver Protocol. Waivers to operate with degraded or inoperative equipment beyond the guidance in **Table 4.1** through **Table 4.15** of this chapter may be granted on a case-by-case basis and only in exceptional circumstances. Waiver authority is the ECG/CC for local missions, or equivalent, based on who has operational control (OPCON) and execution of the aircraft performing a specific mission. The PIC determines the need for a waiver and initiates the request.

4.4. Technical Assistance Service. The PIC may (at any time in the decision process) request technical support and additional assistance from their home unit, ACC staff, and/or maintenance representatives.

4.4.1. PICs electing to operate with degraded equipment or aircraft systems (with appropriate waiver, if necessary) must coordinate mission requirements (revised departure times, fuel requirements, maintenance requirements, etc.) with the C2 agency before flight. **(T-3).**

4.4.2. If beyond C2 communication capability, the PIC may deviate from this chapter or the MEL according to **para 1.3.** Report deviations (without waiver) through channels to HQ ACC/A3C within 48 hours. Units must be prepared to collect background information and submit a follow-up written report upon request. **(T-3).**

4.5. Definitions (Specific to this Chapter).

4.5.1. Home Station. Home bases of assignment for EC-130H aircraft. Aircraft cannot depart their home stations unless MEL home station requirements are met. **EXCEPTION:** During wartime, enroute criteria applies to all aircraft departures.

4.5.2. Enroute. Enroute locations where maintenance repair capability exists. An enroute station has the necessary skilled USAF or USAF-contract maintenance personnel, support equipment, and technical data available to accomplish most repairs.

4.5.3. Local Training. A mission scheduled to originate and terminate at home station, generated for training or evaluation and executed at the local level.

4.5.4. Off-Station Training. A mission that departs home station to perform training, as directed by the wing or ECG/CC, without returning the same day. These missions are supported by home station logistics. **NOTE:** Off-station trainers are considered local training for the purposes of this chapter.

4.5.5. Remarks/Limitations/Exceptions. Some technical information and procedures are contained in this column. This is not all inclusive. Crew members refer to the flight manual and other directives for procedures, techniques, limitations, etc.

4.5.5.1. One-time Flight Clarification: Normally a Red X discrepancy is downgraded for a one-time flight. This condition does not preclude carrying cargo and passengers. The priority is to move the airplane to a repair-capable facility. PICs must coordinate with appropriate agencies to ensure repair capability exists at the destination. **(T-3).** One-time flights may include enroute stops only when necessary to recover the airplane. **EXAMPLE:** An airplane departs on a gear-down flight from Djibouti IAP and requires an enroute fuel stop (Cairo) before landing at the nearest repair capable facility, Sigonella NAS.

4.5.5.1.1. One-time flight to nearest repair-capable facility: Flight is limited to the shortest enroute time to the nearest repair-capable base.

4.5.5.1.2. One-time flight to a repair-capable facility: Flight is not restricted to the nearest repair capable facility.

4.5.5.2. Other Mission and Repair Clarifications:

4.5.5.2.1. Repaired at next repair-capable facility: Mission may continue as scheduled, item is repaired upon reaching a repair-capable facility. Once maintenance action is initiated, and it is determined repairs are not possible, the PIC discusses possible courses of action with C2 agency to return aircraft to service.

Flights should only be conducted with intent to take the aircraft to a repair facility, not to conduct training.

4.5.5.2.2. Mission dictates requirement: PIC considers the entire mission profile, not just the next leg. **EXAMPLE:** An airplane is departing an enroute station with repair capability, after engine start the flight engineer discovers the #1 engine anti-ice is inoperative. Icing conditions are not forecasted for the next leg. However, because the mission spans several days and repair capability does not exist at the scheduled enroute stops, the PIC elects to have the item repaired prior to departing.

4.6. Navigation Systems.

4.6.1. For flights in Minimum Navigation Performance Specification (MNPS), refer to T.O. 1EC-130H-1-4(AV), FLIP General Planning (GP) and Area Planning (AP) volume appropriate for route of flight for equipment requirements.

4.6.2. For flights on all other Category I routes, the PIC determines the minimum navigational capability required to safely accomplish the mission. Consider the following: duration, route of flight, weather, experience and proficiency of the crew.

4.7. Equipment/Cargo Loading. EC-130H aircraft/crews are not equipped or trained to carry cargo. Cargo is defined as any item loaded aboard the aircraft except crew baggage, professional gear, spare mission equipment, crew chief tool boxes, or safety/emergency equipment. However, items other than those listed above may be carried on board the aircraft to support operations. All cargo/baggage is properly restrained IAW T.O. 1EC-130H-5-1, *Sample Basic Weight Checklists* and T.O. 1EC-130H-5-2, *Loading Data*. The following restrictions apply to all EC-130H flights unless a waiver is obtained IAW **para 4.3. NOTE:** Cargo and baggage will not be loaded until the flight engineer and AMT have preflighted the cargo compartment. **(T-3).** The flight engineer and AMT will supervise all loading. **(T-3).** The flight engineer will calculate weight and balance and center of gravity. **(T-3).**

4.7.1. No palletized cargo can be carried.

4.7.2. No hazardous cargo as defined by AFMAN 24-204, *Preparing Hazardous Materials for Military Air Shipments*. This does not apply to items that are required to be carried per T.O. 1EC-130H-1, *Flight Manual* or T.O. 1EC-130H 5-2.

4.7.3. Total weight cannot exceed 1,500 pounds.

4.7.4. No single item over 400 pounds.

4.7.5. Loading restrictions: Do not load/secure baggage or equipment between the aft side of flight station 245 and the first equipment rack/operator console; in the aisle, escape routes, or access areas to aircraft mission systems; or in front of the wheel well inspection windows. Personal and professional equipment, and cargo that meets the requirements of this chapter may be loaded in all other areas as long as tie down devices are available, mission equipment is shielded, weight and balance is maintained, and safety is not compromised.

4.7.5.1. Personnel may not be seated closer than 30 inches in front of netted cargo or cargo that is secured with straps. This does not apply to cargo restrained by chains/chain bridle assemblies.

4.7.5.2. For flight, the weight limit on the aircraft ramp is limited to 4824 lbs. floor loaded cargo (ramp intermediate conveyors removed and stowed forward of ramp). See T.O. 1EC-130H-5-2 for further restrictions.

4.8. Gear-Down Flight Operations. Limit gear down flight operations to sorties required to move the aircraft to a suitable repair facility. Consider gear down flight only after the PIC exhausts all avenues to repair the aircraft in place.

4.8.1. Standard climb-out flight path charts are in T.O. 1C-130H-1-1, *Flight Manual Performance Data*. For gear down operations, drag index must be applied using the Effect of Variant Configurations On Climb Out Flight Path charts. PICs cannot takeoff until there is reasonable assurance the aircraft can achieve/maintain adequate obstacle clearance to include enroute stops and alternates.

4.8.1.1. Time and communications capability permitting, validate takeoff data with 55 ECG/EGV.

Table 4.1. Engines/Gas turbine Compressor (GTC).

Item/System	Installed	Operational	Remarks/Limitations/Exceptions
Engines	4	4	Do not takeoff with nonstandard aircraft configuration or power unless a hostile threat to the aircraft and/or crew makes it imperative. Do not takeoff unless all four engines achieve charted torque at takeoff power settings.
(AVP) Engine Instrument Display System (EIDS)	2	2	
Torquemeter	4	4	
Tachometer	4	4	
Turbine Inlet Temperature Indicators	4	4	
Fuel Flow Gauges	4	4	
Oil Temperature Gauges	4	4	
Oil Pressure Gauges	4	4	Indicators for both the engine power section and reduction gear section must be operational.
Oil Quantity Gauges	4	3	One oil quantity gauge may be inoperative provided the oil quantity is verified prior to flight and the Low Oil Quantity light is operational.
Low Oil Quantity Light	1	0	If inoperative, all four oil quantity gauges are to be operational.

Oil Cooler Flap	4	0	Oil Cooler Flap may be inoperative if the flap can be manually positioned to open and fixed and oil temperature can be maintained within normal limits. Consider impact of LORI Oil Coolers if installed.
Oil Cooler Flap Position Indicator	4	0	
GTC	1	0	Mission dictates requirement.

Table 4.2. Propellers.

Item/System	Installed	Operational	Remarks/Limitations/Exceptions
Propeller	4	4	Propeller may be operated with a feather override failure where the override button fails to pop out at full feather (faulty pressure switch), provided maintenance instructions in the applicable fault isolation manual are followed and no other system is affected.
Synchrophaser	1	1	If the synchrophaser fails, mission may continue to a repair facility provided no other portion of the propeller system is affected. Remove synchrophaser.

Table 4.3. Electrical System.

Item/System	Installed	Operational	Remarks/Limitations/Exceptions
Generators, Engine-Driven	4	4	If a generator fails at an enroute stop or off-station training, a flight to a destination with repair capability, including enroute stops, may be made. If the generator is not equipped with a disconnect, remove it and pad the generator mount before flight, provided no other electrical malfunction exists.

(Legacy) Transformer Rectifiers (TR)	4	4	One Essential TR unit may be inoperative for a flight to a repair facility provided no other electrical malfunction exists.
(AVP) Regulated Transformer-Rectifier Unit (RTRU)	4	2	Mission dictates requirement. TRU fans are considered part of the RTRU for the purposes of determining operational status. One RTRU must be operational on each source AC bus.
ATM and ATM Generator	1	1	If the ATM or ATM generator fails, one-time flight to a repair facility, in visual meteorological conditions (VMC), is authorized provided no other electrical malfunctions exist.
Generator Out Lights	4	4	See Note.
AC Loadmeter	4	4	See Note.
Note: If a generator has been disconnected or removed and padded, its associated indicators do not have to be operational. All associated equipment and indicators are to be operational for each operative engine-driven generator (generator control panel, GCU, voltage regulator, generator out/caution light, AC loadmeter, etc.).			

Table 4.4. Fuel System.

Item/System	Installed	Operational	Remarks/Limitations/Exceptions
Main Tank Fuel Pumps	4	4	One main tank fuel boost pump may be inoperative for one-time flight to a repair facility, provided the respective fuel dump pump is operational.
Main Tank Dump Pumps	4	4	
Auxiliary Tank Fuel Pumps (per tank)	1	0	Mission dictates requirement. Auxiliary tank fuel pumps are required to be operational for any tank containing fuel.
External Tank Fuel Pumps	2	0	Minimum one pump operative for tanks containing fuel.

Main Fuel Quantity Indicators (see note)	4	3	One main fuel tank indicator may be inoperative provided: 1. Both the tank with the inoperative indicator and its symmetrically opposite tank are dipped by the flight engineer to verify quantitative symmetry. Reference TO1-C-130H-2-12JG-10-1 for fuel conversion as needed. 2. At enroute stops when engines are shut down, dip check the tank with the inoperative indicator and the symmetrically opposite. 3. Cross-feed operation begins when total calculated fuel quantity has decreased to 10,000 lbs. 4. Engine-out training using the engine corresponding to the inoperative indicator or its symmetrical opposite is not conducted during tank to engine operation. 5. Plan flights to arrive overhead destination with a minimum 8,000 lbs calculated fuel. Consider maintaining cross-feed operation until engines are shut down. For air refueling restrictions, reference **para 14.4.3.**
Main Fuel Quantity Indicators	4	2	Two main fuel tank indicators may be inoperative provided: 1. All conditions required with 3 operational main fuel quantity indicators (above) are met. Inoperative indicators are asymmetrical. (Main tank indicators in combinations of either #1 and #3 or #2 and #4.) 3. Engine out training is not performed unless all engines are on cross-feed from auxiliary or external tanks with operative indicators. 4. Symmetrical engine fuel flow is maintained.

External Fuel Quantity Indicator (see note)	2	0	One external fuel tank indicator may be inoperative provided both external fuel tanks are checked full or empty. Both external fuel tank indicators may be inoperative provided both external tanks are verified empty. When an external tank indicator is inoperative and the tank cannot be visually checked empty due to foam modification, comply with the following prior to flight: 1. Check pressure with each pump in the external tank. If no pressure is obtained, the tank is verified empty. 2. If pressure is obtained, ground transfer the fuel from the external tank. Defuel the external tank if unable to ground transfer. 3. When unable to verify an external tank is empty prior to engine start, place the tank on cross-feed until no pressure is obtained. This is completed prior to takeoff.
Auxiliary Tank Fuel Quantity Indicators	2	0	If fuel quantity indicator is inoperative, fuel quantity is verified by the flight engineer with the magnetic sight gauge.
Aux Fuel Cross-feed Valves	2	0	The aux cross-feed valve may be inoperative provided the bypass valve and external cross-feed on the same side is operational.
External Fuel Cross-feed Valves	2	0	The external cross-feed valve may be inoperative provided the bypass valve and aux cross-feed on the same side is operational.
Note: Both a main and external fuel tank indicator may be inoperative on the same wing provided the limitations listed for a single inoperative main fuel tank indicator and a single external fuel tank indicator are followed.			

Table 4.5. Hydraulics.

Item/System	Installed	Operational	Remarks/Limitations/Exceptions
Hydraulic Control Panel	1	1	
Engine-driven Hydraulic Pumps	4	4	

Utility/Booster System Engine Pump Pressure Warning Lights	4	4	
Utility System Hydraulic Pressure Indicator	1	1	
Booster System Hydraulic Pressure Indicator	1	1	
Hydraulic Suction Boost Pumps	2	2	
Auxiliary Hydraulic Pump	1	1	
Auxiliary Hydraulic Pressure Indicator	1	1	Direct reading gauge in cargo compartment may be inoperative.
Rudder Boost Pressure Indicators	2	1	

Table 4.6. Anti-Ice/De-Ice Systems.

Item/System	Installed	Operational	Remarks/Limitations/Exceptions
Ice Detection System	1	1	See Note.
Pitot-Heat System	2	2	
TAS Probe Heat	1	1	See Note.
Wing/Empennage Anti-Icing System	2	2	See Note.
Engine Inlet Air Duct Anti-Icing Systems	4	4	
Leading Edge Temperature Indicators	6	6	
Wing Leading Edge and Wheel Well Overtemp Warning Lights	7	7	
Propeller Anti-Icing and Deicing Systems	4	4	See Note below. If flown in an inoperative condition, this system must be turned off and all applicable circuit breakers pulled at all times.
Windshield Anti-Icing Systems	2	2	See Note.
Note: System may be inoperative provided aircraft is not operated in known or forecast icing conditions.			

Table 4.7. Brake/Anti-Skid Systems.

Item/System	Installed	Operational	Remarks/Limitations/Exceptions
Wheel Brakes	4	4	

Anti-Skid	1	1	1. The antiskid may be inoperative for flight to a destination with repair capability, including enroute stops. Repair at next capable facility. 2. Local training flights may continue if the antiskid fails provided the system is turned off. Do not accomplish multiple landings.
Parking Brake	1	1	

Table 4.8. Flight Recorder/Locator Systems.

Item/System	Installed	Operational	Remarks/Limitations/Exceptions
Flight Data Recorder	1	1	See Note. If FDR is inoperative but the CVR is operational, flight is authorized to next repair capable facility.
Cockpit Voice Recorder (CVR)	1	1	See Note. If CVR is inoperative but the FDR is operational, flight is authorized to next repair-capable facility.
Emergency Locator Transmitter	1	1	If enroute, repair at next repair-capable facility.
Underwater Acoustical Locator Beacon (UAB)	1	1	
Note: Training missions may be flown with an inoperative FDR or CVR, provided no passengers are carried. When initiating a tail swap or cross country sortie, FDR and CVR must be operational prior to departing home station.			

Table 4.9. Fire Protection/Warning Systems.

Item/System	Installed	Operational	Remarks/Limitations/Exceptions
Fire Extinguisher System	2	2	
Engine Fire and Turbine Overheat Warning Systems	4	4	
Nacelle Overheat System	4	4	
GTC Fire Warning System	1	1	

Table 4.10. Air Conditioning, Pressurization, and Bleed Air.

Item/System	Installed	Operational	Remarks/Limitations/Exceptions

Flight Deck and Cargo Compartment Air Conditioning Units	2	2	Pressurization and both air conditioning systems should be operational. If a system fails, flight to a destination with repair capability (including enroute stops) may be accomplished. Brief crew and passengers on the possibility that discomfort may be encountered. Air conditioning and pressurization are not required for missions which do not exceed 10,000ft MSL if a reasonable temperature can be maintained.
Flight Deck Auxiliary Vent	1	1	
Cargo Compartment Auxiliary Vent Valve	1	1	Not required for training sorties or when enroute to a base with repair capability.
Flight Deck/Cargo Compartment Temperature Control Systems	2	2	Automatic system may be inoperative provided manual temperature control is operable. Manual system may be inoperative provided automatic temperature control is operable.
Under Floor Heat System	1	0	May be inoperative provided the regulation of cargo compartment temperature is not a mission requirement.
Cabin Pressure Controller	1	1	Automatic controller may be inoperative for pressurized flight provided the manual control is operative. May be inoperative for unpressurized flight.
Cabin Altimeter	1	1	May be inoperative for unpressurized flight.
Cabin Differential Pressure Indicator	1	1	May be inoperative for unpressurized flight.
Cabin Rate of Climb Indicator	1	1	May be inoperative for unpressurized flight.
Emergency De-Pressurization Switch	1	1	

Table 4.11. Landing Gear.

Item/System	Installed	Operational	Remarks/Limitations/Exceptions

Landing Gear System	1	1	If repair capability does not exist and further flight can be made with the gear down and locked, the aircraft may be flown to a destination with repair capability (including enroute stops), provided the gear is not moved from the down and locked position. Flight (including enroute stops) with landing gear doors removed may be accomplished to a destination with repair capability. See **para 4.8.** for additional guidance.
Landing Gear Position Indicators	3	3	All indicators may be inoperative provided gear is not moved from the down and locked position. Repair at next repair capable facility.
Landing Gear Warning Light	1	1	Landing gear warning light may be inoperative provided gear is not moved from the down and locked position. Repair at next repair capable facility.

Table 4.12. Flight Instruments.

Item/System	Installed	Operational	Remarks/Limitations/Exceptions
(AVP) Air Data Computer (ADC)	2	1	
(AVP) Electronic Standby Indicator (ESIS)	1	1	
(AVP) Display Control Panel (DCP)	3	2	Required at both pilot stations.
(AVP) Mode Select Panel (MSP)	2	0	
Airspeed Indicator	2	2	
Vertical Speed Indicator	2	2	Only one is required for local training sorties or enroute stops.
Flight Director	2	0	

Attitude Director Indicator - Attitude Sphere/ Warning Flag - Bank Pointer - Turn Needle - Slip Indicator	 2 2 2 2	 2 2 1 1	The turn needle and slip indicator is to be operable on the same side. All remaining ADI subsystems and warning flags (glideslope and course) are at the discretion of the pilot in command.
Horizontal Situation Indicators (HSI)	2	2	For the purposes of this section, an operational HSI does not require a valid heading source. Refer to **Table 4.13.**
(Legacy) BDHI	3	0	
Barometric Altimeters	3	2	Both pilots' altimeters must be operational.
(AVP) APN-232 CARA	1	1	Repair at next repair capable facility.
(Legacy) CARA/Radar Altimeter	2	2	1. Navigator's CARA may be inoperative. 2. Either the digital or analog indication may be inoperative. 3. Repair pilot's CARA at next repair capable facility.
Ground Collision Avoidance System (GCAS) (if equipped)	1	1	Repair at next repair capable facility.
Enhanced Traffic Alert and Collision Avoidance System (E-TCAS)	1	1	Repair at next repair capable facility.
HF Radio	2	0	Mission dictates requirements.
Airborne Integrated Terminal Group (AITG)	2	0	One of the two AITG radios required for combat/combat support sorties. One radio capable of 8.33 kHz spacing (AITG 2 or ARC-210) must be operative for flight in European airspace.
(AVP) RAD1 / (Legacy) UHF1	1	1	

Table 4.13. Navigation Systems.

Item/System	Installed	Operational	Remarks/Limitations/Exceptions
Standby Magnetic Compass	1	1	

(AVP) ARN-151 Mil GPS	1	0	Mission dictates requirements (i.e. Mil GPS feeds ownship position data to Link 16, and timing data to ARC-210 anti-jam functions).
(AVP) Civ GPS	2	1	See Note 1.
(Legacy) C-12 Compass	2	1	Airspace/Mission dictates requirements. Both must be operational for planned IMC flight or Cat 1 routes.
(AVP) INU/AHRS	4	2	INU 1 or AHRS 1 must be operational/INU 2 or AHRS 2 must be operational. One INU must be operational.
(Legacy) INU	2	1	One INU may be inoperative provided GPS is operational.
(AVP) Interactive Hand Control Unit (IHCU)	3	0	For flight into thunderstorm activity, one IHCU must be operational at the pilot or navigator station.
FMS Control Panel	3	2	Required at both pilot stations.
(AVP) FMS Control Display Unit (CDU)	4	2	Required at navigator station and at least one pilot station. If navigator not on board, required at both pilot stations.
(AVP) Multi-Functional Display (MFD)	5	3	Pilot and copilot stations each require at least one functioning MFD. If flying into thunderstorm activity and either a navigator is not on board or the navigator's MFD is not operational, the pilot must have two functioning MFDs.
Pilot Mode Selector Switch	2	2	
VOR	2	1	See Note 1.
ILS	2	1	See Note 1.
TACAN	2	1	See Note 1.
(AVP) APS-150 Radar (Legacy) APN-59 Radar	1 1	0 0	Required if thunderstorms or hazardous weather conditions that can be detected by airborne radar are forecast or exist along route of flight.

Transponder	1	1	See Note 2. Mode 4 (or 5, with future upgrade) is not required for home station training sorties.

Notes:
1. Navigation equipment compatible with the facilities required for the entire route of flight must be operational.
2. Perform a ground check of the transponder before takeoff, using either the self-test or ground radar interrogation. If self-test is unacceptable and radar facilities do not permit a ground check, crews may takeoff if the transponder was operational on the previous mission. The transponder must be operational when TCAS is required. Refer to AFI11-202V3, as supplemented, for additional restrictions.

Table 4.14. Aircraft Exterior/Interior Lighting.

Item/System	Installed	Operational	Remarks/Limitations/Exceptions
Landing Lights	2	1	One may be inoperative provided the wheel well taxi light on same side is operational.
Wheel Well Taxi Lights	2	1	One may be inoperative provided the landing light on the same side is operational.
Wingtip Taxi Lights	2	2	
Formation Lights	9	0	
Navigation Lights	6	3	For night operations, the left and right wingtip Nav lights must be operational in addition to one of the white lights on the tail cone.
Anti-Collision/Strobe Lights	2	2	If enroute, one may be operational; repair at next repair capable facility.
Wing Leading Edge Lights	2	0	
Primary Instrument Cockpit Lighting	1	0	See Note.

Note: Sufficient edge "peanut" lighting or backlit lighting (depending on aircraft model) is to be operational for night operations for the following instruments; airspeed, altimeters, VSI, ADI, and HSI.

Table 4.15. Doors and Ramp Systems.

Item/System	Installed	Operational	Remarks/Limitations/Exceptions
Ramp and Ramp Locking System	1	1	Warning light, latching mechanisms, and locking system are to be operative for pressurized flight. Aircraft cannot be released for flight with a malfunctioning ramp lock system, with cargo on the ramp. Aircraft may continue to destination if ramp locks malfunction in-flight. Cargo ramp cannot be operated in flight, with cargo on the ramp, with malfunctioning locks. Repair lock malfunction or remove cargo from ramp prior to continuing flight operations. Do not pressurize the airplane if the ramp locks fail to lock. If enroute, unpressurized flight, with no cargo on the ramp, may be performed with a cargo ramp lock malfunction when mission requirements dictate.
Aft Cargo Door and Locking System	1	1	If enroute, mission may continue. Pressurized flight may be performed with an aft cargo door lock malfunction when mission requirements dictate.
Crew Entrance Door Warning Light	1	1	

Chapter 5

OPERATIONAL PROCEDURES

5.1. Checklists. Accomplish all checklists with strict discipline. A checklist is not complete until all items have been accomplished and all applicable crewmembers have called it complete. Momentary hesitations for coordination items, ATC interruptions, and deviations specified in the flight manual, etc., are authorized. Notes amplifying checklist procedures or limitations may be added to the checklists in pencil.

5.1.1. The pilot flying the aircraft initiates all checklists unless another procedure is established by the flight manual or this volume.

5.1.2. The only pages (or inserts) authorized in checklist are C-130 series T.O. aircrew checklists, AFI/AFMAN MDS Volume 3 or MAJCOM checklists and briefing guides, and NAF or ECG/EGV-approved information guides. Unapproved items may not be inserted within authorized checklists (i.e, items not approved cannot be placed inside the blue checklist page covers). Authorized entries will be current and written in pencil. **(T-3).** Local in-flight guides and inserts not affecting T.O. guidance and procedures may be locally developed with 55 ECG Stan/Eval approval.

5.1.3. Abbreviated checklist items that do not apply to the unit's aircraft or mission may be lined out. Do not challenge these items during checklist accomplishment.

5.2. Duty Station. A qualified pilot is required to be in control of the aircraft at all times during the flight. (**EXCEPTION:** Unqualified pilots undergoing qualification training and senior leaders who have completed required training IAW **Chapter 3** of this volume). Only one pilot may be absent from their duty station at a time and only if the flight engineer is at his/her duty station. Both pilots are required to be in their seats when the flight engineer is not in his/hers. With both pilots in their seats, ACs may authorize rest periods for one pilot occupying a primary duty station during non-critical phases of flight (the other pilot is required to be awake and alert). Notify the AC prior to departing assigned primary duty station.

5.2.1. Both pilots, the navigator, and the flight engineer will be at their duty stations during all takeoffs, departures, approaches, aerial refuelings, and landings, except when required for the performance of normal crew duties. **(T-3).** Other crew members may occupy other stations, with MCC and AC concurrence, only if doing so does not interfere with normal crew duties.

5.2.2. During other phases of flight, flight crew members will notify the pilot before leaving and after returning to their duty station. **(T-3).** For mission crew only the AMT and the MCC need to notify the pilot. The AMT and the MCC are responsible for controlling mission aircrew members in the mission crew compartment.

5.3. Flight Station Entry . ACs may authorize passengers, observers, MEP, and any crewmember access to the flight deck during any phase of flight. The total number of persons permitted is limited to the number of seats with operable seatbelts and a sufficient oxygen source. Passengers and observers cannot occupy the pilot, copilot, navigator or flight engineer positions at any time.

5.4. Takeoff and Landing Policy.

5.4.1. An AC certified pilot is required to occupy either the left or right seat during all takeoffs and landings. Instructor or flight examiner pilots may occupy either seat at their discretion regardless of who is designated as pilot in command on the flight authorization (see **para 2.4.2**). The designated PIC (A-code) is not required to occupy a primary position, but still retains overall authority for conduct of the mission.

5.4.2. AC certified pilots who possess less than 100 hours in command in any C-130 since initial upgrade will make all takeoffs and landings from the left seat when a non-AC certified pilot occupies the right seat. **(T-3).**

5.4.3. Non-AC-certified pilots may takeoff or land if an AC pilot with over 100 hours since certification in any C-130 occupies the other seat.

5.4.4. An AC certified pilot makes all takeoffs and landings during:

5.4.4.1. Aircraft emergencies, unless conditions prevent compliance.

5.4.4.2. Missions operating in areas of hostile activity, unless conditions prevent compliance.

5.4.4.3. Situations when, in the opinion of the PIC, marginal conditions exist.

5.5. Landing Gear and Flap Operating Policy. The Pilot Flying (PF) directs landing gear movement both verbally and visually, and the Pilot Monitoring (PM) acknowledges both verbally and visually. The PF and PM signal flap movement verbally only. The copilot operates the landing gear. The PM operates the flaps. Actuate the landing gear or flaps only after command of the PF. Prior to actuation of the landing gear or flaps, the other pilot acknowledges the command by repeating it. During ground operations when the aircraft is stopped, the copilot may actuate the flaps without notifying the pilot.

5.6. Use of Outside Observers. Use crew members to assist in outside watch during all taxi operations and in-flight during arrivals and departures. Crew members designated to perform these duties are exempt from the requirements of **para 5.7** during taxi.

5.7. Seat Belts.

5.7.1. All occupants will have a designated seat with a seat belt. **(T-3).**

5.7.2. Crew members occupying their primary positions will have seat belts fastened at all times in flight, except when crew duties require otherwise. **(T-3).**

5.7.3. All occupants will be seated with seat belts and shoulder harnesses (if available) fastened during taxi, takeoff, air-to-air refueling and landing. **(T-3). EXCEPTIONS:** The flight engineer is exempt from wearing the shoulder harness for ground operations and air-to-air refueling, and mission crew are exempt from wearing shoulder harness during air-to-air refueling. Crew members performing flight examiner and instructor duties and not occupying a primary position are exempt from seat belt requirements as long as they are in compliance with **para 5.7.1.** Crew members standing on the flight deck to scan for obstacles during taxi are exempt as long as the aircraft is not on an active runway.

5.8. Aircraft Lighting. Operate aircraft lighting IAW **Chapter 4** of this volume, AFI 11-202V3, AFI 11-218, *Aircraft Operations and Movement on the Ground*, and applicable T.O.s.

5.8.1. Use anti-collision lights or strobe lights from takeoff to landing on all flights, unless reflections cause pilot distractions in instrument conditions.

5.8.2. Use taxi lights during all taxi operations. Use wingtip taxi lights during night taxi operations. Use landing lights at night in unlighted areas. Use landing and taxi lights during night takeoffs. Use taxi lights in flight any time the landing gear is extended unless reflections cause pilot distractions in instrument conditions. Landing lights may be used continuously during local traffic pattern training and during low-altitude maneuvering in high-density traffic areas.

5.8.3. Use leading edge lights in addition to other required aircraft lighting during operations below 10,000 ft, unless use causes a distraction during IMC flight.

5.8.4. Contingency operations may dictate that external lights be off and internal lights be limited to the minimum necessary for aircrew activities.

5.9. Advisory Calls. The pilot flying will periodically announce intentions during departures, arrivals, approaches, and when circumstances require deviating from normal procedures. **(T-3).** The PM will make mandatory advisory calls except those designated for any crew member. **(T-3).**

5.9.1. Takeoff. State "GO" at refusal speed or takeoff speed, whichever is lower. Unless briefed otherwise, any aircrew member noting a safety of flight malfunction before hearing "GO" will state "REJECT" and a brief description of the malfunction (e.g., "Reject, number two engine flameout"). **(T-2)**.

5.9.2. Altitudes.

Table 5.1. Climb.

(Use Notes in Table 5.4.)		
CLIMB OUT	**PM CALL**	**PF RESPONSE**
Transition Altitude (Note 4, Note 5)	"Transition Altitude, Set 29.92"	"Transition Altitude, Set 29.92"
1,000 ft below assigned altitude	"(Altitude Passing) for (Altitude Assigned)"	"(Altitude Passing) for (Altitude Assigned)"

Table 5.2. Descent.

(Use Notes in Table 5.4.)		
DESCENT	**PM CALL**	**PF RESPONSE**
Transition Level (Note 4, Note 5)	"Transition Level, Set (local altimeter)"	"Transition Level, Set (local altimeter)"

1,000 ft above assigned altitude	"(Altitude Passing) for (Altitude Assigned)"	"(Altitude Passing) for (Altitude Assigned)"

5.9.3. Approaches.

Table 5.3. Non-precision Approaches.

(Use Notes in Table 5.4.)		
NON-PRECISION APPROACHES	**PM CALL**	**PF RESPONSE**
100 ft above Final Approach Fix (FAF) altitude	"100 Above"	
100 ft above stepdown altitude	"100 Above"	
100 ft above Minimum Descent Altitude (MDA)	"Approaching Minimums"	"Acknowledged"
At MDA	"Minimums"	(Note 3)
Runway Environment in Sight	"Runway in Sight"	"Landing" or "Going Around"
Missed Approach Point	"Missed Approach Point" (Note 3)	"Going Around" (Note 1)

Table 5.4. Precision Approaches.

PRECISION APPROACHES	**PM CALL**	**PF RESPONSE**
100 ft above glide slope intercept altitude	"100 Above"	
100 ft above Decision Height (DH)/Decision Altitude (DA)	"Approaching Minimums"	"Acknowledged"
At Decision Height/Decision Altitude	"Minimums"	"Landing," "Continuing," or "Going Around" (Note 2)
Approach Lights in Sight (CAT 1 ILS)	"Approach lights in sight"	"Continuing" or (Note 1)
Runway Environment in Sight	"Runway in Sight"	(Note 3)
Approach Lights and/or Runway Environment Not in Sight	"Go Around"	"Going Around"
At 100 ft above TDZE (CAT I ILS)	"100 ft" (Note 3)	"Landing" or "Going Around"

Notes:
1. With weather at CAT I minimums on a CAT I ILS, the pilot may not see the runway environment at DA; however, the initial portion of the approach lights may be visible. The pilot may continue to 100 ft HAT/HATh with reference to the approach lights only. The pilot may not descend below 100 ft above touchdown zone elevation using the approach lights as reference unless the red termination bars or the red side row bars are distinctly visible and identifiable.
2. Respond with the intention to land if runway environment is in sight, will remain in sight throughout touchdown and the aircraft is in a position for a safe landing.
3. If the PF has stated landing then this call is not required.
4. When on board, the navigator responds with altimeter setting after the PF.
5. On AVP aircraft, the left seat pilot says "Set Twice" after accounting for both the PFD altimeter and the ESIS baro, regardless of whether PF or PM.

5.9.4. Touch and Go. If a malfunction is encountered, crew members should only state the observed malfunction. The AC at the controls announces intention to stop or continue the takeoff.

5.10. Deviations.

5.10.1. The PM is required to tell the PF when heading or airspeed deviations are observed or altitude is more than 100 ft from desired, and no attempt is being made to correct the deviation.

5.10.2. Any aircrew member seeing a variation of 200 ft altitude, a deviation of +/-10 knots in airspeed, or potential terrain or obstruction problem is required to immediately notify the pilot.

5.11. Communications Policy.

5.11.1. Aircraft Interphone.

5.11.1.1. Do not discuss classified information over interphone when radio transmissions are being made unless absolutely necessary for mission accomplishment.

5.11.1.2. Flight crew members (including AMT) will monitor interphone/flight crew hot mic at all times. **(T-3).** All crew members will monitor interphone/flight crew hot mic during ground operations in the terminal environment and during aerial refueling. **(T-3).** Advise the AC when off interphone. During other phases of flight, mission crew members will monitor interphone/flight crew hot microphone as directed by the AC or MCC. **(T-3).**

5.11.1.3. After engine shutdown, crew members will remain on headset until the AC clears the crew off headset. **(T-3).** The AMT will remain outside the aircraft on headset while the GTC is running. **(T-3).**

5.11.1.4. Sterile Cockpit. Limit conversation to that essential for crew coordination and mission accomplishment during taxi, takeoff, approach, landing and any flight below 10,000 ft MSL.

5.11.2. Command Radios.

5.11.2.1. In terminal areas, all aircrew members will monitor the primary command radio, if able. **(T-3).**

5.11.2.2. The pilot or copilot operating command radios will tell the crew which radio is primary, and update the crew when the primary radio changes. **(T-3).**

5.11.2.3. A primary flight deck crew member is required to monitor UHF emergency frequency 243.0 MHz regardless of primary radio.

5.11.2.4. One of the pilots will record and read back all air traffic control (ATC) clearances. **(T-2)**. The navigator will record the clearance and monitor the read back. **(T-3).** Disregard this procedure when ATC instructions require immediate execution, or when such action interferes with timely completion of more important duties.

5.12. Crew Resource Management (CRM). The goal of CRM is enhancing mission effectiveness. The responsibility and authority of the PIC is clearly established in regulations and mission directives. However, CRM is the responsibility of all crew members. It encompasses all aspects of the mission, from planning through debriefing.

5.12.1. PICs are responsible for fostering an atmosphere of open communication and crew participation in the decision-making process. They should delegate and acknowledge team participation. Communication should be frequent, direct, open and concise.

5.12.2. Crew member responsibility includes respecting the authority of the PIC, participating in the mission and decision-making process, and supporting the PIC. Crew members are expected to assert their best judgment and, when in doubt, speak out. The PIC is the final decision authority.

5.12.3. "Time Out" is the common assertive statement for use by all crew members when safety might be jeopardized. It provides a clear warning sign of a deviation or loss of situational awareness and is used to gain the attention of the pilot flying the aircraft. As soon as possible after a "Time Out" call, the pilot is required to stabilize the aircraft, safety permitting. The AC at the controls will then allow the crew to voice concerns. Relying on crew inputs, the PIC decides whether to continue the current course of action or pursue another.

5.12.4. "Knock it off" is used to terminate a maneuver for safety of flight situations. Upon hearing "knock-it-off" the crew should establish a safe attitude, altitude and airspeed and return the aircraft power and flight controls to a normal configuration.

5.12.5. The Two Challenge Rule is used if the PM is unable to gain a response from the PF. After two challenges, the PM takes control of the aircraft.

5.13. Use of Automation.

5.13.1. General Automation Procedures. There should be a clear understanding of the PF, the PM, and navigator duties at all times. Aircrews should use aircraft automation consistent with changing flight environments and aircraft capabilities. If the use of automation creates a loss of situational awareness or results in task saturation, shift to a less demanding level or disconnect the automation entirely and re-establish desired aircraft path and control. Both pilots are responsible for ensuring the aircraft is following the desired flight path.

5.13.2. Verbalize, Verify, and Monitor (VVM) is a closed-loop system of communication designed to significantly reduce typical automation selection errors between the PF, PM and the navigator. VVM consists of the following three step process:

5.13.2.1. When making any changes in the FMS, CANS flight plan, or altitude alerter (as applicable), the pilot/navigator making the entries will VERBALIZE the intended change. **(T-3).**

5.13.2.1.1. The PF will announce changes to the level of automation, flight director and autopilot mode selections, and mode transitions to the maximum extent possible (e.g. "Autopilot engaged", "Altitude Hold", "Nav-Capture", etc.). **(T-3).** The PM will acknowledge the call. **(T-3).**

5.13.2.2. The other pilot and navigator will VERIFY the change. **(T-3).**

5.13.2.3. All pilots and the navigator will MONITOR the aircraft to ensure the expected performance is achieved. **(T-3).**

5.14. Runway Condition Reading (RCR) and Runway Surface Condition (RSC) Limitations.

5.14.1. When no reported RCR is available, consider the runway surface wet when water on the runway causes a reflective glare. The minimum RCR on any portion of the runway for takeoff or landing is 05.

5.14.2. The performance charts used to determine braking action are based on concrete runways. The RCR values for the following runway surfaces depicted in **Table 5.5** are estimates based on operational experience and should be used only as a guide.

Table 5.5. RCR Values.

TYPE SURFACE	RCR (DRY)	RCR (WET)
Asphalt/Concrete	23	12
Aluminum Matting	20	10
M8A1/With Anti-Skid (PSP)	20	8
M8A1/Without Anti-Skid (PSP)	13	3
Clay/Crushed Rock	16	5
Coral	16	4

5.14.3. Limit EC-130H aircraft operations into and out of slush- or water-covered runways to a covering of 1 inch. This number is based on performance charts where an RSC of 10 is equal to 1 inch of slush or water. Performance data where more than 1 inch of slush or water is present may not be accurate.

5.15. Runway and Taxiway Requirements.

5.15.1. Minimum runway width is 80 ft/25 meters. Minimum taxiway width is 30 ft/9 meters.

5.15.2. Runway Length for Landing. Minimum runway for landing is landing distance from 50 ft over the threshold (unless higher obstacles exist).

5.15.3. Runway Length for Takeoff. Minimum runway for a normal takeoff is balanced or unbalanced critical field length, whichever is greater.

5.15.4. The decision to make intersection takeoffs belongs to the AC at the controls. Takeoff and Landing Data (TOLD) computations are based on the runway remaining from the point at which the takeoff is initiated.

5.15.5. Rolling Takeoffs. A rolling takeoff is preferred if performance calculations permit. If the AC deems takeoff performance to be critical takeoff power should be applied before the brakes are released (static takeoff).

5.16. Aircraft Taxi and Taxi Obstruction Clearance Criteria.

5.16.1. After landing and clearing the runway, and with approval of the pilot, the AMT may open the aft cargo door and lower the ramp to approximately 12 inches above horizontal in preparation for back taxi if needed.

5.16.2. Without wing walkers, avoid taxi obstructions by at least 25 ft; with wing walkers, by at least 10 ft. **EXCEPTION:** According to AFI 11-218, locally based aircraft may taxi without marshallers/wing walkers along locally established taxi lines which have been measured to ensure a minimum of 10 ft clearance from any obstruction.

5.16.3. When taxi clearance is doubtful, use wing walker(s). If wing walker(s) are not available, deplane aircrew member(s) to maintain obstruction clearance.

5.16.4. Reverse Taxi.

5.16.4.1. The pilot in the left seat will coordinate reverse taxi directions and signals to be used with the AMT and marshaller (when available). **(T-3).**

5.16.4.2. Secure all cargo and ensure all passengers are seated.

5.16.4.2.1. Open the aft cargo door and lower the ramp to approximately 12 inches above horizontal.

5.16.4.2.2. The AMT will be on the aircraft ramp in the best position to direct reverse taxi, report any hazards, and provide the pilot in the left seat with timely interphone instructions on turns, distance remaining, conditions of the maneuvering area, and stopping point. **(T-3).**

5.16.4.3. During night reverse taxi operation, the pilot in command and AMT will ensure that the taxi area is sufficiently lighted. **(T-3).**

5.16.4.4. Stop no less than 25 ft from an obstruction even if using a wing walker.

5.16.5. Arresting Cables.

5.16.5.1. EC-130H aircraft operations are authorized on runways where BAK-12 systems are installed with an eight-point cable tie-down system. When operating from runways equipped with other types of systems, or if it is unknown if the BAK-12 system includes eight point tie-downs, plan to takeoff and/or touchdown beyond the barrier. Do not touch down on approach end arresting cables, unless recessed. If the aircraft lands before the cable, contact the tower to have the cable inspected.

5.16.5.2. Do not takeoff or land over an approach end cable that has been reported as slack, loose, or improperly rigged by NOTAM, Automated Terminal Information Service (ATIS), or ATC.

5.16.5.3. Operation over raised barrier cables with disc-type support (except donut supported BAK-12 cables restrained with eight point tie downs) at high speeds may result in damage to the airplane.

5.17. Fuel Jettison Procedures.

5.17.1. Aircrews should consider burning down duel versus jettison, unless safety of flight requires an immediate jettison, as determined by the AC. Except in the case of an emergency, before jettisoning fuel, notify the appropriate ATC or flight service facility of intentions, altitude, and location. If available, use designated jettison areas, except when safety of flight would be compromised.

5.17.2. The ECG/CC will coordinate with local agencies to establish jettison areas. **(T-3).** Ideally, jettison areas are at altitudes above 20,000 ft above ground level, off published airways, avoiding urban areas, agricultural regions, and water supply sources. Avoid circling descents. Initiate AF Form 813, Request for Environmental Impact Analysis, and submit it to the base environmental coordinator.

5.17.3. Follow up all jettisons with a detailed report filed by the pilot in command immediately after landing. Submit report to ECG/SE who will retain the report for six months. **(T-3).** Document all pertinent information, including the following items:

5.17.3.1. Scheduled Duration.

5.17.3.2. Actual Duration.

5.17.3.3. Landing Gross Weight.

5.17.3.4. Computed Stopping Distance.

5.17.3.5. Recovery Field.

5.17.3.6. Runway Available.

5.17.3.7. Jettison Altitude/Location.

5.17.3.8. Outside Air Temperature.

5.17.3.9. Wind Direction and Velocity.

5.17.3.10. Jettison Amount.

5.17.3.11. Reason for Jettison.

5.17.3.12. Approval Authority.

5.18. Bird/Wildlife Aircraft Strike Hazard (BASH) Programs . BASH programs are centralized unit efforts that provide information cross-feed, hazard identification, and a consolidated course of action. As a minimum, unit commanders must implement the following procedures: **(T-3).**

5.18.1. Ensure compliance with the following Bird Watch condition restrictions.

5.18.1.1. Bird Watch Condition Low – No operating restrictions.

5.18.1.2. Bird Watch Condition Moderate – Initial takeoffs and final landings allowed only when departure and arrival routes avoid bird activity. Local IFR/VFR traffic pattern activity is prohibited.

5.18.1.3. Bird Watch Condition Severe – All takeoffs and landings are prohibited. Waiver authority is local ECG/CC or equivalent.

5.18.2. When operating at airfields where no BASH program exists, a PIC has the authority to delay takeoffs and arrivals due to bird condition after coordinating with the appropriate C2 authority.

5.18.3. Consider bird migratory patterns during the enroute portion of the mission to help minimize the potential of an in-flight bird strike. The Bird Avoidance Model (BAM) on HQ AFSC/SEF website contains BASH information including regionalized CONUS bird migration patterns, Portable Flight Planning System (PFPS) software overlay, and the latest news. The Avian Hazard Advisory System (AHAS) website is another source for real time bird hazard information. See AFI 91-212, *Bird/Wildlife Aircraft Strike Hazard (BASH) Management Techniques*, for additional information.

5.18.4. Following a known bird strike, aircrew should land as soon as practical to have the aircraft inspected. Bird strike damage cannot be accurately assessed in-flight, and undetected damage may result in a complex airborne emergency. PIC should complete AF Form 853, *Air Force Wildlife Strike Report* and fax to nearest Air Force Flight Safety Office.

5.19. FCFs, ACFs, & OCFs. FCFs, ACFs and OCFs are accomplished IAW T.O. 1-1-300, *Acceptance/Functional Check Flights and Maintenance Operational Checks,* T.O. 1C-130E(H)-6CF-1, *Acceptance and Functional Check Flight Manual,* and AFI 21-101. Crews should only perform tasks or functions contained in specific technical order guidance. If requested to perform a non-standard function, PICs should contact ECG/CC to see if an FCF applies.

5.19.1. FCF Restrictions. See T.O. 1-1-300.

5.19.1.1. If a fully certified FCF aircrew is not available, the ECG/CC or deployed equivalent may appoint a temporary FCF crew, in writing, when operationally necessary and on a case-by-case basis. The squadron commander executing the FCF will ensure the temporary FCF crew is fully briefed by 55 ECG/EGV FCF program managers, given adequate time to study appropriate materials, and participates in a full mission briefing including QA the day prior to the FCF sortie. **(T-3).**

5.19.1.2. Ideally, conduct FCFs in daylight, VMC. ECG/CCs may authorize a flight under a combination of VMC and IMC. Begin the flight in VMC. If the aircraft and all systems are operating properly, the crew may proceed IFR through cloud cover to VFR on top for the altitude phase of the flight.

5.19.1.3. If a malfunction occurs during a FCF, the ECG/CC (or deployed EMXG/CC) may subsequently release the aircraft for flight providing the malfunction is not related to the condition generating the FCF, and the original condition operationally checked good.

5.19.1.4. Perform high speed taxi checks IAW the flight manual, maintenance technical orders, and policy letter on file in QA. Prepare the aircraft with minimum fuel necessary to accomplish the check to limit brake/tire wear, (ensure fuel on board permits a safe return to base should the aircraft unexpectedly become airborne) and turn on the anti-skid

system. The flight engineer will calculate takeoff data for the highest speed planned and ensure runway available allows sufficient stopping distance for existing conditions without exceeding normal brake energy limits. **(T-3).**

5.19.2. IAW AFI 21-101 QA will ensure the FCF, ACF or OCF aircrew is briefed on the purpose and extent of the flight, previous maintenance problems, and discrepancies recorded on the aircraft or engines related to the FCF.

5.19.3. OCFs are conducted to validate the correct operation of an aircraft system or systems. OCF crews will be briefed by maintenance QA on the nature of the previous malfunction(s) and subsequent corrective actions. **(T-3).** OCF crews will conduct only normal flight procedures to verify proper systems operation. **(T-3).** In special circumstances, T.O. 1EC-130H-1 section 3 procedures (i.e., manual gear extension, cruise engine shutdown, etc.) may be utilized to provide a more thorough check of aircraft systems, but prior coordination with 55 ECG/EGV is specifically required in such cases. An FCF is normally required should any portion of the T.O. 1EC-130E(H)-1-6CL-1 checklists be utilized.

5.19.4. 55 ECG Stan/Eval is the focal point for FCFs, ACFs and OCFs for the flying squadrons. The 55 ECG Stan/Eval Pilot and Flight Engineer are designated as the group FCF OIC & NCOIC, respectively, and manage the group FCF program in coordination with QA IAW AFI 21-101. 55 ECG/CC may assign these duties to different crew positions on a temporary basis as needed.

5.19.5. Crew Complement. An FCF crew consists of an FCF-certified AC, an FCF-certified flight engineer, and the most experienced pilot, AMT and navigator available. An OCF crew consists of an instructor pilot, an experienced flight engineer, the most experienced pilot available, and an AMT and navigator. If conditions warrant, OCFs may be flown without a navigator IAW **Chapter 3** of this volume.

5.19.6. FCF crew certification (AC and flight engineer). Squadron commanders certify FCF crew members by memorandum indicating the dates of completion for each item in **para 5.19.6.1.** to be kept on file in the crew members' permanent training folder. Squadrons update the Letter of Certifications IAW AFI 11-202V2, 55 ECG Sup, *Aircrew Standardizations/Evaluation Program.*

5.19.6.1. FCF crew members may be certified once they meet the requirements listed below:

5.19.6.1.1. The PIC will be instructor qualified IAW AFI/AFMAN 11-2EC-130HV1. The flight engineer will be experienced IAW AFI/AFMAN 11-2EC-130HV1, **Table 1.1**.

5.19.6.1.2. Nominated for certification by the squadron DO.

5.19.6.1.3. Once nominated, complete a thorough review of FCF reference material. This review must be conducted with another FCF certified crewmember. **(T-3).**

5.19.6.1.3.1. ACs complete an FCF with an FCF certified AC.

5.19.6.1.3.2. Flight engineers complete an FCF with an FCF certified flight engineer.

5.20. Traffic Alert and Collision Avoidance System (TCAS). For any resolution advisory (RA) requiring deviation from a clearance, consider filing a Hazardous Air Traffic Report (HATR) upon landing.

5.21. Radar Altimeter.

5.21.1. On an AVP-modified aircraft, any crew member detecting a yellow "DH" indication on the Primary Flight Displays (PFDs) at or below the altitude set in the radar altimeter will immediately notify the pilot flying the aircraft. **(T-3).** Verify terrain clearance and aircraft position.

5.21.2. For non AVP-modified aircraft any crew member detecting the illumination of the radar altimeter Low Altitude Warning Light will immediately notify the pilot flying the aircraft. **(T-3).**

5.21.3. Before departure set the radar altimeter for emergency return.

5.21.4. The pilot, copilot, and navigator will use the same radar altimeter setting unless briefed otherwise. **(T-3).**

5.21.5. Set the radar altimeter to the Height Above Touchdown/Height Above Threshold/Height Above Airport (HAT/HATh/HAA) during instrument approaches.

5.22. Reduced Power Operations. Crews are authorized to use reduced power for takeoff, any time maximum takeoff and climb capability are not required. Reduced power is any setting less than Normal Takeoff power, which is defined in the flight manual as 1077°C TIT or 19,600 inch-pounds of torque, whichever occurs first. Crews should consider using reduced power to extend the life of the engine turbines. In all cases, crews will ensure that the computed/posted TOLD data matches actual power settings. **(T-3).**

Chapter 6

AIRCREW PROCEDURES

Section 6A—Pre-Mission

6.1. Aircrew Uniforms.

6.1.1. Aircrew will wear the aircrew uniform, as outlined in AFI 36-2903, *Dress and Personal Appearance of Air Force Personnel,* and the appropriate MAJCOM supplement on all missions unless otherwise authorized. When the Foreign Clearance Guide (FCG) requires civilian attire, dress conservatively.

6.1.2. Squadron commanders will determine clothing and equipment to be worn or carried aboard all flights commensurate with mission, climate and terrain involved. **(T-3)**.

6.1.2.1. See AFI 11-301V1, *Aircrew Flight Equipment (AFE) Program*, for minimum aircrew clothing requirements.

6.1.2.2. Wear of flight gloves for EC-130H aircrew will be at the discretion of the ECG/CC (or equivalent). **(T-3).**

6.2. Personal Requirements. Aircrew members are required to carry or wear personal and professional equipment as follows on all flights:

6.2.1. Flight equipment, including as a minimum: headset, personal helmet, oxygen mask, and operable flashlight.

6.2.2. Passport. Crew members are required to carry a valid passport on all sorties to countries requiring a passport in the Foreign Clearance Guide (FCG). This does not apply to combat missions. **EXCEPTION:** Unit commanders may authorize personnel who have applied for, but not yet received, a passport to act as crew members on sorties not scheduled to transit locations where passports are required.

6.2.3. Shot Record. Crew members are required to maintain worldwide shot requirements and carry their shot records on all sorties outside the CONUS. This does not apply to combat missions.

6.2.4. Driver's License. A valid state driver’s license is required on each TDY where use of U.S. government general purpose vehicles may be required. Contact the local airfield manager before driving on the flight line.

6.2.5. Identification Tags. Crew members are required to carry two identification tags on all flights.

6.2.6. FOD Hazards. Crew members cannot wear wigs, hairpieces, rings, ornaments, or earrings in the aircraft or on the flight line. **EXCEPTION:** Crew members may wear plain elastic hair fasteners and/or pins, clips, or barrettes providing they do not interfere with the wearing of headsets, or the donning of oxygen equipment. Crew members are required to account for them before and after flight.

6.2.7. A reflective belt or suitable substitute is required to be worn on flight lines during hours of darkness or periods of reduced visibility.

6.2.8. Tool Kits. Have at least one AMT tool kit on board for all sorties.

6.3. Pre-Mission Actions.

6.3.1. Aircrews are required to review theater-specific information necessary to successfully operate in the applicable theaters. The review should include (but is not limited to):

6.3.1.1. Review tasking, itinerary and altitude reservation (ALTRV) requirements.

6.3.1.2. Review applicable OPORD, SPINS, Virtual Risk Assessment (VRA), Country Risk Assessment (CRA) and FLIP.

6.3.1.3. Review the FCG for areas of operation (to include classified portion). Obtain necessary diplomatic clearances where required.

6.3.1.4. Obtain required customs forms.

6.3.1.5. Obtain worldwide FLIP and sufficient communications security (COMSEC) materials for the duration of the mission.

6.3.1.6. Ensure physiological training, annual physical, immunizations, flight evaluations, as well as all grounding Go/No-Go items are reviewed to ensure they are current and valid throughout any TDY. CMR items need to be complete IAW AFI/AFMAN 11-2EC-130HV1 requirements and COCOM/theater guidance such as reporting instructions, SPINS, etc.

6.3.1.7. Ensure visas have been received, if required.

6.3.1.8. Obtain terrain charts for unfamiliar destinations if available.

6.3.1.9. Compile sufficient spare forms, flight orders, etc. to cover the TDY period.

6.3.1.10. Consider any foreseeable safety risks and risk mitigation factors IAW Operational Risk Management (ORM).

6.4. Aircrew Publications Requirements. Primary crew members will ensure the publications specified in **Table 6.1.** are carried on all missions. **(T-3).** When the crew includes additional crew members in the same specialty (i.e. two flight engineers on proficiency sorties) each will carry a checklist but otherwise only one set of publications is required. **(T-3).** Units may compile standardized publication kits and issue specific guidance for use to satisfy the requirements of **Table 6.1.**

Table 6.1. Aircrew Publications.

PUBLICATION	EC-130H
Aircraft Flight Manual (-1)[4]	E
Aircraft Performance Manual (-1-1)	E
Aircraft Flight Manual (-1-4)[4]	N
Aircraft Flight Manual (-1-5)[1]	N
Aircraft Flight Manual (-1-6) (Secret)	AMT[5]
Abbreviated Checklists (-1)	ALL

T.O. 1C-130-101	E
ATP-56(C), *Air-To-Air Refueling*[2]	P[3]
AFI 11-202 Volume 3	P[3]
AFMAN 11-2EC-130HV3, *EC-130H Operations Procedures*	P[3]
Appropriate Fuel Planning Documents	N

Notes:

Required on all combat or combat support missions.

Part 1 General, Part 2 Fixed Wing, and Part 5 Annex ZA, ZB, ZE only.

This is the pilot not identified as pilot in command on the flight authorization

Including separate (AV) version if on AVP-modified aircraft.

Required on mission sorties only.

6.5. Airfield Review. Aircrews will consult the web-based airfield database maintained by HQ AMC/A3AS (Airfield Suitability Branch) and comply with the GDSS/ASRR for updates to airfield operability, weight bearing capability and Terminal Instrument Procedures (TERPS) reviews. **(T-2)**. Refer to AFI 11-202V3 and MAJCOM guidance for non-DoD published approach criteria. See MAJCOM/COCOM guidance for foreign instrument procedures not maintained by the U.S. Military, even if they are published in DoD FLIP.

6.6. Aircrew Intelligence Briefing. Before leaving home stations on OCONUS missions, aircrews receive an intelligence briefing that emphasizes terrorist, enemy, and friendly political and military development in the area in which they are planned to fly. Obtain timely intelligence updates prior to entering a specific area of operations (AOR). In theater, aircrews should receive intelligence updates on initial arrival at a forward operating location (FOL), or enroute stop, and thereafter when significant developments occur. Report information of possible intelligence value to the local intelligence office as soon as practical to ensure timely dissemination of mission reports (MISREPs).

6.7. Interconnectivity. Pilots will obtain an easily accessible email account to ensure interconnectivity with all required planning facilities for the mission. **(T-3).** If possible, PIC will acquire a worldwide cell phone to facilitate communication with command and control, maintenance, and planning personnel in case of changes in itinerary. **(T-3).**

Section 6B—Pre-departure

6.8. Flight Crew Information File (FCIF).

6.8.1. Crew members will review FCIF, Volume 1, before all missions or ground aircrew duties, and update the FCIF currency record. **(T-3).** Go/No-Go status is IAW AFI 11-202, Volume 2, as supplemented. During exercises and contingencies, deployed squadrons are required to develop procedures to comply with this paragraph and local requirements.

6.8.2. Crew members delinquent in FCIF review or joining a mission enroute will receive an FCIF update from a primary aircrew member counterpart on the mission. **(T-3).**

6.8.3. Crew members not assigned or attached to the unit operating a mission are required to certify their FCIF review by entering the last FCIF number and their initials behind their name on the file copy of the flight authorization or file copy of their crew orders. This applies to all crewmembers if the normal sign-in system is not working at show time. Instructor pilots flying with general officers or senior staff members are responsible for briefing appropriate FCIF items.

6.9. Operations & Mission Kits. Carry operations kits on all sorties. Contents of the kits are determined by mission requirements. Mission kits required for operating the mission system should be defined in the supplement to this volume. Required and suggested items for operations kits include:

6.9.1. Required on all sorties:

6.9.1.1. DD Form 2131, *Cargo/Passenger Manifest* (if applicable)

6.9.1.2. AF Form 70, *Pilot's Flight Plan and Log* (or computerized flight plan)

6.9.1.3. ECG Form 33, *C-130 Mission Log*

6.9.1.4. UDI Worksheet, *C-130E/H Series Flight Data Worksheet*

6.9.1.5. Local Mission Summary Sheet

6.9.1.6. Flight Authorization (IAW AFI 11-401)

6.9.1.7. AFTO Form781

6.9.1.8. DD Form 2131 (if carrying passengers)

6.9.1.9. COMPASS CALL Risk Analysis Worksheet

6.9.1.10. AF Form 711B, *USAF Mishap Report (or locally developed Incident Report)*

6.9.1.11. DD Form 175, *Military Flight Plan*

6.9.1.12. DD Form 175-1, *Flight Weather Brief*, or equivalent

6.9.2. Required on all sorties away from home station, if applicable:

6.9.2.1. Airfield Suitability and Restrictions Report (ASRR)

6.9.2.2. DD Form 1854, *U.S. Customs Accompanied Baggage Declaration*

6.9.2.3. CBP 7507, *General Declaration (Outward/Inward)*

6.9.2.4. AF Form 651, *Hazardous Air Traffic Report* (HATR)

6.9.2.5. DD Form 1610, *Request and Authorization for TDY Travel of DoD Personnel*

6.9.2.6. AF Form 4116, *C-130 Navigator Flight Plan and Log* (on overwater flights) (or locally approved equivalent)

6.9.2.7. DD Form 1801, *DoD International Flight Plan*

6.10. Route Navigation Kits.

6.10.1. A route navigation kit is issued at home station and remains with the aircraft until return. Kits contain sufficient quantities of material to cover the planned mission and global operations as required.

6.10.2. Minimum contents of route navigation kits are in **Table 6.2.**

6.10.3. On local unit training sorties, local area navigation kits may be used in lieu of route navigation kits in **Table 6.2.** Kits' contents are determined by the crew.

Table 6.2. Route Navigation Kit Contents.

Publication (applicable to area of operation)	Number Required	
	Local	Off Station
FLIP Planning (GP, AP/1/1B/2/3)	N/A	1 (Note 1)
FLIP IFR Supplement	1	1
FLIP Flight Information Handbook	1	1
FLIP Enroute Charts (High and Low)	2	2
FLIP Area Charts (Terminal)	2	2
FLIP Instrument Approach Procedures (Terminal) Low [High as required]	3 (2 if no Nav)	3 (2 if no Nav)
Jeppesen Approaches (Note 2)	As Required	As Required
FLIP Civ DP/STAR	3 (2 if no Nav)	3 (2 if no Nav)
Topographical and Sectional Charts	As Required	As Required
FLIP VFR Supplement	1	1
Notes: 1. FLIP Planning Books (GP, AP/1/1B/2/3) are required only when missions are planned to operate overseas. 2. A username and password are required for Jeppesen publications.		

6.11. Briefing Requirements. Units may amplify these briefing requirements in the supplement to this AFMAN.

6.11.1. Pre-Departure Briefing Items. The PIC will contact the local C2 agency to confirm mission requirements. **(T-3).** The PIC and controlling agency jointly share responsibility to identify special briefing requirements. Briefings may include buffer zone, electronic warfare activities, SAFE PASSAGE, Electromagnetic Interference (EMI), diplomatic clearance, anti-hijacking procedures, operations and safety supplements to flight manuals, and OPORD procedures.

6.11.2. Pilot in Command Briefing. The PIC will ensure that an aircrew briefing is conducted prior to the first sortie of the day. **(T-3).** As a minimum, brief crew members on specific mission details for that day's sortie(s) and the ORM factors for the mission. Complete this briefing prior to engine start. Cover all applicable items of the operations briefing, including MAJCOM, NAF, unit special interest items (SIIs), and ORM. Use

briefing guides contained in AFTTP 3-1.EC-130H, (U) *Tactical Employment EC-130H* (Secret) or 55 ECG IFG (Herk Hints).

6.11.3. Specialized Briefing. Use specialized briefings to detail operating procedures or SIIs peculiar to various crew positions, and to answer questions relating to those specialties. Specialized briefings review tactics and procedures, and technical instructions for specialized equipment operations. All crew members should attend each briefing. Crew members may only be excused from specialized briefings for pre-flight duties; however, the PIC will back brief all appropriate items. **(T-3).**

6.11.4. Weather Briefings. The PIC will obtain a briefing on current weather, trends, and forecast for the proposed route, destination, and alternates. **(T-3).** The PIC will brief primary crew members on appropriate weather conditions before departure. **(T-3).** Verbal briefings are authorized for local flights. Face-to-face briefings are not required.

6.11.5. Mission Briefing. Conduct mission briefings prior to all mission sorties. Briefing content varies depending on numerous factors including mission requirements, ROE/SPINS, threat assessment, etc. Crews are provided all applicable information to ensure safe and effective mission accomplishment. Mission briefings should include, but are not limited, to mission description and purpose, itinerary, aircraft configuration and special equipment, fuel load, clothing requirements, MAJCOM/NAF/unit Special Interest Items, training and evaluation requirements (if applicable), flying safety, and intelligence.

6.11.6. Intelligence Briefings. Before operating in a combat environment, the crew are required to obtain a current intelligence briefing.

6.12. Call Signs.

6.12.1. Training Missions. Use the unit's static call sign prefix followed by a 2-digit suffix assigned by the parent unit.

6.12.2. Operational Missions. Use call signs assigned by OPORD, FRAG, or diplomatic clearance. If call sign is not assigned, obtain and use ACC-assigned off-station call-sign. If an ACC-assigned off-station call sign is unavailable, use the Voice Call Sign Listing (VCSL) option. As a last resort, use unit static call signs.

6.13. Flight Plan/Data Verification.

6.13.1. Computer Flight Plan (CFP) Use. CFPs are the official sources of performance, navigation, and climatic data, including enroute wind information. If stand-alone computer based plans are used, each mission segment should utilize best wind data available. Use only MAJCOM validated CFPs.

6.13.1.1. Use CFPs to the maximum extent practical. Flight crews may manually compute flight plans. The PIC has final responsibility for flight plan accuracy and diplomatic clearance compliance.

6.13.1.2. Verify CFPs for route of flight and fuel computation accuracy before departure. Pass any flight plan discrepancies.

6.13.2. All waypoint data retrieved from a database in legacy aircraft—or an expired database in AVP aircraft—should be verified by one or more of the following methods:

6.13.2.1. Latitude/longitude from current FLIP.

6.13.2.2. Bearing/distance from a flight plan after latitude/longitude is verified for each waypoint.

6.13.2.3. Ground Based NAVAIDs.

6.13.3. Takeoff and Landing Data (TOLD). The flight engineer is required to complete a *TOLD Card* and *Pilot Information Card* IAW Part 10 of T.O. 1C-130H-1-1 or locally developed versions, as specified in **Chapter 11**. A pilot crew member, or additional flight engineer, is required to cross-check the TOLD (Takeoff Landing Data) for accuracy by using the performance manual or approved tabulated data. As a minimum, the person checking the data is required to:

6.13.3.1. Verify gross weight independently from the TOLD.

6.13.3.2. Cross-check air minimum control speed (Vmca) (one engine inoperative in ground effect), takeoff, and landing speeds.

6.13.3.3. Review and compare the computed distances, ground roll, and climb gradient (if applicable) with the actual conditions, runway available, and departure procedures.

6.13.3.4. When conducting flaps-up landing data for training, compute and post Vmca speeds for both configurations; flaps 50% and flaps up (normal boost).

6.14. Departure Planning. Use AFI 11-202V3, AFMAN 11-217 Volume 1, *Instrument Flight Procedures*, Volume 3, *Supplemental Flight Information*, this chapter, and the appropriate MAJCOM supplements. Regardless of the type of departure flown (IFR/VFR), review the following (as appropriate): IFR Departure Procedure, instrument approach plate, NOTAMS, ASRR, and suitable terrain charts. The AC is required to provide the obstacle height, distance, and gradient information necessary for performance computations to the flight engineer.

6.14.1. VFR Departures. **NOTE:** Do not fly VFR departures in lieu of obstacle clearance planning.

6.14.1.1. ECG/CC or designated representative approval is required if departing VFR due to inability to meet IFR climb gradient requirements. Conduct an ORM analysis for the VFR departure and provide this analysis to the approving official.

6.14.1.2. The minimum climb performance for VFR departures is determined by ensuring all the following conditions are met:

6.14.1.2.1. All-engine climb capability ensures obstacle avoidance along the departure route.

6.14.1.2.2. One Engine Inoperative (OEI) climb capability is required to ensure departure and emergency return route provides obstacle avoidance.

6.14.1.2.3. In all cases, the aircraft performance must meet or exceed a climb rate of 100 ft/nm OEI to VFR traffic pattern altitude **(T-3). NOTE:** If unable to comply with all of the above conditions, download fuel or delay until conditions that are more favorable exist.

6.14.1.3. Refer to FLIP for host nation VFR requirements before flying VFR outside of CONUS.

6.14.2. IFR Departures.

6.14.2.1. If the airport does not have an authorized IFR departure method, depart VFR IAW **para 6.14.1.** An IFR departure is not authorized at airfields without an instrument approach.

6.14.2.2. Departure End of Runway (DER) Screen Height. When any doubt exists about which screen height to use, plan to cross the DER at 35 ft (minimum) unless you can ascertain a different screen height requirement from an appropriate authority.

6.14.2.3. IFR Climb-To Altitude. For purposes of calculating climb gradient, aircrews are authorized to use local MSA, ESA, MEA, MOCA, "climb-to" altitude specified in published departure procedure, and/or OROCA/ORTCA as the minimum applicable IFR altitude. Note, this applies to both All Engines Operating (AEO) and One Engine Inoperative (OEI) conditions. In the event the aircraft is unable to meet the published ALL ENGINE climb gradient:

6.14.2.4. Minimum Climb Gradient, One Engine Inoperative (OEI). Use the following method to ensure the aircraft can vertically clear all obstacles along the planned departure route if unable to meet the published climb gradient with OEI:

6.14.2.4.1. Calculate TOLD using 100 percent engine efficiency, or using drag index for Low Band Transmit (LBT) antennae removed. These options are automatically approved for day VMC but require SQ/CC (or designated representative) approval for night VMC or day/night IMC conditions. Prior to takeoff, crews must verify engine efficiency and thoroughly brief responsibilities for and timing of potential LBT antenna jettison. **(T-3).**

6.14.2.4.2. Download fuel.

6.14.2.4.3. Delay the mission until atmospheric conditions allow for sufficient performance to meet the requirements.

6.14.2.4.4. After exhausting the options listed above, or when they are deemed impractical, crews may subtract 48 ft/nm from the published climb gradient.

6.14.2.4.5. Depart VFR. Comply with **para 6.14.1.** above.

6.14.2.5. Practice Instrument Approaches under VFR. For the purpose of determining climb requirements, crews receiving radar vectors upon climbout or navigation via a published missed approach or instrument departure procedure, even if operating under VFR, are required to treat these departures as IFR for the purpose of determining climb requirements. ECG/CC approval is required if unable to meet these requirements. Comply with **para 6.14.2.4.1** if unable to meet IFR departure climb gradients after performing a touch and go. Practice instrument approaches under VFR to low approaches may subtract 48'/nm as long as crews comply with guidance in **para 6.14.2.4.1.** If the low approach is initiated at Decision Altitude/Minimum Decision Altitude (DA/MDA) crews are required use the published missed approach climb gradient (see **para 6.14.2.6** below) or climb gradients associated with ATC instructions. Below DA/MDA, crews are required to comply with published climb gradients for departures.

6.14.2.6. Missed Approach Climb Gradients. Aircraft must comply with missed approach climb gradient guidance in AFI 11-202V3. **(T-2)**. When operationally

necessary, crews may subtract 48 ft/nm if they have complied with **para 6.14.2.4** and subordinate paragraphs.

6.14.3. Critical Field Length (CFL). Takeoff gross weight (GW) can never exceed that which would require CFL in excess of the runway available for a normal takeoff. In some cases, a minimum altitude is required at the published screen height. For screen height greater than 50 ft, add 50 ft to balanced CFL for every foot of required altitude at DER (**EXAMPLE:** 55 ft screen height drives a 250 ft increase to balanced CFL).

6.14.4. Gross Weight (GW). Unless waived by MAJCOM/A3, ensure that the aircraft does not exceed the maximum GW, zero fuel weight, or center of gravity limitations specified in the aircraft flight manual. GW may be further restricted by operating conditions such as, icing, temperature, pressure altitude, runway length and slope, aerodrome weight bearing capacity, departure maneuvering, required climb gradients, and obstacles.

6.15. Weather Minimums for Takeoff. Minimum RVR for takeoff is 1600 ft.

6.15.1. For RVR less than 1600 ft but equal to or greater than 1000 ft, takeoffs are permitted for operational missions provided the runway has dual RVR readouts and displays (minimum RVR 1000 ft on both), runway centerline lighting is operational, runway centerline markings are visible, and both pilots are fully qualified in their respective crew position. If any of the above criteria is not met, minimum RVR is 1600 ft on all RVR readouts.

6.15.1.1. When weather is below landing minimums, a departure alternate is required (see **para 6.17**).

6.15.1.2. If no RVR readout is available for the departure runway, a report of ½ mile (800 meters) or better visibility is required.

6.16. Alternate Planning. Select alternate airports meeting the requirements of AFI 11-202V3. The PIC retains final authority in the choice of alternates; however, selection by support agencies normally should be used if they meet the above criteria and the aircraft has already been serviced.

6.17. Departure Alternates.

6.17.1. A departure alternate is required if weather is below landing minimums for an available approach (at departure aerodrome).

6.17.2. Suitability of Departure Alternates. When a departure alternate is required, the aircraft is required to be capable of maintaining the MEA or minimum obstruction clearance altitude (MOCA), whichever is higher, to the alternate using OEI performance criteria. To qualify as a departure alternate, the airfield is required to meet one of the following conditions:

6.17.2.1. For an alternate within 30 minutes flying time, the existing weather is required to be equal to or better than the published approach minimums and forecast to remain so until one hour after takeoff, but in no case forecast to be lower than 200-1/2 (RVR 2400 ft), or:

6.17.2.2. For an alternate within two hours flying time, the existing weather is required to be at least 500 ft and 1 SM above the lowest compatible published approach

minimums, but not less than 600-2 for a precision approach or 800-2 for a non-precision approach, and forecast to remain so for one hour after ETA at the alternate.

6.18. Destination Requirements (for filing purposes). The forecast destination weather is according to AFI 11-202V3 and the following:

6.18.1. File two alternates when:

6.18.1.1. The forecast visibility (TEMPO or prevailing) is less than published for the approved straight-in or sidestep approach.

6.18.1.2. The forecast ceiling or visibility (TEMPO or prevailing) is less than published for all other approaches. For approaches with no published ceiling requirement (e.g. Jeppesen approaches), the minimum required ceiling is computed by taking the published HAA or HAT/HATh and rounding it up to the nearest one hundred ft (or as determined by MAJCOM TERPs review). For example, a Jeppesen VOR approach with a published HAA of 642 ft would require a forecasted ceiling of 700 ft.

6.18.1.3. The forecast surface winds (TEMPO or prevailing) exceed limits corrected for RCR.

6.18.2. File an alternate, regardless of forecast weather, when the departure or destination aerodrome is outside the CONUS. **EXCEPTION:** Comply with basic AFI 11-202V3 when:

6.18.2.1. OCONUS intra-theater flight does not exceed a 3-hour duration or:

6.18.2.2. OCONUS mission orbit is less than 3 hours flight time from arrival or departure base.

6.18.3. A remote or island destination is defined as any aerodrome, which due to its unique geographic location, offers no suitable alternate (civil or military) within 2 hours flying time. The forecast weather at the remote or island destination is required to meet the following criteria:

6.18.3.1. The prevailing surface winds, corrected for RCR, are within limits at ETA and forecast to remain so for 2 hours thereafter and:

6.18.3.2. The prevailing ceiling and visibility must be equal to or greater than published minimums for an available non-precision approach, for ETA plus 2 hours. However, if a precision approach is available, the ceiling or visibility may be intermittently below non-precision approach minimums (excluding ASR), but not below precision approach minimums (for ETA plus 2 hours). **NOTE:** See **Chapter 13** for fuel planning considerations to a remote or island destination.

6.18.4. When filing to a destination where the alternate is located in Alaska or at latitudes greater than 59°N, see **Chapter 13** for fuel planning considerations.

6.19. Adverse Weather.

6.19.1. Flight into areas of forecast or reported severe turbulence is prohibited. **(T-3).** Do not fly into an area of known or forecast moderate or greater mountain wave turbulence. **(T-3).**

6.19.1.1. Crews should confirm the type of aircraft to which the forecast turbulence applies to, or what type of aircraft reported the encounter, to gain a more accurate picture for their route of flight. The EC-130H is a Category III aircraft for turbulence.

6.19.1.2. The AC is responsible for ensuring all passengers are seated, with seat belts fastened, when areas of moderate or greater turbulence are encountered or anticipated. **WARNING:** Serious injury may occur if passengers do not have their seat belts fastened and the aircraft encounters moderate or severe turbulence.

6.19.2. Flight into areas of forecast or reported severe icing is prohibited. **(T-3).** Prolonged operation, such as cruise flight or holding, in areas of moderate icing should be avoided. **NOTE:** Air Force Weather Agency technical note AFWA/TN 98/002, Meteorological Techniques, states that freezing drizzle is equivalent to moderate icing and freezing rain is equivalent to severe icing.

6.19.2.1. Do not takeoff under conditions of freezing rain. **(T-3).** Do not takeoff under conditions of freezing drizzle except when aircraft has been properly de-iced/anti-iced IAW flight manual procedures. **(T-3).** When freezing fog is forecast or reported, aircrews are required to confirm with weather agencies what type (if any) icing is associated with the freezing fog.

6.19.2.2. Freezing precipitation, snow, freezing fog, or temperatures near 0°C, may cause ice or frost to accumulate on aircraft surfaces. When an aircraft requires de-icing prior to takeoff, refer to the following:

6.19.2.2.1. Only use de-ice and anti-ice fluids listed in an aircrew's respective flight manual. Aircrews are required to be familiar with, and follow all restrictions in their associated flight manual with respect to anti-ice/de-ice procedures. In extreme climatic conditions, anti-ice fluids listed in T.O. 1EC-130H-1 are approved for use. FAA holdover times for expected duration of anti-ice benefits can be found at the Air Force Flight Standards Agency (AFFSA) website: **https://cs2.eis.af.mil/sites/10539/default.aspx**. As a guide for approved anti-icing fluids, crews may use published anti-icing holdover times IAW T.O. 42C-1-2, *Aircraft Anti-Icing Procedures*.

6.19.2.2.2. In all cases, PICs will ensure a visual inspection of the aircraft is completed within 5 minutes of departure. **(T-3).**

6.19.3. Do not fly directly above (within 2,000 ft) thunderstorms or cumulonimbus clouds. If unable to vertically clear thunderstorms or cumulonimbus clouds by at least 2000 ft, avoid them by at least:

6.19.3.1. 20 NM at or above FL230.

6.19.3.2. 10 NM below FL230. **WARNING:** Aircraft damage may occur 20 NM or more from any thunderstorms. Aircrews must familiarize themselves with information on thunderstorm development and hazards. **(T-2).** Refer to AFH 11-203V1, *Weather for Aircrews*.

6.19.4. The use of ground-based radar as a means of thunderstorm avoidance should only be used to assist in departing an inadvertently penetrated area of significant weather. It should never be considered a normal avoidance procedure. When relying exclusively on ground-based radar for weather avoidance, and the ground controller is unable to provide avoidance instructions, attempt to maintain VMC by:

6.19.4.1. Changing routing.

6.19.4.2. Diverting to alternate.

6.19.4.3. Declaring an emergency and requesting priority assistance.

6.19.5. Aircrews should avoid flying in areas of recently dissipated thunderstorms and clouds due to advection (horizontal movement of clouds caused by wind) downwind of thunderstorms.

6.19.6. In order to minimize exposure to thunderstorm hazards when approaching or departing an airport in an area where thunderstorms are occurring or are forecast:

6.19.6.1. Attempt to maintain VMC.

6.19.6.2. Maintain at least 5 NM separation from heavy rain showers.

6.19.7. Significant Meteorological Information (SIGMET). National Weather Service in-flight weather advisories are not limiting to Air Force aircraft. Contact the nearest military weather facility or flight service station for details, if applicable.

6.19.8. Volcanic Dust Precautions. Aircraft flight operations in areas of forecast or known volcanic activity or dust is prohibited. Plan all missions to avoid flying downwind of volcanic activity, and in all cases by at least 50 NM.

6.19.9. Lightning Avoidance. The following conditions are most conducive to lightning strikes and prolonged flight in them should be avoided:

6.19.9.1. Within 8°C of freezing level.

6.19.9.2. In clouds or in any intensity of precipitation or turbulence associated with thunderstorm activity.

6.19.9.3. In clouds within 5,000 ft of the freezing level.

6.20. Risk Management (RM). RM is a logic based, common sense approach to making calculated decisions on human, material, and environmental factors before, during, and after all operations. PICs are required to accomplish RM worksheets IAW MAJCOM and local guidance as part of preflight activities. Deployed crews are required to comply with local instructions and use locally derived RM worksheets. In the absence of deployed guidance, the 55 ECG RM worksheet may be used.

Section 6C—Preflight

6.21. AFTO Form 781.

6.21.1. Review AFTO Forms 781 series before applying power to the aircraft or operating aircraft systems. Sign an exceptional release before flight. A maintenance officer, maintenance superintendent, or authorized civilian normally signs the exceptional release. If one of these individuals is not available, the PIC may sign the exceptional release. Ensure that the DD Form 1896, *DoD Fuel Identaplate,* is aboard the aircraft and AIR CARD information available for servicing. **NOTE:** On trips outside the CONUS, aircraft must have a physical AIR CARD on board, unless waived by the ECG/CC (or equivalent).

6.21.2. One-Time Flights. An aircraft may be released for a one-time flight with a condition that might be hazardous for continued use, provided the aircraft is airworthy for one flight to another station. Refer to T.O. 00-20-1, *Aerospace Equipment Maintenance Inspection,*

Documentation, Policies, and Procedures, for downgrade authority and procedures. After the maintenance release is obtained, coordinate mission requirements with the controlling agency. The PIC's concurrence is required before the aircraft can be flown.

6.21.3. For Red X clearing procedures at stations without maintenance support refer to **Chapter 11**.

6.22. Aircraft Servicing and Ground Operations.

6.22.1. Aircraft Refueling. Aircrew members qualified in ground refueling may perform refueling duties. Aircrews will only refuel in cases when maintenance support is not readily available and the mission would be delayed. **(T-3).** Crew members may augment maintenance refueling teams at enroute stops.

6.22.2. Aircraft Dash One Preflight Inspection Requirements.

6.22.2.1. The aircraft dash one preflight inspection remains valid until either:

6.22.2.1.1. Aircraft ground time exceeds 12 hours (72 hours provided the aircraft is sealed, not flown and documented entry control is maintained).

6.22.2.1.2. Another maintenance dash six preflight is performed.

6.22.2.2. When an aircrew assumes a preflighted spare or quick turn, a thorough visual inspection will be performed. **(T-3).** A thorough visual inspection includes, but is not limited to, ensuring all panels are secure, tires and struts are inflated, all hydraulic reservoirs are serviced, and there are no visible fluid leaks on the aircraft.

6.22.2.2.1. An aircraft should be sealed if the aircrew preflight has been completed and the aircraft is left unattended by aircrew. The time an aircraft remains sealed cannot exceed the maintenance dash six inspection time limit.

6.22.2.2.2. Once the aircraft is sealed, the following notes are entered in the aircraft AFTO Form 781A, Maintenance Discrepancy and Work Document, discrepancy block (Flight Engineer and AMT notes may be combined into one block). Notify the maintenance operations desk what time the aircraft is sealed and seal number.

NOTE: Flight Engineer preflight inspection C.W., Time:____, Fuel:____, LOX:___, Seal #:____

NOTE: AMT preflight inspection C.W., Time:_____, Seal #:_____. Write seal numbers in ink. The Flight Engineer/AMT is required to state what sections of the preflight were not accomplished.

6.22.2.2.3. An aircraft seal may be broken only by a maintenance officer, maintenance superintendent, production superintendent, flight engineer or AMT. The corrective actions block in the 781A is annotated anytime the seal is broken. The date corrected block is completed, noting the reason for breaking the seal, and the corrected/transferred by block is signed. In addition, a new discrepancy block is completed as follows:

NOTE: Aircraft Resealed, Seal #_____, See Page:_____, Block:_____ (this refers to the discrepancy block where the aircraft was originally sealed).

6.22.3. Fire Protection and Crash Rescue.

6.22.3.1. The aircraft engine fire extinguisher system fulfills the minimum requirements for fire protection during engine start.

6.22.3.2. A fireguard is required for all engine starts including the GTC. A crew member or ground controller may act as fireguard.

6.22.4. Aircrew and Maintenance Engine Runs.

6.22.4.1. Normally, engine runs are not accomplished by a mix of aircrew and maintenance personnel. When an aircrew member is required to start or run up engines for maintenance purposes, the following procedures apply:

6.22.4.1.1. Maintenance personnel are required to accomplish all necessary inspections and preparations for the engine run. These actions include but are not limited to: intake/exhaust inspections, access panel security servicing, and AFTO Form 781 documentation.

6.22.4.1.2. Use the pilot, flight engineer and AMT flight manual checklists. Begin with the "cockpit checklist", and complete all appropriate checklists through the "Before Leaving the Airplane" checklist.

6.22.4.1.3. Only deviate from the flight crew checklist when maintenance requires less than four engines to be started.

6.22.4.1.4. Operate symmetrical engines when power settings above ground idle are required. **NOTE:** The above procedures do not preclude an aircrew from allowing maintenance personnel onboard to troubleshoot an engine malfunction after engines have been started at the beginning of a mission or prior to engine shutdown at the end of a mission.

6.22.5. Towing. Aircrew members normally do not participate in towing operations. If required to occupy cockpit positions during towing operations conducted by personnel not familiar with C-130 towing procedures, the PIC will coordinate with the senior maintenance officer or superintendent to ensure the towing supervisor and crew are qualified. **(T-3).** At non-USAF installations, the PIC must have approval from the airfield operations officer or manager prior to towing. **(T-3).** The PIC will ensure the tow team supervisor briefs all personnel on their duties and the associated hazards. **(T-3).** Proper checklists will be used. If any doubt exists as to the qualification of tow team personnel or the safety of the operation, make no attempt to tow the aircraft until qualified Air Force personnel can be located. Under no circumstances will any crewmember act as the towing supervisor. **(T-3).**

6.22.6. During servicing and ground operations, personnel cannot walk through a prop arc unless performing engine/propeller maintenance, inspecting intakes, or performing required pilot, flight engineer or AMT preflight duties. Personnel cannot enter a prop arc while an engine/GTC is running, or external air is connected to the aircraft. After stations time maintenance personnel will report to the AMT prior to boarding. **(T-3).** The AMT will relay the number of maintenance personnel enplaning/deplaning to the PIC. **(T-3).**

6.23. Aircraft Recovery Away from Main Operating Base. The PIC is responsible for ensuring the aircraft is turned to meet subsequent mission tasking. If qualified aircraft maintenance specialists are unavailable, the aircrew is responsible for turning the aircraft to meet subsequent mission tasking.

6.23.1. The PIC is responsible for the recovery items including:

6.23.1.1. Parking and receiving.

6.23.1.2. Aircraft servicing, including Aircraft Ground Equipment (AGE) usage.

6.23.1.3. Supervision of minor maintenance within local capability.

6.23.1.4. Minor configuration changes to meet mission tasking.

6.23.1.5. Securing the aircraft before entering crew rest.

6.23.1.6. Coordinating aircraft security requirements.

6.23.1.7. Documenting AFTO 781-series forms.

6.23.2. In all cases where aircrews are required to service the aircraft without qualified maintenance specialist assistance, comply with the appropriate maintenance T.O.

6.23.3. Aircrews are not qualified to accomplish the required ground inspections. In those instances where maintenance personnel are not available, the aircrew are required to enter a red dash symbol in the AFTO Form 781H, Aerospace Vehicle Flight Status and Maintenance Document, updating current status and enter a red dash symbol and a discrepancy that reflects that the applicable maintenance inspection (i.e. preflight, thru-flight, basic post-flight) is overdue.

6.24. Aircrew Flight Equipment Requirements.

6.24.1. Oxygen. Prior to takeoff, sufficient, on-board oxygen is required to accomplish the planned flight from the equal time point (ETP) should oxygen be required (minimum 5 liters in the system with walk-around bottles filled).

6.24.2. Since the EC-130H flight deck can accommodate more crew members than there are oxygen regulators, EC-130H aircrew may pre-position emergency escape breathing devices (EEBD), emergency passenger oxygen systems (EPOS), or MA-1 Walk-Around bottles on the aircraft.

6.24.3. When carrying passengers or MEPs, distribute EPOS (if available) to each passenger regardless of planned flight altitude. If the POKs are used, the kits need only be positioned on the aircraft and distributed to each passenger for scheduled flights above FL250. EPOS are distributed and their use demonstrated before departure.

6.24.4. Aircrew members will comply with the oxygen requirements in AFI 11-202V3. Additional crew members above those required to accomplish the mission are considered passengers for the purpose of determining oxygen requirements.

6.24.5. Crew members occupying a crew station will have an oxygen mask with communication connected and readily available for use from before engine start until engine shutdown. **(T-3).**

6.24.5.1. Crew members who do not have access to the aircraft oxygen system will have an EPOS, EEBD, or spare MA-1 walk-around bottle within reach for flights above 10,000 ft. **(T-3).**

6.24.6. Life preserver units (LPUs) or Personal Floatation Device. The AMT will place an LPU within easy reach of each passenger and aircrew member before takeoff on overwater

flights. **(T-3).** Crew members will fit and adjust LPUs (if applicable) for overwater flights and will wear them on overwater missions below 2,000 ft. **(T-3).** (**EXCEPTION:** LPUs need not be worn for takeoffs, landings or approaches).

6.24.7. Parachutes.

6.24.7.1. Parachutes will be carried on aircraft IAW T.O. 1EC-130H-5-2 or other applicable MAJCOM or tech order guidance.

6.24.7.2. Personnel performing duties near an open (or suspected open) door/hatch/ramp in-flight require restraint by a safety harness. As a secondary option only, if a safety harness is unavailable, personnel will wear a parachute at a minimum. **(T-3).**

6.24.8. Aircrew Flight Equipment Documentation. PICs are required to ensure all prepositioned AFE and survival equipment items are serviceable, inventoried, and certified on the AFTO Form 46, *Prepositioned Aircrew Flight Equipment*, prior to flight. Notify the AFE section of any onboard equipment shortages or unserviceable conditions. Note discrepancies in the AFTO Form 781F, Aerospace Vehicle Flight Report and Maintenance Document. Standard preflight requirements are required to be sufficient for inventories at enroute stops when the crew does not change. Do not open sealed bags for the sole reason to count equipment. Check attached tag on sealed bags for type and quantity of equipment and inspection currency.

Section 6D—Departure

6.25. On-Time Takeoffs.

6.25.1. Mission departures are on time if the aircraft is airborne +/- 30 minutes of scheduled takeoff time or as specified by applicable MAJCOM or COCOM guidance.

6.25.2. Scheduled takeoff time may be adjusted to meet mission requirements. PICs shall notify C2 agency before takeoff to adjust the scheduled takeoff time. **(T-3).**

6.25.3. Early Departures. Early departures are authorized to prevent a delay due to weather, air refueling control time, on-station time, ATC restrictions, airfield or aircraft operational limitations, to adjust mission flow during a large-scale operation, or if approved through C2 channels provided the impact on local facilities and FDP is evaluated.

Section 6E—Enroute

6.26. Flight Progress. In-flight, use all available navigational aids to monitor navigation system performance. Immediately report malfunctions or any loss of navigation capability that degrades centerline accuracy to the controlling air route traffic control center (ARTCC). Use the following procedures for flight progress:

6.26.1. The navigator verifies waypoint data inserted into the navigation system by checking both the coordinate information and the distances between waypoints against the flight plan.

6.26.1.1. If a revised clearance is received, record and plot the new route of flight on the chart.

6.26.1.2. Navigators will use the procedures in **Chapter 10** for flight following. **(T-3).**

6.26.2. Operations in International/Territorial Airspace. (See FLIP, FCG, and AP, for further guidance).

6.27. Navigational and Airspace Capabilities. The following guidance applies to legacy avionics. AVP airspace capabilities and certifications are published in T.O. 1EC-130H-1-4(AV), but may be updated by MAJCOM or T.O. guidance distributed through stan/eval channels. The legacy avionics EC-130H MIL-GPS is a mission-enhancement system only and is not certified for IFR navigation. Refer to AFI 11-202V3 requirements for using hand-held GPS.

6.27.1. Minimum Navigation Performance Specifications (MNPS) Airspace. As of the date of this writing, MNPS certifications are currently grandfathered over the North Atlantic through the end of year 2019 (consult ICAO guidance through stan/eval and/or AFFSA channels for updates). Refer to FLIP GP and the appropriate AP volume(s) for the route of flight for specific procedures and requirements. The legacy avionics EC-130H is certified for MNPS operations.

6.27.2. Required Navigation Performance (RNP) Airspace. Legacy avionics EC-130H aircraft are approved for RNP-5 and BRNAV operations only with a qualified navigator at the navigator's station. Crews are required to immediately notify ATC if any of the required equipment fails after entry into RNP airspace and coordinate a plan of action. Document in the aircraft forms malfunctions or failures of RNP required equipment. Minimum equipment for the EC-130H to operate in RNP5/BRNAV airspace is one INU capable of updates. Flights entering RNP-5 airspace after long overwater flight must be especially aware of tolerances specific to their RNP level and update accordingly. Aircrew should refer to FLIP General Planning for specific tolerance information.

6.27.3. Reduced Vertical Separation Minimum (RVSM) Airspace. The EC-130H is not RVSM compliant as of this writing. Refer to applicable T.O. or MAJCOM guidance in the event of future upgrades or modifications.

6.28. CIRVIS and Other Reports. Report all vital intelligence sightings from aircraft as indicated in FLIP planning or FLIP Enroute Supplement. Report other incidents as indicated in JCS Pub 6V5 and AFI 10-206, *Operational Reporting.*

6.29. In-flight Meals. Pilots should not eat meals at the same time and their meals should consist of different menu items. Do not activate or handle Flameless Ration Heaters, included in MREs, inside the aircraft.

6.30. Communications.

6.30.1. Crews will conduct an HF radio ground check before takeoff if use of the HF radio may be required for ATC or C2 communications. **(T-3).** Attempt to establish HF contact before going out of UHF/VHF range. If unable to establish HF contact with the controlling HF station, and an alternate means of relay of ATC information is not available, the aircraft should return to the nearest suitable support base.

6.30.2. Pilots provide ARTCC position and weather observations when required. If unable to contact an ATC agency, attempt to relay through the global HF stations.

6.31. In-flight Emergency Procedures. Time and conditions permitting, inform the passengers of the situation and intentions when encountering an in-flight emergency.

6.31.1. Notification of C2 Agencies. When practical, after completing the aircraft emergency action checklists and associated actions, the AC is required to furnish ATC and appropriate C2 agencies with a description of the difficulty, assistance required, intentions and any other pertinent information.

6.31.2. The AC may initiate a CONFERENCE HOTEL when additional expertise is necessary. See local guidance for current contact information. Communications procedures are as follow:

6.31.2.1. Local Area. Use appropriate UHF or VHF frequencies.

6.31.2.2. Enroute. Attempt to establish a phone patch with the nearest C2 Center using global HF network, UHF/VHF stations, SATCOM, etc.

6.31.2.3. Provide the following information when time permits:

6.31.2.3.1. Description of the situation to include actions taken and intentions.

6.31.2.3.2. Requested assistance.

6.31.2.3.3. Fuel on board and hours of endurance.

6.31.2.3.4. Position.

6.31.2.3.5. Altitude and flight conditions.

6.31.2.3.6. Number of personnel and DVs on board.

6.31.2.3.7. Qualification of all primary crewmembers.

6.31.2.3.8. Planned landing destination and ETA.

6.32. Need for Medical Assistance. When a person aboard the aircraft requires medical care, the AC is required to notify the station of intended landing in sufficient time so the aircraft may be met by medical personnel. Notification includes the patient's sex, approximate age, and the major complaint.

Section 6F—Arrival

6.33. Descent. Before descent into unfamiliar areas, pilots and navigators are required to review appropriate terrain charts to increase aircrew situational awareness of obstructions. Primary crew members cannot be involved in duties other than aircraft operations, descent and approach monitoring, and required checklist items from the initial descent point to landing.

6.33.1. Weather Forecasts. It is the pilot's responsibility to obtain destination weather prior to descent.

6.33.1.1. Obtain weather from ATIS/ASOS/AWOS, any USAF base weather station via pilot-to-meteorologist service (PMSV), Flight Watch, or Flight Service Station (FSS). Check on the latest weather prior to descent.

6.33.1.2. For aircraft flying OCONUS, contact servicing OWS as described in the Flight Information Handbook.

6.33.1.3. The ATC system can provide weather information to enroute aircraft, based on controller workload. All CONUS ARTCCs have weather forecasters assigned, but only

provide weather information when their workload allows. Do not use ARTCC controllers as a primary source of weather information.

6.34. Instrument Approach Procedures.

6.34.1. Aircraft category. For FAA/NAS operations, the EC-130H is a category "C" aircraft, unless higher approach airspeeds require otherwise. For ICAO or other foreign operations, category is determined by comparing computed airspeed to applicable guidance.

6.34.2. Weather minimums.

6.34.2.1. For precision approaches, visibility is required to be no lower than RVR 2400 ft or ½ mile visibility (800 meters) with no RVR readout available. DH is based on a HAT/HATh of no less than 200 ft.

6.34.2.2. For circling approaches with no published ceiling requirement, the required ceiling is computed by taking the published HAA plus 100 ft rounded up to the next one hundred foot value. (**EXAMPLE:** if the HAA is 747 ft, add 100 ft to get 847 ft and then round up to the next one hundred foot value which would be 900 ft. The ceiling for the approach is at or above 900 ft). When circling minimums are published, but not by category, circling approach minimums are as published, but in no case lower than 500 ft and 1.5 miles visibility (Category C) or 600 ft and 2 miles visibility (Category D) above published airport elevation.

6.34.3. Flight Instrumentation Requirements.

6.34.3.1. If full flight instrumentation is not available and operational, aircraft are limited to a DH/MDA based on a HAT/HATh of 300 ft and RVR 4000 ft, or ¾ mile visibility (1220 meters) with no RVR.

6.34.3.1.1. ILS. Full flight instrumentation consists of: dual flight displays (one flight director plus ADI repeat), complete differential pressure instruments, heading/compass systems, and attitude indicators in the pilot and copilot positions. **NOTE:** The EC-130H is certified only for Category I ILS as of this writing. Monitor official stan/eval channels for potential future upgrades.

6.34.3.1.2. Full flight instrumentation for a precision approach radar (PAR) consists of: complete differential pressure instruments, heading/compass systems, and attitude indicators in the pilot and copilot positions.

Section 6G—Post-Flight

6.35. Maintenance. Complete the AFTO Form 781 after each flight. After landing, crew members debrief maintenance personnel, if present, on the condition of the aircraft, engines, avionics equipment, and all installed special equipment as required.

6.35.1. An entry is placed in AFTO 781A, "Aircraft Subjected to Salt Spray" (state lowest altitude and duration) anytime the aircraft is flown under 1000 ft above sea except for takeoffs and landings.

6.36. Border Clearance.

6.36.1. Normal Operations.

6.36.1.1. The unit dispatching the mission is normally responsible for the border clearance of its aircraft.

6.36.1.2. When support is not available, border clearance is the responsibility of the PIC. When an EC-130H aircraft is on-loaded at a base without an air traffic function, the PIC is responsible for ensuring the following:

6.36.1.2.1. Crew members and passengers possess current passports and valid visas, when required.

6.36.1.2.2. Crew members and passengers have current certificates of immunization (shot record).

6.36.1.2.3. Departing or entering the United States through a location where border clearance can be obtained.

6.36.1.2.4. Obtaining border clearance for passengers, crew and baggage, if required, before takeoff to a foreign area or after arrival from a foreign area.

6.36.1.2.5. Spraying the aircraft (see the FCG and **para 6.37**).

6.36.2. Procedures for U.S. Entry.

6.36.2.1. Enroute, the AMT will distribute personal customs declarations (when not accomplished by passenger services) to all passengers and crew members. **(T-3).** The AMT will also brief passengers and crewmembers on customs regulations, and prepare and compile necessary border clearance forms for the PIC's signature. **(T-3).**

6.36.2.2. Enroute, notify the C2 agency at the base of intended landing of any change in ETA to ensure that border clearance is accomplished as soon as possible after landing.

6.36.2.3. Obtain a permit to proceed when military necessities require an aircraft, which has landed in the United States for customs clearance, to proceed to another base in the U.S. to obtain border clearance. The permit to proceed delays customs inspection of cargo, passengers, and crew until arrival at the offload station, and saves intermediate offloading and reloading normally required for customs inspection. The permit to proceed is valid only to the airport of next landing where the border clearance is completed or a new permit to proceed issued by a customs official. Do not make intermediate stops between the issue point of the permit to proceed and destination of manifested cargo unless required by an emergency or directed by the controlling C2 center.

6.36.2.4. When an aircraft lands for a U.S. border clearance, a U.S. Customs representative normally will meet the aircraft to obtain the required documents. Do not deplane passengers, troops, or crew members unless necessary for safety or the preservation of life and property (AMT accepted). Do not unload until approved by customs and agriculture personnel or their designated representatives. This procedure applies to the initial landing in the U.S. and all landings required when operating on a permit to proceed or until all crew, passengers, and cargo complete final border clearance.

6.36.3. Inspections of U.S. Aircraft by Foreign Officials.

6.36.3.1. Follow USAF policy on status of military aircraft as stated in Department of Defense Foreign Clearance Guide (FCG). In substance, this policy holds that U.S. military aircraft are immune from searches, seizures, and inspections (including customs and safety inspections) by foreign officials. In addition, ACs should be aware of, and adhere to, any specific FCG provisions for individual countries.

6.36.3.2. If confronted with a search request by foreign authorities, aircrews should use the following procedures.

6.36.3.2.1. In most cases, search attempts may be halted simply by a statement of the PIC to the foreign official that the aircraft is a sovereign instrumentality not subject to search without consent of USAF headquarters or the U.S. Department of State officials in the country concerned. This should be clearly conveyed in a polite manner so as not to offend foreign authorities that may honestly, but mistakenly, believe they have authority to search USAF aircraft.

6.36.3.2.2. If foreign authorities insist on conducting a search, the PIC should make every effort to delay the search until he or she can contact USAF headquarters (through MAJCOM C2) or the appropriate embassy officials. The PIC should then notify these agencies of foreign request by the most expeditious means available and follow their instructions.

6.36.3.2.3. If foreign officials refuse to desist in their search request, pending notification to USAF headquarters or the appropriate embassy, the PIC should indicate that he or she would prefer to fly the aircraft elsewhere (provided fuel, flying time, and mechanical considerations permit a safe flight) and request permission to do so.

6.36.3.2.4. If permission is refused and the foreign authorities insist on forcing their way on board an aircraft, the PIC should state that he/she protests the course of action being pursued and that he intends to notify both USAF headquarters and the appropriate American embassy of the foreign action. The PIC should not attempt physical resistance, and should thereafter report the incident to USAF headquarters and appropriate embassy as soon as possible. The PIC should escort foreign authorities if the inspection cannot be avoided.

6.36.3.3. Other procedures may apply when carrying sensitive cargo or equipment. Follow these procedures and applicable portions of classified FCG supplements.

6.36.4. Exercises and Contingency Operations.

6.36.4.1. General. Certain missions, which do not transit normal ports of entry or exit, require special procedures to expedite compliance with customs, public health, immunization, and agricultural requirements. A joint memorandum of understanding, between these agencies and MAJCOM establishes certain procedures and waivers.

6.36.4.2. Implementation. Implementation of the agreement is not automatic. Traffic and border clearing agencies implement all or part of the agreement as necessary for each operation. Inspection and clearance may be accomplished at the U.S. on-load or off-load base, or at the foreign on-load or off-load base.

6.36.4.3. Customs Procedures.

6.36.4.3.1.1. Outbound: No requirement. Filing of Customs Form 7507 is not required unless directed.

6.36.4.3.1.2. Inbound: Prepare one copy of the following documents before arrival:

6.36.4.3.1.3. Customs Form 7507 (Passenger list not required).

6.36.4.4. Public Health Procedures.

6.36.4.4.1. When operating from a base without a traffic officer, the PIC ensures all crewmembers and passengers are properly immunized.

6.36.4.4.2. Spray the aircraft if required.

6.36.4.4.3. Immigration Procedures.

6.36.4.4.4. Outbound: No requirements.

6.36.4.4.5. Inbound: Submit the following to the immigration inspector if carrying civilian passengers.

6.36.4.4.5.1. One copy of Customs Form 7507.

6.36.4.5. Agriculture Procedures:

6.36.4.5.1. Outbound: No requirement.

6.36.4.5.2. Inbound: Consult Border Clearance Guide.

6.36.5. Military Customs Pre-clearance Inspection Program. All crew members are required to be in compliance with Military Customs Pre-clearance requirements. Expect a Customs representative will meet the aircraft and collect all declarations.

6.37. Insect and Pest Control.

6.37.1. Responsibility. PICs will ensure required spraying is accomplished according to, Department of Defense FCG, or as directed by higher headquarters. Certify the spraying on Customs Form 7507, or on forms provided by the country transited. Aircraft should never be sprayed with passengers on board. The only exception is when mandated by the FCG.

6.37.1.1. When spraying is required, use insecticide, aerosol d-phenothrin-2 percent, National Stock Number (NSN) 6840-01-067-6674 (or equivalent), to spray the aircraft. Wear leather or Nomex gloves while spraying.

6.37.1.1.1. Direct the nozzle toward the ceiling of the compartment or space being sprayed.

6.37.1.1.2. Spray spaces inaccessible from within the aircraft after completely loading fuel, baggage, cargo, and passengers, including baggage compartments, wheel wells, and other similar spaces.

6.37.1.1.3. Spray the cabin, cockpit, and other spaces accessible from within the aircraft after the crew is aboard and after closing all doors, windows, hatches, and ventilation openings. **CAUTION:** If the insecticide label directs disembarkation after use, spray before boarding crew or passengers. Close all doors and hatches for 10

minutes after dispensing and ventilate for 15 minutes before allowing anyone on board.

6.37.1.2. Spray for 105 seconds unless longer periods are specified for the country being transited. **NOTE:** Keep used aerosol cans separate from other trash so they may be disposed of safely.

6.37.2. Responsibility of PIC In-flight. When seeing any insect or rodent infestation of the aircraft in-flight, notify the destination C2 center, airfield management operations, or airport manager of the situation before landing so the proper authorities can meet the aircraft.

6.37.3. Procedure at Aerial Port of Debarkation (APOD). On arrival at an APOD, do not open cargo doors or hatches except to enplane officials required to inspect the aircraft for insect or rodent infestation.

6.38. Aircrew Debriefing. Review and evaluate overall training and/or mission performance. Each student or aircrew member should understand thoroughly what training has been accomplished, or lessons learned from mission employment. Ensure all training is documented. Debrief maintenance write-ups with applicable personnel.

Section 6H—Miscellaneous

6.39. Dropped Objects. If an externally dropped object is discovered, the flight crew is required to:

6.39.1. Notify ATC or the controlling agency as soon as practical and include details of routing, altitude, weather, etc.

6.39.2. Notify maintenance at the first military station transited.

6.40. Cockpit Voice Recorder. If involved in a mishap or incident, after landing and terminating the emergency, pull the CVR and FDR power circuit breakers.

6.41. Aircrew Flight and Dash 21 Equipment Documentation. The PIC or designated representative are responsible for the following:

6.41.1. Before departing home station or enroute stations, ensure appropriate serviceable protective clothing, aircrew flight equipment, survival, and dash 21 equipment for the entire or remainder of the mission are aboard the aircraft.

6.41.2. Before departing home station and following enroute crew changes, review AF Form 4076, Aircraft Dash 21 Equipment Inventory, to ensure all required dash 21 equipment has been certified as installed by maintenance, the initial check has been signed by maintenance, and configuration documents match mission requirements.

6.41.3. Before departing home station and following enroute crew changes, review, sign, and date the AFTO Form 46 to ensure all required protective clothing, aircrew flight equipment and survival equipment have been certified as installed by AFE and that configuration documents match mission requirements. Ensure appropriate number and type of life preservers are aboard for over-water missions.

6.41.4. Missing Equipment. Aircrew members discovering equipment missing are required to accomplish the following:

6.41.4.1. Make an AFTO Form 781A entry for equipment found missing. Additionally, ensure equipment removed from the aircraft at an enroute station is documented in the AFTO Form 781A.

6.41.4.2. Annotate AF Form 4076, *Aircraft Dash 21 Equipment Inventory* and AFTO Form 46 in the next vacant column indicating the quantity remaining for the item. Ensure the ICAO location designator is entered above the check number of that column. Leave AF Form 4076 and AFTO Form 46 on board the aircraft in the event of an enroute crew change.

6.41.4.3. Advise the PIC and determine whether the missing equipment should be recovered or replaced before mission continuation.

6.41.4.4. Assist, as required, in preparing reports of survey for missing equipment.

6.41.4.5. When possible, advise HQ ACC/A3TV and HQ ACC/A3TO (or MAJCOM aircrew flight equipment office) and appropriate C2 agency (or airport management) before mission continuation.

6.41.5. Additional Equipment. If more equipment is discovered during the preflight than is annotated on the AF Form 4076 or AFTO Form 46, annotate the total quantity in the next vacant column for the item. Ensure the ICAO location designator is entered above the check number of that column.

6.42. Impoundment of Aircraft. If an aircraft is involved in a serious in-flight incident, the PIC should impound the aircraft immediately after landing and contact the controlling C2 agency for further instructions.

6.43. Loose Objects in the Cockpit.

6.43.1. Do not place items (checklists, charts, etc.) behind the condition levers or on the throttle quadrant during critical phases of flight.

6.43.2. Place only soft items on the top bunk.

6.44. Wake Turbulence Avoidance. Comply with wake turbulence avoidance criteria. Acceptance of traffic information, instructions to follow an aircraft, or a visual approach clearance is acknowledgment from the AC to ensure takeoff and landing intervals and accepts responsibility of providing wake turbulence separation. Refer to FLIP GP for more information concerning wake turbulence separation.

6.45. Ordnance Procedures. Conduct the following procedures after the live firing of flares or the crew suspects aircraft battle damage:

6.45.1. After landing, taxi to the de-arm area or another suitable safe location.

6.45.2. Deplane the flight engineer or AMT to check all flare dispensers for hung ordnance or damage, and maintain contact with either a safety observer or the AC at all times, either visually or over interphone. **NOTE:** ALE-47 flare squibs that fail to fire are not considered hung ordnance.

6.45.3. If hung ordnance is found (identified by a protruding or partially ejected flare cartridge) the aircraft remains in or proceeds to a de-arm area until Explosive Ordnance Disposal (EOD) personnel meet the aircraft. The aircraft is required to remain in the

designated safe area until EOD personnel can clear all hung ordnances. Aircrew should remain onboard aircraft unless a compound emergency or crew safety requires egress.

6.45.4. If hung ordnance is not found, the aircraft can proceed to the parking location.

6.46. Classified Equipment and Material. Comply with the following or as directed in MAJCOM supplement.

6.46.1. Equipment. When classified equipment is onboard, ensure the C2 center or airfield management operations office is aware of the requirement for aircraft security according to **Chapter 7** of this AFMAN. At bases not under jurisdiction of the Air Force, ensure the aircraft and equipment are protected. AFI 16-1404, *Air Force Information Security Program*, provides specific guidance concerning the security of various levels of classified equipment aboard aircraft. For classified aircraft components which cannot be removed and stored, lock and seal the aircraft. If available, use security forces to guard the aircraft; otherwise, use guards employed by the host country for flight line/airport area control. Do not leave unguarded classified information stored in navigation or radio equipment.

6.46.1.1. COMPASS CALL aircraft security requirements are defined in AFI 31-101, *Integrated Defense* when operating at U.S. Air Force installations and in AFJI 31-102, *Physical Security* (OPNAVINST 5530.15A, AFR 207–4, MCO 5500.13A, DLAR 5710.4) when operating on another service's installation. **Chapter 7** of this volume provides additional guidance. Security requirements should be specified in the deployment order for deployed operations.

6.46.1.2. The security requirements for an aircraft possessing SCI material are the same as a ground SCIF.

6.46.2. Material. Ensure COMSEC and other classified materials are turned in at destination and receipts are obtained for COMSEC and classified material. The on-site C2 center provides temporary storage for COMSEC and other classified materials during enroute, turnaround, and crew rest stops. If a storage facility is not available, the aircraft gun storage box may be used for material classified up to and including SECRET. Encrypted COMSEC is only transferred to authorized DoD personnel. The PIC and MCC ensure that all material, discussions and display screens are limited to the clearance level of escorted personnel.

6.46.3. Mode 4 Procedures. **NOTE:** Future AFFSA directives may result in an upgrade to Mode 5. In the event of this, as a general rule of thumb, crews can interchange Mode 5 with Mode 4 in the procedures below. However, any T.O. or MAJCOM guidance distributed through official stan/eval channels supersedes the below in the event of a discrepancy.

6.46.3.1. Aircrews are required to ensure that they have an operable Mode 4 when required for mission accomplishment. Aircrews are required to conduct an operational ground test of the Mode 4 (ground test assets permitting) before deployment overseas, or as specified in the OPORD or contingency/exercise tasking.

6.46.3.2. Attempt to fix an inoperable Mode 4 before takeoff. Do not delay takeoff nor cancel a mission for an inoperable Mode 4, except when the aircraft is planned to transit an area where safe passage procedures are implemented.

6.46.3.3. Conduct an in-flight check of the Mode 4 on all missions departing the CONUS for overseas locations. Aircrews can request the Mode 4 interrogation check through NORAD on UHF frequency 364.2.

6.46.3.4. Aircraft with inoperable Mode 4 continue to their intended destinations. Repairs are accomplished at the first equipment, parts, and maintenance technicians are available. In theaters where safe passage is implemented, aircraft follow procedures for inoperable Mode 4 as directed in the applicable airspace control order or Air Tasking Order (ATO) and/or SPINS.

6.46.3.5. Ground and in-flight checks of the Mode 4, when conducted, are a mandatory maintenance debrief items. Crews are required to annotate successful and unsuccessful interrogation of the Mode 4 on all aircraft forms (AFTO Form 781A).

6.46.4. Aircrews are required to carry COMSEC equipment and documents required to operate the Mode 4 (or 5, as applicable) when required for mission accomplishment or as required in SPINS. Before departing for any destination without COMSEC storage facilities, crews will contact their local COMSEC managers for guidance. **(T-3).**

6.46.5. Emergency Destruction. Destroy/damage classified material and/or equipment prior to a crash landing or bailout if possible.

6.46.6. If ground egress is required and classified material cannot be secured, the PIC or designated representative shall obtain the names and telephone numbers of all un-cleared emergency responders and/or maintenance personnel who boarded the aircraft and were exposed to classified material. If SCI material was inadvertently disclosed, contact the SSO to conduct an inadvertent disclosure briefing to those members exposed to SCI.

6.47. AMT and Flight Engineer Confidence Activities.

6.47.1. Confidence activities (in-flight opening of paratroop doors or ramp and cargo door) are required for AMT and flight engineer training to prepare for emergency procedures. Conduct confidence activities IAW the Inflight Guide. Only AMTs and flight engineers are permitted to accomplish the confidence activities. All other aircrew members not taking part in the confidence activities are seated with seat belt securely fastened.

6.47.2. Confidence activities are only conducted during syllabus training, continuation training, flight evaluations and emergencies.

6.47.3. A safety observer is required to be present during all confidence activities. Safety observers are required to have a second restraint harness on and fitted. **NOTE:** Do not use the flight deck restraint harness for confidence activities.

6.47.4. Adjust the lifeline of the restraint harness to allow mobility only to the troop door for opening and closing. **WARNING:** Do not open aircraft ramp and door and paratroop doors at the same time. **WARNING:** Except for an actual contingency or emergency that threatens the survivability of the aircraft and crew, do not disconnect or lengthen the restraint harness to a point that would allow the crew member to fall outside the aircraft.

6.47.5. Do not wear a parachute in place of a restraint harness during any confidence activity training or evaluation.

Chapter 7

AIRCRAFT SECURITY

7.1. General. This chapter provides guidance for aircraft security and unlawful seizure of aircraft. EC-130H aircraft are normally Protection Level 3 assets, but may become Protection Level 2 under certain conditions. See AFI 31-101 for definitions and designations of Protection Levels.

7.2. Security. See AFI 13-207, *Preventing and Resisting Aircraft Piracy (Hijacking)*, AFI 10-701, *Operations Security*, and AFI 31-101, for requirements for protection of aircraft in transient status at U.S. and foreign bases.

7.3. Security Procedures.

7.3.1. Forward Operating Location Security. Security arrangements at forward operating locations is made by DETCOs or ADVON personnel, and are required to comply with the minimum requirements referenced in AFI 31-101, which provides protection level status and procedures for COMPASS CALL and other aircraft.

7.3.2. Enroute Security. ACs receive a threat assessment and security capability evaluation briefing at home station and receive updates at enroute C2s. Assess the situation and take the following actions, if necessary:

7.3.2.1. Request area patrol coverage from local security forces. If local authorities request payment for this service, consult appropriate C2 channels.

7.3.2.2. Direct armed aircrew members to remain with the aircraft and maintain surveillance over aircraft entrances and activities in the vicinity of the aircraft. Acquire a means to report suspicious or hostile activity to security forces, if available.

7.3.2.3. If the PIC determines airfield security is inadequate and the safety of the aircraft is in question, (i.e. local security forces are unacceptable or unavailable and the crew is not augmented with security police), the PIC may waive crew duty time limitations and depart as soon as possible for a base where adequate security is available. If departure is not possible, the aircrew must secure the aircraft to the best of their ability. Crew rest requirements are subordinate to aircraft security when the airframe/equipment may be at risk. Request security assistance from the nearest DoD installation, U.S. embassy, local military or law enforcement, as appropriate.

7.3.2.4. If, in the PIC's judgment, the aircraft needs to be locked and sealed to detect unauthorized entry, use the aircraft lock and secure the hatches, windows, and doors in a manner that indicates unauthorized entry. Wipe the immediate area around lock and latches clean to aid in investigation of a forced entry. Coordinate with local base operations on procedures for servicing the aircraft while the crew is away. Report any unauthorized entry or tampering to the Office of Special Investigation (OSI), security forces or local authorities, and the C2 agency. Have aircraft thoroughly inspected prior to flight.

7.4. Arming of Aircrew Members. Due to the nature of the EC-130H mission, crews are not normally armed enroute to a forward operating location. However, weapons may be carried on

the aircraft for use in theater. When the ECG/CC determines the nature of the deployment warrants the aircrews carry weapons enroute, follow the procedures in **para 7.4.1** below.

7.4.1. Weapons Issue (Enroute). When required by Rules of Engagement (ROE), Air Tasking Order (ATO), or Special Instructions (SPINS), obtain weapons and ammunition from the weapons storage area. Crew members will be armed according to AFI 31-207, *Arming and Use of Force by Air Force Personnel*, and MAJCOM directives. Present a current AF Form 522, *USAF Ground Weapons Training Data*, for weapon issue. The same weapon is reissued until the mission terminates. If an armed aircrew member leaves the crew enroute, transfer the weapon to another authorized aircrew member using AF Form 1297.

7.4.1.1. Load and unload weapons at approved clearing barrels if available. To transfer loaded weapons to another aircrew member, place the weapon on a flat surface. Do not use hand-to-hand transfer.

7.4.1.2. Do not wear weapons off the flight line except to and from the armory and other facilities associated with aircrew activities (e.g., base operations, fleet service, cargo and passenger terminals, flight line cafeteria or snack bar). Weapons remain under the positive control of the crewmember at all times.

7.4.1.3. Arm aircrew members prior to preflight duties. When no passengers are aboard and after a satisfactory stowaway check, weapons may be stored in the gun box in flight. Aircrew members rearm before landing. Weapons are not unloaded before placement in the gun box.

7.4.1.4. During crew rest, store weapons in the most secure facility available, normally a base or civil law enforcement armory. If a weapons storage facility is unavailable, secure firearms and ammunition in the aircraft. If the aircraft is not equipped with a gun box, leave the weapons in the most secure and least visible location on the aircraft. Attempt to seal the weapons with a tamper-evident seal, such as a boxcar seal, and maintain the seal number if applicable. Lock and seal the aircraft doors.

7.4.2. Contingency Missions.

7.4.2.1. Crewmembers shall be issued weapons in accordance with theater directives prior to combat/combat support sorties as part of their survival equipment. The squadron commander/DETCO in conjunction with AFE personnel determine procedures for weapons issue. Additionally, deployed leadership will develop in-garrison weapons issue/arming procedures commensurate with current force protection procedures. **(T-3).**

7.5. Preventing and Resisting Hijacking. Refer to AFI 13-207 for detailed guidance. Security operations surrounding EC-130H aircraft at deployed locations are normally sufficient to deter piracy without any action by aircrew. Aircrew should always remain vigilant to any unusual circumstances, and report them to security forces.

7.6. Armed Passengers. EC-130H aircraft normally do not carry passengers; therefore the risk of hijacking is further reduced. When onboard, passengers do not normally carry weapons or ammunition on their person or in hand-carried baggage. Exceptions include special agents and guards of the Secret Service or State Department and other individuals specifically authorized to carry weapons. Take every precaution to prevent accidental discharge of weapons.

7.6.1. Passengers or deadhead crewmembers will not retain custody of ammunition on an aircraft and will turn it in to the troop commander or PIC. **(T-3).** Excepted passengers (above) may carry unloaded weapons and ammunition aboard the aircraft during combat operations.

7.6.2. If guards or couriers need to clear their weapons, the PIC is required to ensure the individual:

7.6.2.1. Moves to a safe, clear area at least 50 ft from any aircraft, equipment, or personnel before un-holstering or unslinging their weapons.

7.6.2.2. Clears weapons in accordance with standard safety procedures.

7.7. Force Protection. Crews are to remain alert to possibility of terrorist activities at all times. Reference AFTTP 3-4, *Airman's Manual*, Joint Service Guide 5260, *Service Member's Personal Protection Guide: Combat Terrorism While Overseas*, and AFI 10-245, *Antiterrorism (AT)*, for force protection measures.

Chapter 8

OPERATIONAL REPORTS AND FORMS

8.1. General. This chapter contains a description of applicable reports and forms. For assistance in completing safety forms contact the wing, unit, or local flight safety officer.

8.2. AF Form 457, *USAF Hazard Report* (AFI 91-202, *The U.S. Air Force Mishap Prevention Program*). AF hazard reporting system provides a means for Air Force personnel to alert supervisors and commanders to hazardous conditions requiring prompt corrective action. A hazard is any condition, act, or circumstance that jeopardizes or may jeopardize the health and well-being of personnel, or which may result in loss, damage, or destruction of any weapons system, equipment, facility, or material resource.

8.3. AF Form 651, Hazardous Air Traffic Report (HATR). The Air Force HATR program provides a means for personnel to report all near midair collisions (NMAC), TCAS resolution advisories requiring the aircraft to deviate from assigned course/altitude, alleged hazardous air traffic conditions, or NAVAIDS, FLIP or published directions/instructions that contributed to a hazardous situation. Use information in HATR reports only for mishap prevention.

8.3.1. AFI 91-202 and AFMAN 91-223, *Aviation Safety Investigations and Reports*, list HATR reportable incidents and procedures.

8.4. AF Form 711B, *USAF Aircraft Mishap Report Worksheet* (AFI 91-204).

8.4.1. Responsibilities. Notify the appropriate authorities of any mishap involving aircraft or crew. When notified, appropriate authorities initiate investigative and reporting actions in accordance with AFI 91-204, *Safety Investigations and Reports*. **NOTE:** Do not attempt to classify a mishap.

8.4.2. Reportable Mishaps.

8.4.2.1. Report damage to the aircraft, or injury to the crew or passengers; also report any damage or injury to another organization's equipment or personnel resulting from the movements or actions of an aircraft or crew.

8.4.2.2. Report the following occurrences:

8.4.2.2.1. A physiological episode is a physiological reaction, near accident, or hazard in-flight due to medical or physiological reasons. This includes:

8.4.2.2.1.1. Aircrew or passenger decompression sickness from evolved gas (bends, chokes, skin, neurological, or neurocirculatory manifestations).

8.4.2.2.1.2. Aircrew loss of consciousness or incapacitation in-flight.

8.4.2.2.1.3. Aircrew hypoxic (altitude) hypoxia (suspected, probable, or definite).

8.4.2.2.1.4. Aircrew trapped gas disorders (ear, sinus, teeth, or abdominal).

8.4.2.2.1.5. Aircrew or passenger symptoms or health effects caused by toxic, noxious, or irritating materials such as smoke, fumes (including carbon monoxide) or liquids.

8.4.2.2.1.6. All events during which a crewmember executed any portion of an

emergency checklist in response to toxic smoke/fumes/liquid exposure.

8.4.2.2.1.7. Any unintentional strike by an aircraft to another object regardless of damage cost or need for repairs.

8.4.2.2.1.8. Loss of cabin pressurization that requires executing an emergency checklist.

8.4.2.2.1.9. Aircrew G-induced loss of consciousness.

8.4.2.2.1.10. Aircrew spatial disorientation of any type (including visual illusion) resulting in an unusual aircraft attitude.

8.4.2.2.1.11. Any medical condition, event or physical injury directly resulting from performance of flight activities that an aeromedical professional determines is significant to the health of the aircrew.

8.4.2.2.1.12. Suspected Laser Exposure. If exposed to a laser, the AC notifies appropriate command and control, intelligence, safety and medical agencies as soon as possible. Aircrew who suspect exposure to laser radiation from either friendly or hostile sources should report to the Flight Surgeons Office or nearest emergency room where individual can be examined by an ophthalmologist immediately upon landing. Reference AFI 11-301V4, *Aircrew Laser Eye Protection (ALEP)*, for further guidance.

8.4.2.2.1.13. Hyperventilation.

8.4.2.2.1.14. Death by natural causes of any aircrew member during flight.

8.4.2.2.1.15. Unintentional loss of pressurization if cabin altitude is above FL180, regardless of effects on personnel.

8.4.2.2.1.16. Alcohol and hangover (crew only).

8.4.2.2.1.17. Illness (both acute and pre-existing), including food poisoning, dehydration, myocardial infarction, seizure, and so forth. **NOTE:** In the event of a physiological episode, all aircrew members and passengers involved are required to report to a flight surgeon as soon as practical and request that an AF Form 711B be accomplished.

8.4.2.2.2. Emergency, precautionary, or inadvertent engine shutdown at any time after taxi until normal engine shutdown. Report any loss of thrust sufficient to prevent maintaining level flight at a safe altitude. **NOTE:** Intentional shutdowns for training and FCF are excluded; however, report failure to restart, using the criteria above.

8.4.2.2.3. Unselected propeller reversal.

8.4.2.2.4. Flight control malfunction resulting in an unexpected or hazardous change of flight attitude, altitude, or heading.

8.4.2.2.5. All un-commanded inputs to the flight controls whether it results in a dangerous situation or not. Report autopilot faults if, in the opinion of the investigator, the autopilot would have put the aircraft in a dangerous situation.

8.4.2.2.6. Structural failure of critical landing gear components. Malfunction of landing gear when difficulty is experienced using emergency system or procedures.

8.4.2.2.7. In-flight loss of all pitot-static instrument indications or both primary and standby attitude indicators.

8.4.2.2.8. In-flight fires, massive fuel leakage in an engine bay, all gear-up landings.

8.4.2.2.9. Spillage or leakage of radioactive, toxic, corrosive, or flammable material from aircraft stores that creates a hazardous condition or an airborne emergency divert.

8.4.2.2.10. All cases of departure from intended takeoff or landing surface onto adjacent surfaces.

8.4.2.2.11. Any incident which does not meet the established criteria for a reportable mishap but, in the judgment of the PIC, needs to be emphasized in the interest of flight safety.

8.5. Petroleum, Oil, and Lubricants (POL)—Aviation Fuels Documentation. This section prescribes aviation POL (AVPOL) procedures that ensure correct documentation, form and invoice processing, and program supervision. Reference AFI 11-202V3. Use the Multi Service Corporation (MSC) air card for the purchase of aviation fuel and ancillary ground services at commercial airports (and some military installations) worldwide. The air card is authorized for use by all U.S. government aircraft, state, and local law enforcement aircraft, and some foreign government aircraft. All PICs should plan to use the AIR CARD. In most cases, there cannot changes when refueling at non-Defense Energy Support Center (DESC) contract locations. The MSC card is accepted at approximately 4,800 locations worldwide. It replaces the Standard Form (SF) 44, *Purchase Order-Invoice-Voucher*, at locations that accept the MSC card.

8.5.1. Responsibilities. Aircrew and maintenance personnel need to be familiar with AVPOL procedures and documentation requirements of this chapter. Improper use of AIR CARD could create financial liability for the purchaser.

8.5.2. Refuel/de-fuel USAF aircraft at DoD locations whenever possible. If DoD service is not available, purchase fuel from other source(s) in the following priority:

8.5.2.1. Defense Fuel Supply Center (DFSC) or Canadian into-plane contracts.

8.5.2.2. Foreign government air forces. **NOTE:** The historically most reliable source of contract servicers has been **https://aircardsys.com** or alternatively **https://www.airseacard.com**.

8.5.2.3. Open market AIR CARD purchase to include Shell International Trading Company (SITCO) agreement.

8.5.3. Refueling at USAF Locations. DD1896, *Jet Fuel Indentaplate*, is the aircraft fuel and oil charge card required in this context. The PIC or designated representative completes the form then logs and places a copy inside the AF Form 664.

8.5.4. Refueling at Locations other than USAF Bases.

8.5.4.1. DD Form 1898, *Fuel Sales Slip*. This form is used to record the aviation fuels transaction (issue or defuel) at other DoD locations, including into-plane contract

locations. Log and place the DD1898 inside the AF Form 644. The PIC or designated representative completes this form. **NOTE:** If the contractor insists on a unique invoice along with the DD 1898, annotate the vendor's invoice with "DUPLICATE DD1898 ACCOMPLISHED".

8.5.4.2. AF Form 664 is a tool to log and store all AVPOL transaction forms. Record all off station transactions on the front of the form and insert the original form inside the envelope. Turn in the AF Form 664, with supporting forms, to maintenance debriefing or as directed by local procedures. The PIC or designate representative completes this form when appropriate.

8.5.4.3. Purchasing Aviation Fuel in Canada. The DoD and Canadian Department of National Defense have signed a memorandum of understanding allowing DoD aircraft to use the DD1896, *Jet Fuel Identaplate*, when refueling at Canadian airfields with a Canadian National Defense Contract (CNDC). Use the AIR Card for fuel purchases at Canadian airports without a CNDC, and for ground handling services at all Canadian airports.

8.5.4.4. Use host country forms to effect purchases at foreign military airfields, including replacement-in-kind locations. Hand scribe information from aircraft identaplate on the local form. Log and place a copy inside the AF Form 664.

8.5.4.5. The SF 44 may be used to purchase fuel, ground services and/or other authorized products when no MSC card contract is in place.

8.5.4.5.1. SF 44 fuel purchases where FBO (Fixed Based Operations) agrees to invoice DESC for payment.

8.5.4.5.1.1. The aircrew presents the SF 44 as the purchase invoice when an FBO refuses to accept the MSC card. The aircrew completes the SF 44 and attaches it to the FBO vendor ticket/invoice when the FBO also declines use of the SF 44 and uses its own invoice/receipt. Fuel purchases are documented on a separate SF 44 from ground services and other authorized products since the FBO invoices DESC for the fuel and the customer for non-fuel product and services.

8.5.4.5.1.2. Copies 1 and 2 of the SF 44 are provided to the FBO. Copy 1 of the SF 44 and one copy of the FBO commercial invoice, if applicable, is forwarded to the following address by the FBO to bill/invoice DESC: DESC-RRF, Building 1621-K, 2261 Hughes Avenue, Suite 128, Lackland AFB, Texas, 78236.

8.5.4.5.1.3. Copy 3 of the SF 44 and one copy of the FBO commercial invoice, if applicable, is provided to the aircrew. Log and place a copy inside the AF Form 664. Aircrews present all fuel purchase receipts to the designated aviation squadron Certifying Official and/or Accountable Official upon return to home station to enable timely validation and financial obligation processing into the Fuels Automated System (FAS). **NOTE**: Aviation Into-Plane Reimbursement (AIR) CARD. The AIR CARD is a commercial credit card which allows aircrews to purchase aviation fuel, fuel related supplies, and/or ground services at commercial airports where no DoD/Canadian into-plane contracts exist. Accepted at over 4200 locations, it is intended to replace the SF 44 at locations that accept the AIR CARD. All Air Force aircraft are issued an AIR CARD.

8.5.4.5.2. SF 44 fuel purchases where the FBO requires cash payment.

8.5.4.5.2.1. Cash fuel purchases are only authorized when either the DoD 4500.54G, *DoD Foreign Clearance Guide*, requires cash payment, or when FBO locations outside the United States and U. S. Territories refuse MSC card and/or SF 44 invoicing processes. Aircrews required to pay cash for aviation fuel purchases are required to employ the following procedures: **NOTE:** These procedures do not apply to non-fuel products or services.

8.5.4.5.2.1.1. The aircrew is required to obtain cash from a local DoD Finance source that is charged to an approved Treasury suspense account prior to home station departure.

8.5.4.5.2.1.2. Aircrews complete the SF 44 and obtain the FBO fuel vendor annotation in block 11 of the form to confirm total cash amount and also sign and date blocks 20 and 21. Log and place a copy inside the AF Form 664. Aircrew are required to return unused cash to their local DoD Finance source upon return to home station.

8.5.4.5.3. SF 44 purchases of ground services and other approved products (not fuel).

8.5.4.5.3.1. Complete a separate SF 44 for non-fuel purchases. Provide the FBO copies 1 and 2 of the SF 44. The FBO uses copy 1 and one copy of the FBO commercial invoice, if applicable, to directly bill/invoice the purchasing organization. Block 9 of the SF 44 reflects the organization name and address of the finance office responsible for payment to the FBO. The purchasing organization makes payment to the FBO upon receipt of the invoice from the FBO. Log and place a copy inside the AF Form 664.

8.5.4.5.4. If the vendor presents their own form for signature and accepts the SF 44, write the statement "SF 44 Executed" on the vendor's form.

8.5.4.5.5. Turn in two copies of the SF 44 to the operations officer at home station.

8.5.4.5.6. Present the aircraft identaplate for purchases at SITCO Agreement locations. Make certain the invoice includes date of transaction, grade of product, quantity issued/defueled, unit of measure, and signature of Air Force member who accepted product. If vendor also requires completed SF 44 write statement, "AF FORMS EXECUTED on vendor's invoice". Log and place a copy inside the AF Form 664.

8.6. AFTO Form 781H, *Aerospace Vehicle flight Status and Maintenance*. Use AFTO Form 781H to record POL actions for specific airframe IAW applicable directives. The PIC or designated representative completes the form and turns it in to maintenance debrief.

Chapter 9

AIRCREW OPERATIONS IN CHEMICAL, BIOLOGICAL, RADIOLOGICAL, NUCLEAR, AND HIGH-YIELD EXPLOSIVE THREAT ENVIRONMENT

9.1. Overview. The proliferation of Chemical, Biological, Radiological, Nuclear, and High-Yield Explosive (CBRNE) weapons and the means to deliver them present serious security threats to all airborne operations. See AFMAN 11-301, *Aircrew Flight Equipment (AFE) Operations in a Chemical, Biological, Radiological, Nuclear (CBRN) Environment* for general aircrew operational guidance and AFMAN 10-2503, *Operations in a Chemical, Biological, Radiological, Nuclear and High-Yield Explosive (CBRNE) Environment* for general CBRNE discussion.

9.2. CBRNE Passive Defense Measures. Passive defense measures are those activities conducted to negate, contain, and manage the effects of CBRNE attack. Passive defense measures include pre-, trans-, and post-attack actions designed to mitigate the CBRNE threat through contamination avoidance, protection, and contamination control.

9.2.1. In-flight Diversion. When advised that a destination airfield is under CBRNE attack or has been contaminated, the aircrew is required to divert to an uncontaminated airfield, if at all possible. Authority to land at a contaminated airfield is specified in the controlling OPORD.

9.2.2. Survival Launch. If caught on the ground during attack warning, make every reasonable effort to takeoff launch to avoid the attack. Upon proper clearances, aircrew may launch to survive if they have sufficient fuel and unrestricted, safe access to the runway. In practice, this option may only be practical for aircraft that have just landed or aircraft at or near the end of the runway. If launch is not possible, shut down engines and avoid running environmental control systems. Close aircraft doors/hatches/ramps, don Individual Protective Equipment (IPE), and seek personal protective cover on the base. If time does not permit using base facilities, and the attack is a missile attack, remain in the sealed aircraft for a minimum of one-hour after the attack and/or follow host base guidance.

9.2.3. Individual Protective Equipment. The current in-flight protective gear issue for aircrew members is listed in AFI 11-301V2 and AFMAN 11-301.

9.3. Ground Operations.

9.3.1. Establishing the Threat Level. Aircrews should monitor command and control channels to ensure they receive the latest information concerning the destination's alert condition. Diversion of aircraft to alternate "clean" locations may be required, unless operational necessity otherwise dictates. The theater C2 agency (normally through the controlling OPORD) directs aircrew pre-exposure activities.

9.3.2. Crew Rest Procedures. Operational necessity may require the aircrew to rest/fly in a contaminated environment. If the mission is not being staged by another aircrew or pre-flight crews are not available, the aircrew may pre-flight, load, and secure the aircraft prior to entering crew rest. The departing aircrew is required to perform necessary crew preparations and pre-flight briefings. If possible, aircrew transport should be provided in a covered vehicle. Aircrews should avoid pre-flighting the aircraft prior to departure to prevent

contamination spread to them and/or the aircraft. As aircrews proceed to fly, they require assistance from ground support personnel in removing their aircrew protective over cape and over boots prior to entering the aircraft.

9.3.3. Mission Planning. Mental preparation is key for aircrews to face the dangers of CBRN weapons. Thorough flight/mission planning is required. PICs should emphasize ACDE wear, crew coordination, CBRNE hazards and countermeasures, in-flight diversion, plans for on-load/off-load in the event of a ground attack, and plans for the return leg in the event of aircraft contamination. Alternative scenario plans should also be considered in the event mission-oriented protective posture (MOPP) conditions change.

9.3.4. Oxygen Requirements. Operating a contaminated aircraft may increase oxygen requirements. T.O. 1EC-130H-1 contains charts of oxygen consumption if operating at cabin altitudes above 10,000 ft MSL.

9.3.5. Donning Equipment. Aircrew don ACDE based on the alarm condition (See AFTTP 3-4). Use the "buddy dressing" procedures, and refer to AFE-provided donning checklist and T.O. 1EC-130H-1 to ensure proper wear. When wearing the ACDE, Atropine and 2 PAM Chloride auto injectors are required to be kept in the upper left ACDE pocket. If the integrated survival vest/body armor is worn, the Atropine and 2 PAM Chloride auto injectors may be kept in the lower right flight suit pocket. This standardized location enables personnel to locate the medication should an individual be overcome by CWA poisoning. M-9 paper on the flight suit facilitates detection of liquid chemical agents and ACCA processing. M-9 paper should be placed on the flight suit prior to entering the CBRN threat area or when an Alarm Yellow or higher has been declared. When inbound to a CBRN threat area, prior to descent, the PIC is required to ensure crew and passengers don appropriate protective equipment IAW arrival destination's MOPP level and brief aircrew operations in the CBRN threat area. As a minimum, include the following in this briefing: flight deck isolation, oxygen requirements, air conditioning system requirements, IPE requirements, ground operations and MOPP levels. Aircrew members determine if the wear of the integrated survival vest/body armor and LPUs restrict dexterity and mobility to the point that it becomes a safety issue. If the aircrew deems the equipment to create a safety of flight concern, then the items may be pre-positioned (instead of worn) on the aircraft to be readily available to the aircrew.

9.3.6. On-load and Off-load Considerations. Exercise extreme care to prevent spreading contamination to the aircraft interior during ground operations, particularly to the flight deck area. Reduce the number of personnel entering the aircraft. Do not place contaminated engine covers, safety pins and chocks in the aircraft unless sealed in clean plastic bags and properly marked IAW T.O. requirements. Aircrew members entering the aircraft are required to remove plastic over boots and over cape portions of the aircrew ensemble and ensure flight/mobility bags are free of contaminants and placed in clean plastic bags. Prior to entering the aircraft all personnel should implement boot wash/decontamination procedures. Aircrew exiting aircraft into a contaminated environment are required to don plastic over boots and over cape prior to leaving the aircraft.

9.3.7. Communications. Conducting on-/off-loading operations, while wearing the complete ACDE, complicates communications capability. Use the mini-amplifier/speaker or the aircraft public address system and augment with flashlight and hand signals, as required.

9.3.8. 10-Foot Rule. The 10-foot rule was developed in order to provide guidance for protecting personnel using or handling contaminated resources (such as pallets) or working in locations with materials that might retain a residual chemical. The 10-foot rule embodies a safety factor that goes beyond current OSD guidance (which allows removal of IPE whenever detectors no longer detect a chemical agent vapor hazard). There are two phases associated with the 10-foot rule.

9.3.8.1. Initial Phase. During the initial phase, personnel remain in MOPP 4 whenever they stay within 10ft of the contaminated equipment for more than a few seconds. This MOPP level provides personnel the maximum protection from the chemical agent as it transitions from a contact and vapor hazard to a vapor hazard only.

9.3.8.2. Follow-on Phase. In the follow-on phase, personnel use gloves (i.e. leather, rubber, cloth, etc.) when operating on or handling the contaminated equipment. Although a contact hazard is unlikely, relatively small amounts of the agent may still be present. The use of gloves ensures that unnecessary bare skin contact with agent residue is avoided.

9.3.8.3. **Table 9.1** shows "estimated" times associated with initial and follow-on phases of the 10-foot rule. To simplify response processes, commanders may choose to use the worst case scenario as the foundation for all 10-foot rule actions, i.e., 24 hours for the initial phase and all periods of time greater than 24 hours for the follow-on phase.

Table 9.1. "10-Foot Rule" Time Standards.

"10 Foot Rule" Time Standards (See Note)		
Agent	**Initial Phase**	**Follow-on Phase**
HD	0-12 hrs	Greater than 12 hrs
GB	0-12 hrs	Greater than 12 hrs
GD, GF, GA	0-18 hrs	Greater than 12 hrs
VX, R33	0-24 hrs	Greater than 24 hrs
Note: Rule is based on expected contamination on an airbase following a chemical attack. Adjust times if agent concentration is higher than expected.		

9.3.8.4. Additional Threats. Blood agents damage mask filters. All personnel are required to change mask filters at the earliest possible opportunity after a blood agent attack. **EXCEPTION:** Filters installed in aircrew CWU-80/P filter packs can only be removed and replaced by AFE personnel.

9.4. Flight Operations.

9.4.1. Outbound with Actual/Suspected Chemical Contamination. Air washing is a useful in-flight decontamination technique for removing most of the liquid agent from aircraft metal surfaces. However, vapor hazards may remain in areas where the airflow characteristics prevent complete off-gassing (i.e., wheel wells, flap wells, rivet and screw heads, joints, etc.). Flights of at least 2 hours are recommended, and lower altitudes are more effective than higher altitudes. Fly with the aircraft configured (gear and flaps extended) as long as

possible to maximize the airflow in and around as many places as possible. Once airborne with actual/suspected vapor contamination, purge the aircraft for 2 hours using Smoke and Fume Elimination procedures. To ensure no liquid contamination exists, conduct a close inspection of aircrew, passenger ensembles, and cargo using M-8 and M-9 detection paper. Detection paper only detects certain liquid agents and does not detect vapor hazards. Above the shoulder ACDE should only be removed if there is absolutely no vapor hazard. Be advised that residual contamination (below the detectable levels of currently fielded detection equipment) may be harmful in an enclosed space. The aircrew must take every precaution to prevent spreading of liquid contaminants, especially on the flight deck area. The best course is to identify actual/suspected contamination, avoid those areas for the remainder of the flight, and keep the cargo compartments cool. If an aircrew member or passenger has been in contact with liquid contaminants, all personnel aboard the aircraft are required to stay in full ACDE/GCE until processed through their respective contamination control area (CCA). Upon arrival, park the contaminated aircraft in an isolated area and cordoned to protect unsuspecting ground personnel.

9.4.2. Documenting Aircraft Contamination. When it is suspected or known that an aerospace vehicle or piece of equipment has been contaminated with a radiological, biological or chemical contaminant, a Red X is entered and an annotation is made in historical records for the lifecycle of the equipment. Before clearance of a Red X for contamination, consult Bioenvironmental Engineer or higher DoD authority.

9.4.2.1. Limits of Decontamination. Complete decontamination of aircraft and equipment may be difficult, if not impossible, to achieve. Crews must restrict formerly contaminated assets to DoD-controlled airfields and not released from US government control. **(T-3).**

9.4.3. Communicating Down-line Support. Pass aircraft contamination information through command and control channels when inbound. This information is used to determine if a diversion flight is required or decontamination teams are needed. Report the physical condition of any crew/passengers who are showing agent symptoms and whether they are wearing chemical defense ensembles.

Chapter 10

NAVIGATION PROCEDURES

10.1. General. This chapter contains EC-130H navigation procedures and forms. It is to be used in conjunction with procedures and requirements set forth in AFI 11-202V3, AFI 11-217, and FLIP. Since airspace and associated navigational aid equipment capabilities are rapidly evolving, aircrew need to maintain an in depth knowledge of current requirements/policies.

10.1.1. General instructions for completion of AF Form 4116 are provided in this chapter. MAJCOM-approved computer flight plans may be used as a substitute for AF Form 4116.

10.1.1.1. The AF Form 4116 was developed to provide a tool for all possible missions of the C-130. Most missions do not require all sections of the form. In the interest of conservation, navigators are encouraged to print and use only those sections of the AF Form 4116 required for their respective mission.

10.1.1.2. The 55 ECG Form 33, *EC-130H Mission Log*, may be used along with a Navigator Computer Flight Plan (CFP) in lieu of an AF Form 4116. In-flight procedures and calculations on the Form 33 correspond to the same sections on the 4116, and all procedures and regulations in this instruction apply to filling out the Form 33.

10.2. Mission Planning Procedures.

10.2.1. The AC and navigator jointly verify routing, altitude and fuel load prior to departure. Use the chart updating manual or host nation chart updating product to update charts within 10 NM of the approach, departure, emergency, and divert bases for airfields without a DoD or MAJCOM-approved approach. FalconView or JMPS generated charts with updated ECHUM overlays fulfill this requirement. Navigators provide a copy of the flight plan to the copilot to verify routing and aid in position reporting.

10.2.2. When practical, plan the most direct routing possible or utilize wind optimized CFP routing to enhance fuel conservation.

10.2.3. A MAJCOM-approved CFP, AF Form 70, or AF Form 4116 is required for all flights.

10.2.4. A fuel plan is required for all flights.

10.3. Flight Planning.

10.3.1. Most entries on the AF Form 4116 and AF Form 33 are self-explanatory or explained below.

10.3.1.1. A/B - Ahead or Behind. Compare ETA based on the original flight plan to actual time of arrival (ATA) at each waypoint. Record the difference in this column. If the flight plan changes in-flight, non-applicable ATA spaces may be left blank.

10.3.2. When an alternate destination is required**,** use a flight planning line to indicate, at a minimum, the name of the alternate and the time, course, and distance to the alternate.

10.3.3. Aircrews may use PFPS or any other MAJCOM-approved flight planning program.

10.3.4. Fuel Planning. Accomplish fuel planning IAW T.O. 1C-130H-1-1 and **Chapter 14** of this volume. CFP enroute fuel may be used for fuel analysis in lieu of enroute fuel derived from T.O. 1C-130H-1-1. AF Form 4116 fuel analysis blocks may be reproduced on the computer flight plan printed format.

10.4. Flight Charts.

10.4.1. The navigator flight follows all missions using a suitable plotting chart (JNC, JNCA, GNC, or ONC). Navigators use the FalconView moving map on Digital Mapping Interface System (DMIS) or laptop computer for situational awareness only; these tools do not replace printed charts.

10.4.2. Show the following items on the chart:

10.4.2.1. Navigator's name and coordinated universal date. Annotate chart number and edition on a stripped chart.

10.4.2.2. Annotate flight plan course line and waypoints (if not pre-labeled) with waypoint number, identifier, radial and DME, or latitude and longitude.

10.4.2.3. Annotate suitable emergency airfields. Optimum emergency airfields are located within 50 NM of the intended route. Refer to the GDSS/GDSS2 (when available)/ASRR for suitability.

10.4.2.4. Annotate portions of Air Defense Identification Zones (ADIZ)/FIR boundaries (if not depicted accurately) pertinent to the route.

10.4.2.5. Annotate the approximate location of the ETP.

10.4.2.6. Planned air refueling track and exit point.

10.4.3. Plot each fix or position along with the time at that position. Use standard symbols from AFPAM 11-216, *Air Navigation*.

10.4.4. In the interest of conservation, flight charts for high level missions may be reused whenever such reuse would not affect plotting accuracy of fixes or position determination.

10.4.5. FalconView or JMPS produced Lambert-Conformal charts may be used.

10.5. In-Flight Procedures.

10.5.1. The navigator monitors the primary command radio unless directed to do otherwise. The navigator records ATC clearances and monitors the read back. This normally includes all ATC instructions involving departure, enroute, and approach procedures. This procedure is not applicable when ATC instructions require immediate execution by the pilot, or when such action interferes with the timely performance of other time-sensitive navigator duties.

10.5.2. On approach or departure, the navigator monitors the aircraft position using an appropriately scaled chart (ONC, TPC, JOG, etc). In IMC or at night the navigator uses all available navigational aids (including aircraft radar) to keep the aircraft clear of all obstructions.

10.6. Laptop/Integrated Computers. Computers running FalconView or JMPS moving map software and connected to a GPS provide invaluable situational awareness. Laptop computers and handheld GPS require approval for unrestricted use in flight IAW AFI 11-202V3.

10.6.1. Navigators will use a USAF approved computer on all combat and combat support missions. **(T-3).** Annotate non-USAF approved computers in unit supplements, as applicable.

10.6.1.1. When computers are used, GPS units should be connected and the Moving Map Display should be operating.

10.6.2. Do not use computers with GPS moving map displays as the primary source of navigation.

10.7. Flight Records. Record flight progress for Category I routes of 3 hours or longer. Record enough detail to reconstruct the mission. Units may publish local standards for log procedures in the unit supplement. See **Figure 10.2** through **Figure 10.5** for examples of a completed AF Form 4116.

10.7.1. Maintain a flight log on Category I routes or route segments of 3 hours or longer. Time between fix plots will not exceed 1 hour. **(T-3). NOTE:** Malfunctions or loss of navigational capability which degrade course centerline accuracy, are required to be reported immediately to ATC.

10.7.2. This form consists of planning and in-flight progress data. Complete it in sufficient detail to fully evaluate or reconstruct the flight. Page 1 of the form should be completed when a CFP is not available on Category I routes. Use page 4, the in-flight section, to record present positions and spot readings.

10.7.2.1. As soon as practical after level-off or coast-out, whichever occurs first, navigators are required to verify aircraft position by either navigation aid fix or radar fix.

10.7.2.1.1. Record the fix in AF Form 4116 Section VII.

10.7.2.1.2. At the time of the fix record the primary navigation solution in AF Form 4116 Section V.

10.7.2.1.3. At the time of the fix record, as a minimum, GMT, present position, true heading, spot wind, TAS, altitude and ETA to the next waypoint in AF Form 4116 Section VIII.

10.7.2.2. After coast out, record current position every 30 minutes on AF Form 4116, Page 3 in Section V, *Fix/Computer Position*.

10.7.2.2.1. Record the present position for the navigation solution.

10.7.2.3. Plot the current position every hour or within 10 minutes of crossing an oceanic reporting point, whichever occurs first.

10.7.2.3.1. Record the GMT, current position of the primary navigation system, true heading, spot w/v, true air speed, altitude, and ETA to the next point.

10.7.2.4. Between recorded positions, record spot readings at regular intervals to allow for calculating a DR in the event of a navigation system failure.

10.7.2.4.1. Spot readings include, as a minimum, time, heading, drift angle, ground speed, wind vector, and true airspeed.

10.7.2.5. As soon as practical, prior to coast-in, the navigator verifies aircraft position by either navigation aid fix or radar fix.

10.7.2.5.1. Record the fix in AF Form 4116 Section VII.

10.7.2.5.2. At the time of the fix record the primary navigation solution for all other navigation solutions in AF Form 4116 Section V.

10.7.2.5.3. At the time of the fix record, as a minimum, GMT, present position, true heading, spot wind, TAS, altitude and ETA to the next waypoint in AF Form 4116 Section VIII.

10.7.2.6. In the event of a navigation system failure (INU or GPS), implement full log procedures. Beginning at the last plotted position, compute a Dead Reckoning (DR) up to the present position. Plot a fix at a minimum of once per hour. Plot a DR associated with the fix on the chart prior to plotting the position. If the navigation system failure is resolved, the navigator may resume log procedures as outlined in **para 10.8.1.**

10.7.2.7. At the time of the fix record the GMT, current position, true heading, spot w/v, true air speed, altitude and ETA to the next point.

10.7.2.8. As soon as practical prior to coast-in, navigators verify aircraft position by either navigation aid fix or radar fix.

10.8. Deviation Check Procedures. This operation is required only on legacy avionics aircraft.

10.8.1. Heading deviation checks are required on Category I routes or route segments of 3 hours or longer, compute heading deviation for each compass system with one hour of reaching initial cruise altitude. Record deviation for all compass systems.

10.8.2. Accomplish within one hour of initial cruise altitude. Heading checks should be computed in Section IV of AF Form 4116, page 3 or section IV on 55 ECG Form 33. Record and compare the CANS true heading with all compass systems. The AF Form 4116 deviation checks format solves for "deviation" (DEV) for all heading reference systems. **NOTE:** Compass deviation is not necessarily constant over time or after significant course changes. Navigators should reconfirm deviation on CAT I legs every 3 hours or after planned course changes of greater than 30 degrees.

10.9. True Airspeed (TAS) Check Procedures. This operation is required only on legacy avionics aircraft.

10.9.1. Compute a TAS check on all Category I route of 3 hours or longer.

10.9.2. Accomplish within one hour of initial cruise altitude. Record time of the check and altitude from the pressure altimeter. If using free air temperature gauge, record indicated outside air temperature (IOAT). Use the heat of compression table on AF Form 4116 to convert IOAT to true outside air temperature (TOAT). If using CANS temperature, record TOAT.

10.9.3. Normally, navigators on EC-130H models can use +1 knots for indicated airspeed (IAS) to calibrated airspeed (CAS) correction and -2 knots for CAS to equivalent airspeed (EAS) correction for TAS below 270.

10.9.4. ITAS – Indicated TAS. Record the TAS reading from the TAS meter and the CANS. Record the difference between computed TAS and this reading in the CORR block.

10.10. Equal Time Point Computations. ETP Computations are required on Category I routes or Category I portions of routes when the total time between the last suitable airfield (LSAF) and the first suitable airfield (FSAF) is 3 hours or more (see **Figure 10.1**).

10.10.1. Use the worksheet on the AF Form 4116, page 2, to calculate the time to ETP.

10.10.2. Re-compute ETP in-flight when the actual time of arrival at a reporting point is 15 minutes or more ahead or behind the planned time if the change was caused by erroneous wind information.

10.11. In-flight Fuel Management Procedures.

10.11.1. Fuel computations are required for Category I route segments of 3 hours or longer. Record the fuel readings listed below within one hour of level off time and at regular time intervals, not to exceed 1 hour and 30 minutes. Use the worksheet on page 3 of the AF Form 4116 to complete in-flight fuel management computations. For flights not requiring fuel computations, annotate fuel status on the flight plan or CFP used for flight following.

10.11.1.1. ETA DEST. Best known arrival time at Initial Approach Fix.

10.11.1.2. TIME. Time of the fuel reading.

10.11.1.3. TERMINAL FUEL FLOW.

10.11.1.4. CURRENT FUEL FLOW.

10.11.1.5. AVG FUEL FLOW. Calculate by adding terminal fuel flow to current fuel flow and dividing the sum by 2.

10.11.1.6. FUEL REM. Fuel quantity at time of calculation. In the interest of safety, use the lower of the calculated or gauge fuels.

10.11.1.7. O/H FUEL. Required overhead fuel (item 13 of the fuel plan).

10.11.1.8. DIFF. Subtract O/H Fuel from FUEL REM.

10.11.1.9. FUEL ETE. Calculate using DIFF divided by AVG FUEL FLOW.

10.11.1.10. ETE DEST. Subtract TIME from ETA DEST.

10.11.1.11. EXT TIME. Subtract ETE DEST from FUEL ETE. Report this value to the pilot. If this is a negative value, check the computation and values for errors. If they are correct, evaluate your destination options.

10.11.2. Use the following formulas to accomplish in-flight fuel management:

10.11.2.1. [(Terminal fuel flow + Present fuel flow)] / 2 = Average Fuel Flow

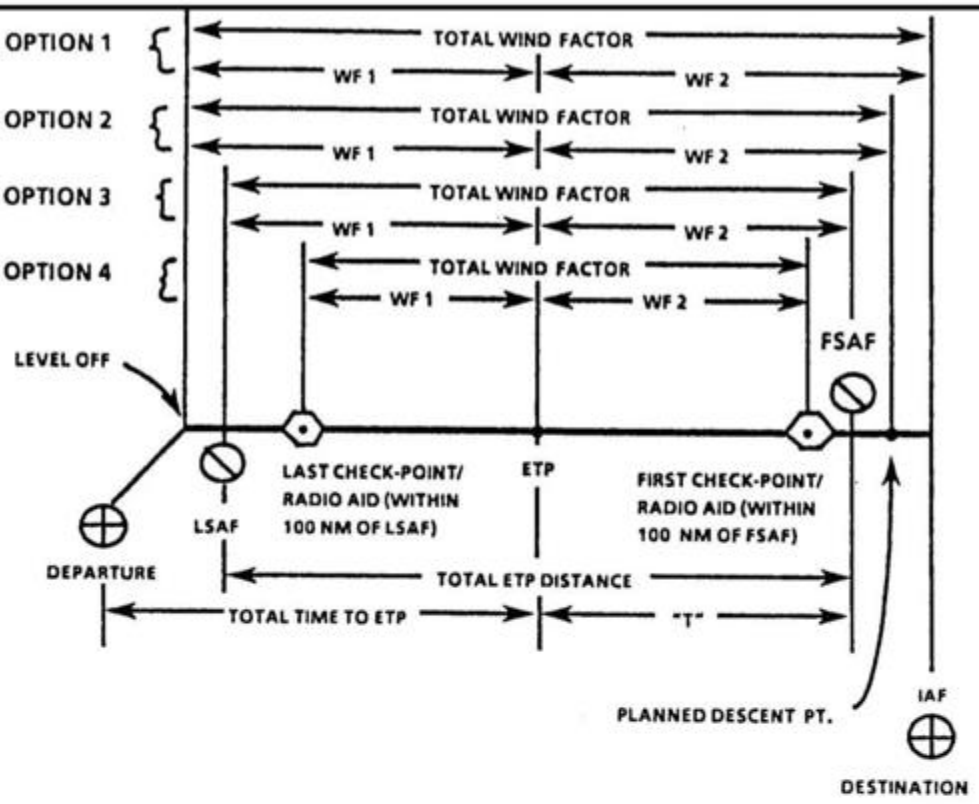
10.11.2.2. Present fuel - Overhead fuel = Usable Fuel

10.11.2.3. Usable fuel / Average fuel burn rate = Fuel ETE

10.11.2.4. Fuel ETE - ETE to destination = Extra Time

10.11.3. The navigator may terminate these procedures one hour from destination, when the Category I route segment is completed, or at the discretion of the AC.

Figure 10.1. ETP Computations.



1. WIND FACTOR COMPUTATION (USE OPTION 1, 2, 3, OR 4):

   A. TOTAL WIND FACTOR:

   $$\frac{\text{TOTAL WIND FACTOR DISTANCE}}{\text{TOTAL WIND FACTOR TIME}} = \text{AVERAGE GS}$$

   AVERAGE GS - PLANNED AVERAGE TAS = TOTAL WIND FACTOR

   B. FIRST HALF WIND FACTOR (WF 1):

   $$\frac{\text{DISTANCE FROM BEGIN PT. TO APPROX. MID-POINT}}{\text{TIME FROM BEGIN PT. TO APPROX. MID-POINT}} = \text{AVERAGE GS}$$

   AVERAGE GS - PLANNED AVERAGE TAS = WF 1

   C. SECOND HALF WIND FACTOR (WF 2):

   $$\frac{\text{DISTANCE FROM APPROX. MID-POINT TO END PT.}}{\text{TIME FROM APPROX. MID-POINT TO END PT.}} = \text{AVERAGE GS}$$

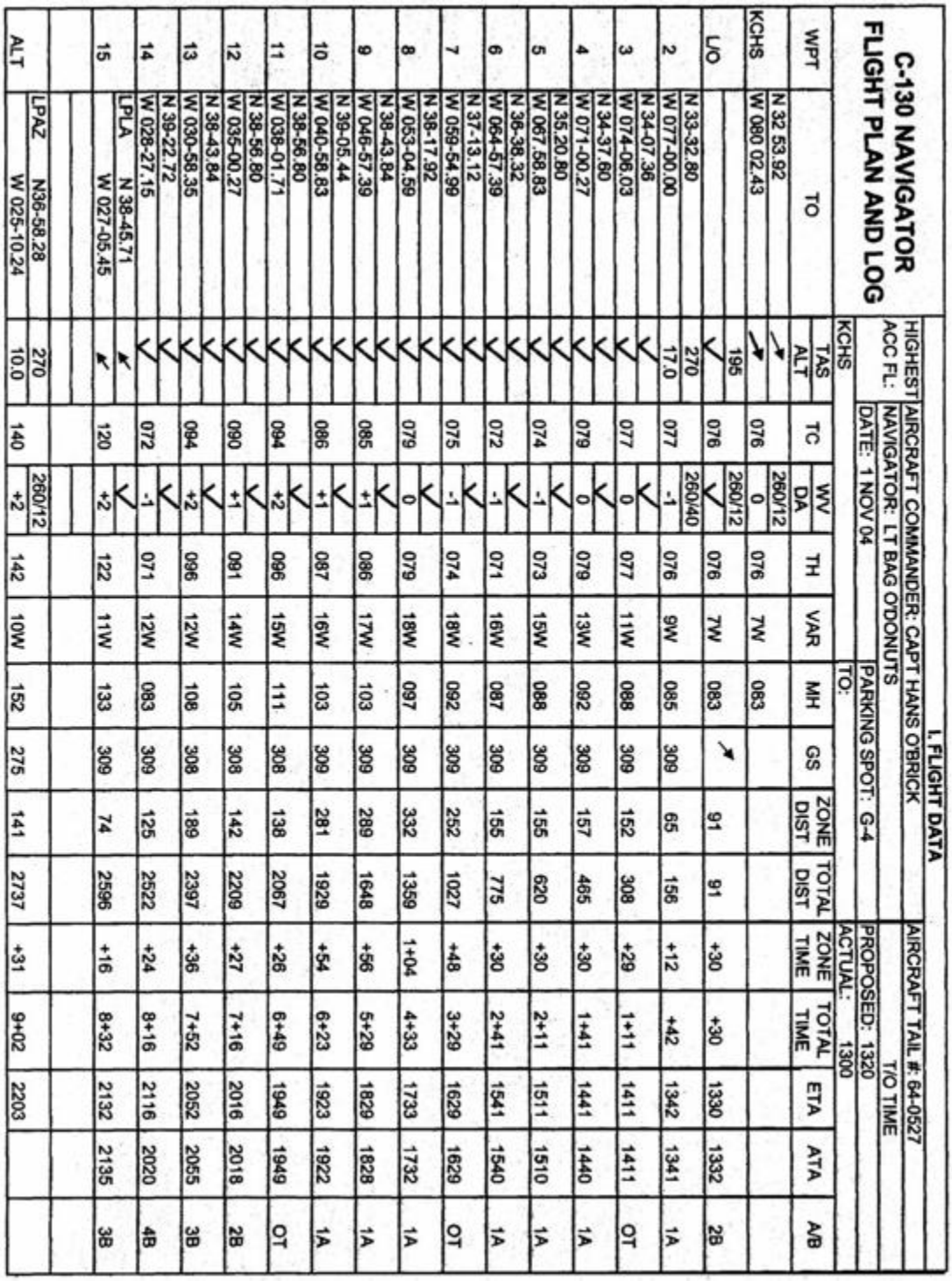
   AVERAGE GS - PLANNED AVERAGE TAS = WF 2

2. ETP COMPUTATION:

   A. $$\frac{\text{TOTAL ETP DISTANCE (LSAF TO FSAF)}}{\text{(WF 2 - WF 1) + 2(PLANNED AVG TAS)}} = \frac{\text{"T" (TIME IN MIN FROM ETP TO FSAF)}}{60}$$

   B. TIME (FROM DEPARTURE) TO ETP = TOTAL TIME TO FSAF - "T"

Figure 10.2. AF Form 4116 Example (1 of 4).



C-130 NAVIGATOR FLIGHT PLAN AND LOG

I. FLIGHT DATA

HIGHEST ACC FL: | AIRCRAFT COMMANDER: CAPT HANS O'BRICK | AIRCRAFT TAIL #: 64-0527

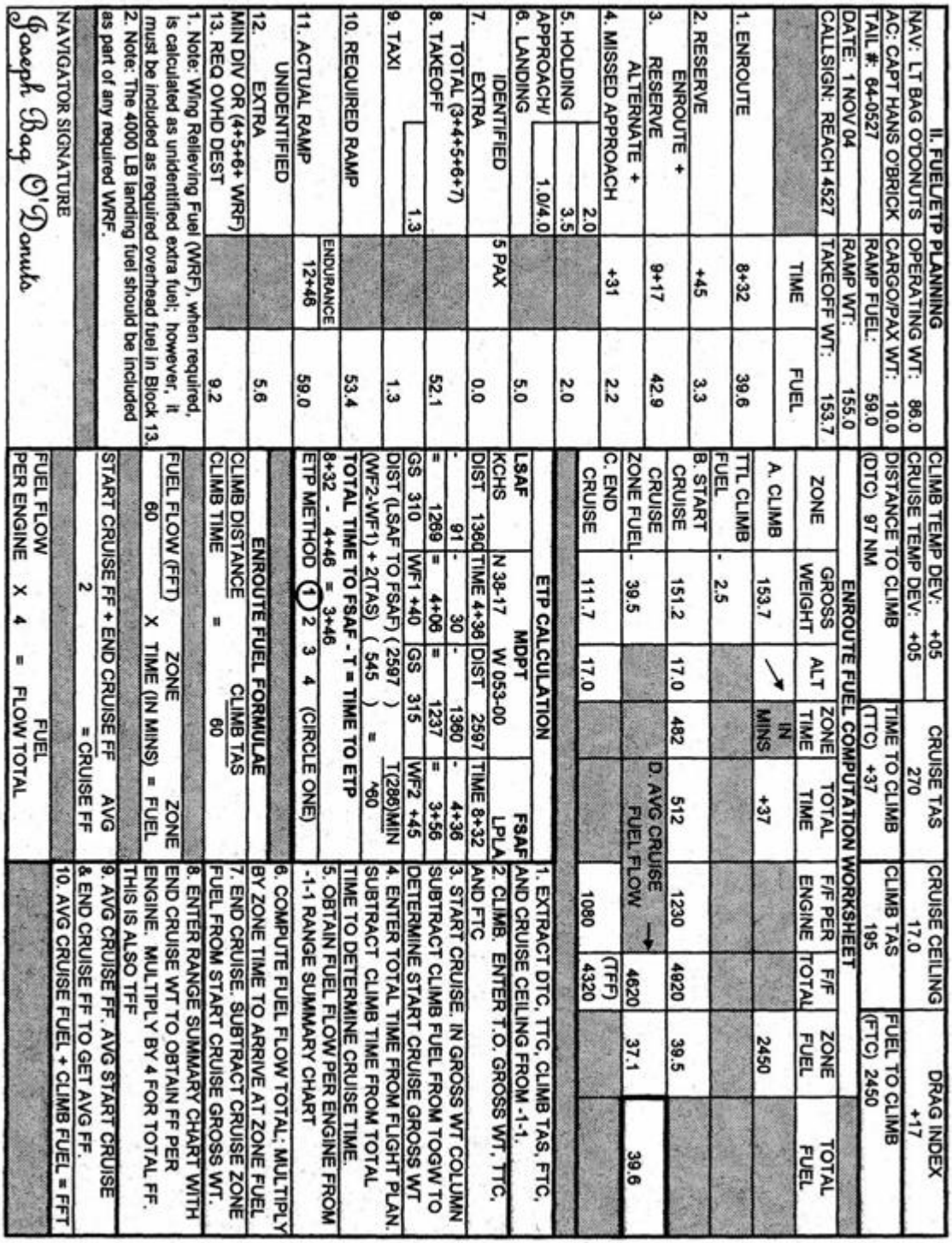
NAVIGATOR: LT BAG O'DONUTS | T/O TIME

DATE: 1 NOV 04 | PARKING SPOT: G-4 | PROPOSED: 1320

TO: | ACTUAL: 1300

WPT	TO	TAS / ALT	TC	WV / DA	TH	VAR	MH	GS	ZONE DIST	TOTAL DIST	ZONE TIME	TOTAL TIME	ETA	ATA	A/B
	N 32 53.92	↗		260/12											
KCHS	W 080 02.43	↗	076	0	076	7W	083								
		195		260/12											
L/O		✓	076	✓	076	7W	083	↗	91	91	+30	+30	1330	1332	2B
	N 33-32.80	270		260/40											
2	W 077-00.00	17.0	077	-1	076	9W	085	309	65	156	+12	+42	1342	1341	1A
	N 34-07.36	✓		✓											
3	W 074-06.03	✓	077	0	077	11W	088	309	152	308	+29	1+11	1411	1411	OT
	N 34-37.60	✓		✓											
4	W 071-00.27	✓	079	0	079	13W	092	309	157	465	+30	1+41	1441	1440	1A
	N 35.20.80	✓		✓											
5	W 067.58.83	✓	074	-1	073	15W	088	309	155	620	+30	2+11	1511	1510	1A
	N 36-38.32	✓		✓											
6	W 064-57.39	✓	072	-1	071	16W	087	309	155	775	+30	2+41	1541	1540	1A
	N 37-13.12	✓		✓											
7	W 059-54.99	✓	075	-1	074	18W	092	309	252	1027	+48	3+29	1629	1629	OT
	N 38-17.92	✓		✓											
8	W 053-04.59	✓	079	0	079	18W	097	309	332	1359	1+04	4+33	1733	1732	1A
	N 38-43.84	✓		✓											
9	W 046-57.39	✓	085	+1	086	17W	103	309	289	1648	+56	5+29	1829	1828	1A
	N 39-05.44	✓		✓											
10	W 040-58.83	✓	086	+1	087	16W	103	309	281	1929	+54	6+23	1923	1922	1A
	N 38-56.80	✓		✓											
11	W 038-01.71	✓	094	+2	096	15W	111	308	138	2067	+26	6+49	1949	1949	OT
	N 38-56.80	✓		✓											
12	W 035-00.27	✓	090	+1	091	14W	105	308	142	2209	+27	7+16	2016	2018	2B
	N 38-43.84	✓		✓											
13	W 030-58.35	✓	094	+2	096	12W	108	308	189	2397	+36	7+52	2052	2055	3B
	N 39-22.72	✓		✓											
14	W 028-27.15	✓	072	-1	071	12W	083	309	125	2522	+24	8+16	2116	2020	4B
	LPLA N 38-45.71	↙		✓											
15	W 027-05.45	↙	120	+2	122	11W	133	309	74	2596	+16	8+32	2132	2135	3B
				260/12											
ALT	LPAZ N36-58.28	270	140	+2	142	10W	152	275	141	2737	+31	9+02	2203		
	W 025-10.24	10.0													

Figure 10.3. AF Form 4116 Example (2 of 4).



II. FUEL/ETP PLANNING

NAV: LT BAG O'DONUTS | OPERATING WT: 86.0
AC: CAPT HANS O'BRICK | CARGO/PAX WT: 10.0
TAIL #: 64-0527 | RAMP FUEL: 59.0
DATE: 1 NOV 04 | RAMP WT: 155.0
CALLSIGN: REACH 4527 | TAKEOFF WT: 153.7

	TIME	FUEL
1. ENROUTE	8+32	39.6
2. RESERVE ENROUTE +	+45	3.3
3. RESERVE ALTERNATE +	9+17	42.9
4. MISSED APPROACH	+31	2.2
5. HOLDING	2.0 / 3.5	2.0
APPROACH/ 6. LANDING	1.0/4.0	5.0
7. IDENTIFIED EXTRA	5 PAX	0.0
TOTAL (3+4+5+6+7)		52.1
8. TAKEOFF	1.3	
9. TAXI		1.3
10. REQUIRED RAMP	ENDURANCE 12+48	53.4
11. ACTUAL RAMP		59.0
UNIDENTIFIED 12. EXTRA		5.6
MIN DIV OR (4+5+6+ WRF) 13. REQ OVHD DEST		9.2

1. Note: Wing Relieving Fuel (WRF), when required, is calculated as unidentified extra fuel; however, it must be included as required overhead fuel in Block 13.
2. Note: The 4000 LB landing fuel should be included as part of any required WRF.

NAVIGATOR SIGNATURE: Joseph Bag O'Donuts

CLIMB TEMP DEV: +05
CRUISE TEMP DEV: +05
DISTANCE TO CLIMB (DTC) 97 NM
CRUISE TAS 270
TIME TO CLIMB (TTC) +37
CRUISE CEILING 17.0
CLIMB TAS 195
DRAG INDEX +17
FUEL TO CLIMB (FTC) 2450

ENROUTE FUEL COMPUTATION WORKSHEET

	ZONE	GROSS WEIGHT	ALT	ZONE TIME IN MINS	TOTAL TIME	F/F PER ENGINE	F/F TOTAL (TFF)	ZONE FUEL	TOTAL FUEL
TTL CLIMB FUEL	A. CLIMB	153.7	→		+37			2450	
B. START CRUISE ZONE FUEL	- 2.5								
C. END CRUISE	CRUISE	151.2	17.0	482	512	1230	4020	39.5	
		39.5			D. AVG CRUISE FUEL FLOW →		4620	37.1	39.6
		111.7	17.0			1080	4320		

ETP CALCULATION

		MDPT	FSAF
LSAF KCHS	N 38-17	W 053-00	LPLA
DIST 1360	TIME 4+38	DIST 2597	TIME 8+32
- 91	- 30	- 1360	- 4+36
= 1269	= 4+08	= 1237	= 3+56
GS 310	WF1 +40	GS 315	WF2 +45

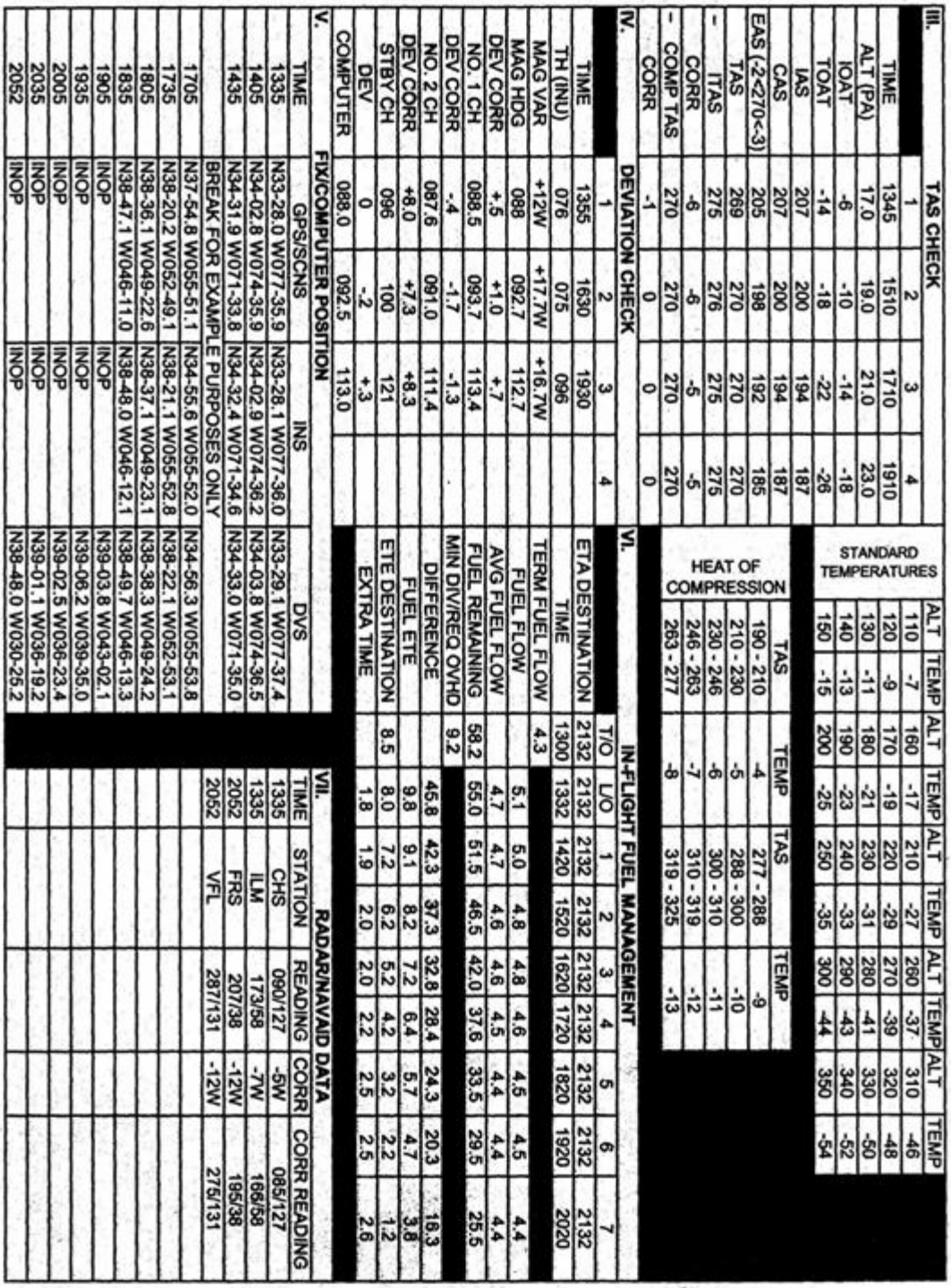
DIST (LSAF TO FSAF) (2597) = T(286)MIN
(WF2-WF1) + 2(TAS) (545) = ^60
TOTAL TIME TO FSAF - T = TIME TO ETP
8+32 - 4+46 = 3+46
ETP METHOD (1) 2 3 4 (CIRCLE ONE)

1. EXTRACT DTC, TTC, CLIMB TAS, FTC, AND CRUISE CEILING FROM -1-1.
2. CLIMB. ENTER T.O. GROSS WT, TTC, AND FTC
3. START CRUISE. IN GROSS WT COLUMN SUBTRACT CLIMB FUEL FROM TOGW TO DETERMINE START CRUISE GROSS WT
4. ENTER TOTAL TIME FROM FLIGHT PLAN. SUBTRACT CLIMB TIME FROM TOTAL TIME TO DETERMINE CRUISE TIME.
5. OBTAIN FUEL FLOW PER ENGINE FROM -1-1 RANGE SUMMARY CHART
6. COMPUTE FUEL FLOW TOTAL; MULTIPLY BY ZONE TIME TO ARRIVE AT ZONE FUEL
7. END CRUISE. SUBTRACT CRUISE ZONE FUEL FROM START CRUISE GROSS WT.
8. ENTER RANGE SUMMARY CHART WITH END CRUISE WT TO OBTAIN FF PER ENGINE. MULTIPLY BY 4 FOR TOTAL FF. THIS IS ALSO TFF
9. AVG CRUISE FF. AVG START CRUISE & END CRUISE FF TO GET AVG FF.
10. AVG CRUISE FUEL + CLIMB FUEL = FFT

ENROUTE FUEL FORMULAE

CLIMB DISTANCE / CLIMB TAS = CLIMB TIME
FUEL FLOW (FFT) / 60 X TIME (IN MINS) = ZONE FUEL
START CRUISE FF + END CRUISE FF / 2 = AVG CRUISE FF
FUEL FLOW PER ENGINE X 4 = TOTAL FUEL FLOW

Figure 10.4. AF Form 4116 Example (3 of 4).



III. TAS CHECK

	1	2	3	4
TIME	1345	1510	1710	1910
ALT (PA)	17.0	19.0	21.0	23.0
IOAT	-6	-10	-14	-18
TOAT	-14	-18	-22	-26
IAS	207	200	194	187
CAS	207	200	194	187
EAS (-2<270<3)	205	198	192	185
TAS	269	270	270	270
- ITAS	275	276	275	275
CORR	-6	-6	-5	-5
= COMP TAS	270	270	270	270
CORR	-1	0	0	0

STANDARD TEMPERATURES

ALT	TEMP
110	-7
120	-9
130	-11
140	-13
150	-15

HEAT OF COMPRESSION

TAS	TEMP
190 - 210	-4
210 - 230	-5
230 - 246	-6
246 - 263	-7
263 - 277	-8

ALT	TEMP	ALT	TEMP	ALT	TEMP	ALT	TEMP	ALT	TEMP
160	-17	210	-27	260	-37	310	-46		
170	-19	220	-29	270	-39	320	-48		
180	-21	230	-31	280	-41	330	-50		
190	-23	240	-33	290	-43	340	-52		
200	-25	250	-35	300	-44	350	-54		

TAS / TEMP

TAS	TEMP
277 - 288	-9
288 - 300	-10
300 - 310	-11
310 - 319	-12
319 - 325	-13

IV. DEVIATION CHECK

	1	2	3	4
TIME	1355	1630	1930	
TH (INU)	076	075	096	
MAG VAR	+12W	+17.7W	+16.7W	
MAG HDG	088	092.7	112.7	
DEV CORR	+.5	+1.0	+.7	
NO. 1 CH	088.5	093.7	113.4	
DEV CORR	-.4	-1.7	-1.3	
NO. 2 CH	087.6	091.0	111.4	
DEV CORR	+8.0	+7.3	+8.3	
STBY CH	096	100	121	
DEV	0	-2	+3	
COMPUTER	088.0	092.5	113.0	

VI. IN-FLIGHT FUEL MANAGEMENT

	T/O	L/O	1	2	3	4	5	6	7
ETA DESTINATION	2132	2132	2132	2132	2132	2132	2132	2132	2132
TIME	1300	1332	1420	1520	1620	1720	1820	1920	2020
TERM FUEL FLOW	4.3								
FUEL FLOW		5.1	5.0	4.8	4.8	4.6	4.5	4.5	4.4
AVG FUEL FLOW		4.7	4.7	4.6	4.6	4.5	4.4	4.4	4.4
FUEL REMAINING	58.2	55.0	51.5	46.5	42.0	37.6	33.5	29.5	25.5
MIN DIV/REQ OV/HD	9.2								
DIFFERENCE		45.8	42.3	37.3	32.8	28.4	24.3	20.3	16.3
FUEL ETE		9.8	9.1	8.2	7.2	6.4	5.7	4.7	3.8
ETE DESTINATION	8.5	8.0	7.2	6.2	5.2	4.2	3.2	2.2	1.2
EXTRA TIME		1.8	1.9	2.0	2.0	2.2	2.5	2.5	2.6

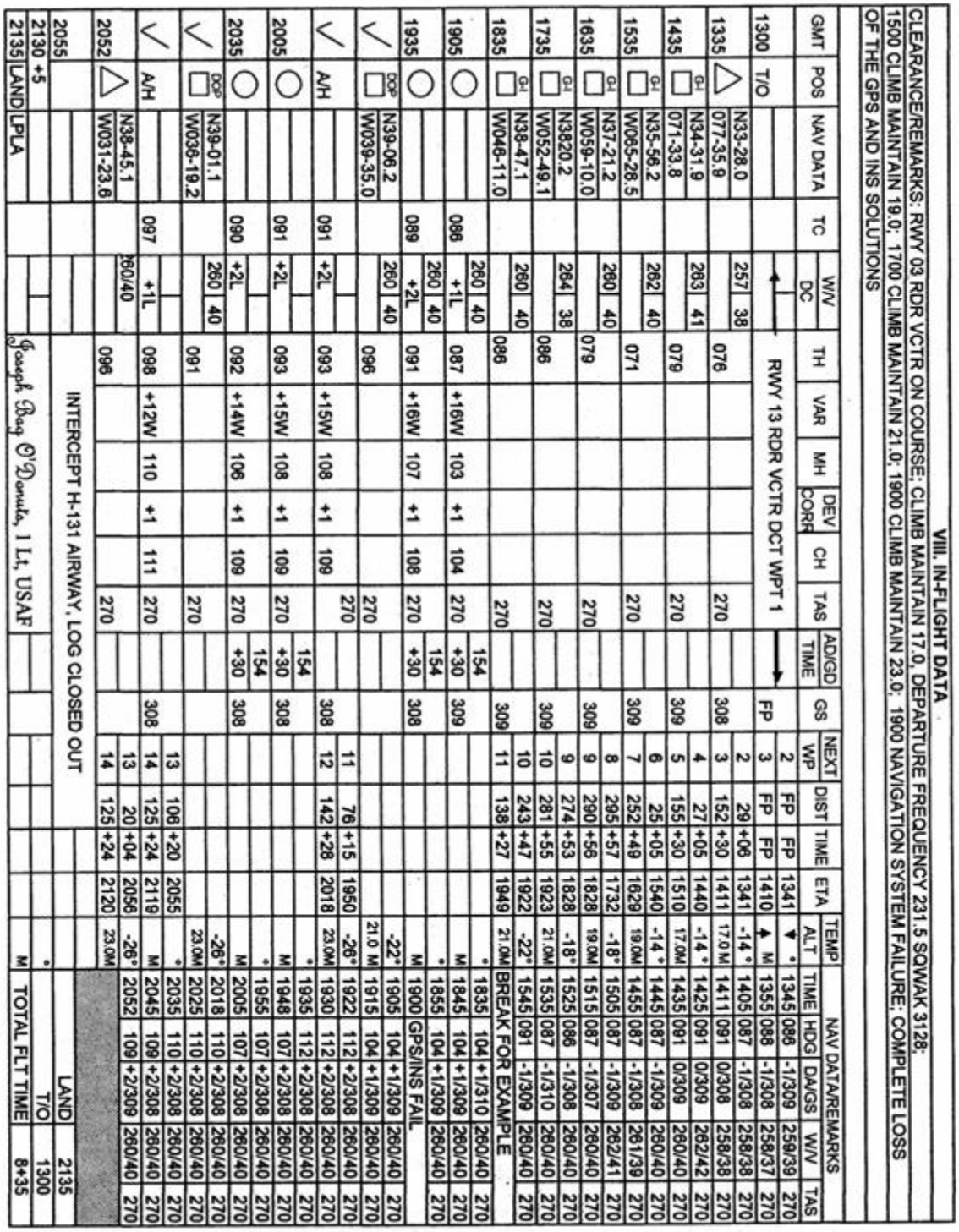
V. FIX/COMPUTER POSITION

TIME	GPS/SCNS	INS	DVS
1335	N33-28.0 W077-35.9	N33-28.1 W077-36.0	N33-29.1 W077-37.4
1405	N34-02.8 W074-35.9	N34-02.9 W074-36.2	N34-03.8 W074-36.5
1435	N34-31.9 W071-33.8	N34-32.4 W071-34.6	N34-33.0 W071-35.0
	BREAK FOR EXAMPLE PURPOSES ONLY		
1705	N37-54.8 W055-51.1	N34-55.6 W055-52.0	N34-56.3 W055-53.8
1735	N38-20.2 W052-49.1	N38-21.1 W055-52.8	N38-22.1 W052-53.1
1805	N38-36.1 W049-22.6	N38-37.1 W049-23.1	N38-38.3 W049-24.2
1835	N38-47.1 W046-11.0	N38-48.0 W046-12.1	N38-49.7 W046-13.3
1905	INOP	INOP	N39-03.8 W043-02.1
1935	INOP	INOP	N39-06.2 W039-35.0
2005	INOP	INOP	N39-02.5 W036-23.4
2035	INOP	INOP	N39-01.1 W036-19.2
2052	INOP	INOP	N38-48.0 W030-25.2

VII. RADAR/NAVAID DATA

TIME	STATION	READING	CORR	CORR READING
1335	CHS	090/127	-5W	085/127
1335	ILM	173/58	-7W	166/58
2052	FRS	207/38	-12W	195/38
2052	VFL	287/131	-12W	275/131

Figure 10.5. AF Form 4116 Example (4 of 4).



VIII. IN-FLIGHT DATA

CLEARANCE/REMARKS: RWY 03 RDR VCTR ON COURSE; CLIMB MAINTAIN 17.0, DEPARTURE FREQUENCY 231.5 SQWAK 3128;
1500 CLIMB MAINTAIN 19.0; 1700 CLIMB MAINTAIN 21.0; 1900 CLIMB MAINTAIN 23.0; 1900 NAVIGATION SYSTEM FAILURE; COMPLETE LOSS OF THE GPS AND INS SOLUTIONS

GMT	POS	NAV DATA	TC	W/V DC	TH	VAR	MH	DEV CORR	CH	TAS	AD/GD TIME	GS	NEXT WP	DIST	TIME	ETA	TEMP ALT	NAV DATA/REMARKS TIME	HDG	DA/GS	W/V	TAS
1300	T/O			RWY 13 RDR VCTR DCT WPT 1								FP	2	FP	FP	1341	▼ °	1345	086	-1/309	259/39	270
													3	FP	FP	1410	▲ M	1355	088	-1/308	258/37	270
1335	△	N33-28.0	257	38									2	29	+06	1341	-14 °	1405	087	-1/308	258/38	270
		077-35.9			076				270			308	3	152	+30	1411	17.0 M	1411	091	0/308	258/38	270
1435	GI □	N34-31.9	263	41									4	27	+05	1440	-14 °	1425	091	0/309	262/42	270
		071-33.8			079				270			309	5	155	+30	1510	17.0M	1435	091	0/309	260/40	270
1535	GI □	N35-56.2	262	40									6	25	+05	1540	-14 °	1445	087	-1/309	260/40	270
		W065-28.5			071				270			309	7	252	+49	1629	19.0M	1455	087	-1/308	261/39	270
1635	GI □	N37-21.2	260	40									8	295	+57	1732	-18°	1505	087	-1/309	262/41	270
		W059-10.0			079				270			309	9	290	+56	1828	19.0M	1515	087	-1/307	260/40	270
1735	GI □	N3820.2	264	38									9	274	+53	1828	-18°	1525	086	-1/308	260/40	270
		W052-49.1			086				270			309	10	281	+55	1923	21.0M	1535	087	-1/310	260/40	270
1835	GI □	N38-47.1	260	40									10	243	+47	1922	-22°	1545	091	-1/309	260/40	270
		W048-11.0			086				270			309	11	138	+27	1949	21.0M	BREAK FOR EXAMPLE				
1905	○		260	40													°	1835	104	+1/310	260/40	270
			086	+1L	087	+16W	103	+1	270	154	+30	309					M	1845	104	+1/309	260/40	270
			260	40							154						°	1855	104	+1/309	260/40	270
1935	○		089	+2L	091	+16W	107	+1	108	270	+30	308					M	1900	GPS/INS FAIL			
		N39-06.2	260	40													-22°	1905	104	+1/309	260/40	270
✓	DCP □	W039-35.0			096				270								21.0 M	1915	104	+1/309	260/40	270
									270				11	76	+15	1950	-26°	1922	112	+2/308	260/40	270
✓	A/H		091	+2L	093	+15W	108	+1	109			308	12	142	+28	2018	23.0M	1930	112	+2/308	260/40	270
										154							°	1935	112	+2/308	260/40	270
2005	○		091	+2L	093	+15W	108	+1	109	270	+30	308					M	1948	107	+2/308	260/40	270
											154						°	1955	107	+2/308	260/40	270
2035	○		090	+2L	092	+14W	106	+1	109	270	+30	308					M	2005	107	+2/308	260/40	270
																	-26°	2018	110	+2/308	260/40	270
✓	DCP □	N39-01.1	260	40													23.0M	2025	110	+2/308	260/40	270
		W036-19.2			091				270								°	2035	110	+2/308	260/40	270
✓	A/H												13	106	+20	2055	M	2045	109	+2/308	260/40	270
			097	+1L	098	+12W	110	+1	111	270		308	14	125	+24	2119	-26°	2052	109	+2/309	260/40	270
2052	△	N38-45.1	260/40								308		13	20	+04	2056	23.0M					
		W031-23.8			096				270				14	125	+24	2120						
2055					INTERCEPT H-131 AIRWAY, LOG CLOSED OUT															LAND		2135
2130	+5																°			T/O		1300
2135	LAND	LPLA			Joseph Boy O'Donnell, 1 Lt, USAF												M	TOTAL FLT TIME				8+35

Chapter 11

FLIGHT ENGINEER (FE) PROCEDURES AND FORMS

Section 11A—Normal Procedures

11.1. General. In addition to duties in the flight manual and other applicable technical orders, Flight Engineers are required to comply with the procedures and duties in this AFMAN. With the exception of hostile environment repair, these items need not be briefed and are performed as normal procedures. The AC may assign other duties to the flight engineer as necessary.

11.2. Responsibilities. The flight engineer is responsible to the AC for all inspections and procedures required by all applicable technical orders and DoD and Air Force instructions.

11.3. Authority to Clear Red X Symbols. Flight engineers are normally not authorized to clear a Red X. When the aircraft is on a Red X and qualified maintenance personnel are not available to clear it, the flight engineer may obtain authorization to clear the Red X in accordance with T.O. 00-20-1. At enroute stations, flight engineers are authorized to clear Red X symbols for intake and exhaust inspections, dust covers and plugs installed, and aircraft panels removed and installed to facilitate other maintenance. Other aircrew members are not authorized to clear a Red X.

11.4. Aircraft Servicing. Flight engineers are normally not required to refuel or defuel aircraft, however, the flight engineer is qualified and authorized to accomplish these duties when maintenance personnel are not available. This policy is designed for support of the aircraft and its mission while away from home station. The applicable refueling and defueling checklists will be used during all refueling and defueling operations. **(T-3)**. If no crew chief is available, the flight engineer is required to perform the Refueling Supervisor duties and operate the Single Point Refueling (SPR) panel. The AC may designate other aircrew members as safety observers/fire guards as required. Follow procedures in T.O. 1EC-130H-1 for primary fuel management procedures.

11.4.1. In order to comply with the intent of primary and spear pod fuel management and to provide the greatest flexibility for maintenance and operations, standard ramp fuel loads in excess of 28,000 pounds should be loaded as follows:

11.4.1.1. Without SPEAR pods installed.

11.4.1.1.1. Outboard main tanks. 8,000 pounds each is the minimum to be considered full.

11.4.1.1.2. Inboard main tanks. 7,200 pounds in each tank is the minimum to be considered full.

11.4.1.2. With SPEAR pods installed.

11.4.1.2.1. Outboard main tanks. 6,600 pounds each is the minimum to be considered full.

11.4.1.2.2. Inboard main tanks. 7,200 pounds in each tank is the minimum to be considered full.

11.4.1.3. Put any additional fuel required in the auxiliary tanks and then the external tanks (if installed).

11.4.2. In some cases, operational commitments, availability of fuel services or planned landing criteria dictate that these procedures be adjusted. However, every effort should be made to comply with these guidelines and the flight manual to maximize airframe life.

11.5. Aircraft Structural Integrity Program (ASIP). Complete an UDI Worksheet IAW T.O. 1C-130-101 Implementation of C-130 series Aircraft Usage Report on all flights. Flight Engineers will input flight data reflecting aircraft usage within five duty days of the flight. **(T-3)**.

11.6. Aircraft Systems/Forms Management.

11.6.1. The flight engineer monitors aircraft systems during all flight and ground operations. Notify the pilot of all abnormal indications and take action as required.

11.6.2. In addition to the procedures in T.O. 00-20-1 and AFI 11-401, the flight engineer assists the pilot in maintaining the AFTO Form 781.

11.6.2.1. IAW AFI 11-401, if the engines are stopped or the aircraft is on the ground more than five minutes, or any crewmembers enplane or deplane, log multiple sorties will be logged on the AFTO Form 781. Annotate separate lines with the original mission number. Use actual takeoff and land (+5 minutes) times will be used at all times when completing the 781. This will not require a new Form 2407 is not required since it is a continuation of the original sortie.

11.7. TOLD Cards.

11.7.1. All performance calculations are normally based on 95 percent engines and without nose wheel steering (unless otherwise specified in this volume or the performance manual). Takeoff data is normally calculated using the "without nose wheel steering option". If takeoff data using the "with nose wheel steering" option is used, crews are required to thoroughly review and brief the "with nose wheel steering" takeoff procedures in the performance manual. Initial TOLD cards are computed using flight manual performance data. Subsequent TOLD card computations are accomplished using flight manual performance data or approved tabulated data. All tabulated TOLD data is required to be approved by the respective NAF/OV prior to use. A copy of all approved tabulated data is maintained by NAF/OV.

11.7.1.1. Flight Engineers are required to use forms as prescribed in T.O. 1C-130H-1-1 or locally produced equivalent forms. 55 ECG Stan/Eval is authorized to approve minor modifications of TOLD cards. Submit locally produced forms to ACC/A3CR for information purposes.

11.7.2. The engineer posts the torque value corresponding to the required takeoff power setting, in addition to both the 3-engine and 4-engine climb performance on the TOLD card.

11.7.3. Mini TOLD card blocks 1 thru 5 contain: outside ambient temperature, pressure altitude, 3-engine service ceiling, 2-engine service ceiling, and Critical Field Length.

11.7.4. Following initial takeoff and landing data computation, only affected speeds need be re-computed if favorable conditions afford an additional margin of safety in all other areas. On local proficiency flights, only the mini C-130 TOLD Card is updated.

11.7.5. When conducting flaps up landing data for training, compute and post VMCA speeds for both configurations: flaps 50% and flaps up (normal boost). Example, VMCA, in ground effect, one engine inoperative – 94/110.

11.7.6. Compute cruise data and post a mini C-130 TOLD Card for cruise segments of 1 hour or more duration and update hourly. Advise and assist the pilot in maintaining required climb and cruise power. Blocks 1 thru 3 contain: Maximum Endurance 20% flaps (as charted), Stall Speed (Vs1), 0% flaps, 45 degrees bank, Stall Speed (Vs1), 0% flaps, 60 degrees bank, Remarks, Outside Ambient Temperature (OAT) and temperature deviation. **NOTE:** In the event that Dash 1 stall speeds conflict with performance manual stall speeds, Dash 1 stall speeds will be used.

11.7.7. The minimum TOLD requirements for a termination landing are: air minimum control speeds, obstacle clearance speed, 3-engine climb-out factor, 3-engine climb speed, 0% flap landing approach speed, and 50% and 100 % landing speeds and distances.

Section 11B—DD Form 365-4, Instructions and Miscellaneous Information

11.8. Introduction. This section provides instructions for computation and completion of DD Form 365-4, *Weight and Balance Clearance Form F*. Compute the Form F by using simplified moments. All entries and signatures must be legible.

11.9. Load Planning. Plan so that the center of gravity of the loaded aircraft is within the specified forward and aft limits for any given operating condition. Also consider aircraft limitations and emergency jettisoning. Math, charts contained in T.O. 1EC- 130H-5-2, and aircraft load adjuster (slipstick) are tools which may be used for planning. When the fuel load is unknown, load plan for a 20-22 percent of MAC zero fuel.

11.10. General Instructions. These instructions apply to Form F using simplified moments. Entries on the form (**Figure 11.1**) may be either handwritten, computer generated/printed or maintained digitally.

11.10.1. DD Form 365-4 Heading. Enter date, mission number (from flight orders), aircraft type, serial number, departure and destination station (name or ICAO identifier), home station of aircraft, and pilot's rank and last name.

11.10.2. Limitations Column. Enter the appropriate weight and CG limits for the planned mission using the following criteria; do not exceed the maximum gross weight and center of gravity limits specified in T.O. 1EC-130H-1. Gross weights may also be limited by operating conditions (e.g. obstacle clearance, rate of climb, weather conditions, altitude, runway/taxiway bearing capacity), or any other published restrictions.

11.10.2.1. Takeoff. Unless other restrictions are imposed, use 155,000 pounds for EC-130H aircraft.

11.10.2.2. Landing. Unless other landing restrictions are imposed, use 155,000 pounds for EC-130H and subtract operating weight plus estimated landing fuel (references 9 and 23).

11.10.3. Permissible CG Takeoff and Landing. Compute the forward and aft center of gravity limitations using the center of gravity table in the appropriate T.O. 1EC-130H-5-2. Permissible CG Zero Fuel Wt. block is not required to be filled in.

11.10.4. Signature Blocks.

11.10.4.1. Computed By—Signature, rank, and organization.

11.10.4.2. Weight and Balance Authority—Leave blank.

11.10.4.3. Pilot—Signature on original and duplicate.

11.11. Instructions for Moment Form F. Use applicable T.O. 1EC-130H-5-2, Chart E.

11.11.1. Reference 1. Enter basic weight and moment from the last entry of the certified copy of DD Form 365-3, *Basic Weight and Balance Record* (Chart C) in the aircraft weight and balance handbook.

11.11.2. Reference 2. Leave blank.

11.11.3. Reference 3. Enter the number of aircrew members, locations, weight, and moment from crew/cargo compartment tables.

11.11.4. Reference 4. Enter crew baggage by location. Determine weight and moment.

11.11.5. References 5, 6, and 7. Determine amount of equipment on board and enter by location. Determine weight and moment.

11.11.6. Reference 8. Leave blank.

11.11.7. Reference 9. Total of references 1 through 8.

11.11.8. Reference 10. Enter total takeoff fuel and determine moments from fuel moment charts. **NOTE:** In the remarks section enter takeoff fuel weight, broken down by tank, to the nearest 100 pounds along with the associated moments using the fuel moment charts contained in T.O. 1EC-130H-5-2. If individual tank moments cannot be calculated, an alternate method of computing fuel moments is accomplished with the following formula: Fuel weight X 0.552 = Fuel Moment. If this method is used only total fuel needs to be entered (not individual tanks).

11.11.9. Reference 11. Leave blank.

11.11.10. Reference 12. Total of references 9 and 10.

11.11.11. Reference 13. Distribution of Allowable Load (Payload/Cargo).

11.11.11.1. Enter weight of cargo by determining the fuselage station of the cargo center of balance. General cargo may be compartment loaded. Determine moment.

11.11.11.2. Enter number and weight of passengers using either a compartment centroid or each individual's weight by location centroid. Determine moment.

11.11.11.3. Enter the total load weight and moment of reference 13 in reference 15 as a subtotal. **NOTE:** The total weight of reference 13 cannot exceed the smallest allowable load determined by the limitation block.

11.11.12. Reference 14. Compute and enter zero fuel weight and zero fuel moment by adding references 9 and 15. Zero fuel percent of MAC is not required, but may be helpful when targeting a 20-22 zero fuel percent of MAC.

11.11.13. Reference 15. Subtotals; enter totals from reference 13.

11.11.14. Reference 16. Total of references 12 and 15.

11.11.15. Reference 17. Enter the takeoff CG in percent of MAC.

11.11.16. Reference 18. When applicable, enter correction from computations in corrections column. **NOTE:** Computations in the corrections column may require correction of the zero fuel figures, but is not mandatory.

11.11.17. Reference 19. Adjustments after weight or moment from reference 18 are either added or subtracted to/from reference 16.

11.11.18. Reference 20. Enter corrected CG in percent of MAC, as required. **NOTE:** Leave references 18, 19, and 20 blank if corrections are not required.

11.11.19. Reference 21. Enter figures from reference 14.

11.11.20. Reference 23. Enter landing fuel weight and moment, obtained by determining estimated amount of fuel remaining in tanks for landing. **NOTE:** In the remarks section enter estimated landing fuel weight, broken down by tank, to the nearest 100 pounds along with the associated moments using the fuel moment charts contained in T.O. 1EC-130H-5-2. An alternate method of computing fuel moments is accomplished with the following formula: Fuel weight X 0.552 = Fuel Moment. If this method is used only total fuel needs to be entered (not individual tanks). When flight plan fuel weights are not available, use the following criteria to compute fuel burn off: **NOTE:** PPH = pounds per hour.

11.11.20.1. 4,500 PPH – normal flight at altitude.

11.11.20.2. 5,000 PPH – low level.

11.11.20.3. 6,000 PPH – first hour of flight (climb-out).

11.11.21. Reference 24. Total of references 21 and 23.

11.11.22. Reference 25. Enter the landing CG in percent of MAC.

11.11.23. Remarks Block. Enter weight and simplified moment for all tanks containing fuel for planned takeoff fuel load as well as estimated landing fuel. Include total weight and moment of fuels. See **Figure 11.1.**

11.11.24. Load Adjuster Number Block. Enter Load Adjuster number, if used. If Load Adjuster is not used and fuel calculations are computed using Chart E tables in T.O. 1EC-130H-5-2, enter “Chart E and Math”.

Figure 11.1. Example DD Form 365-4 Form F.

WEIGHT AND BALANCE CLEARANCE FORM F - TRANSPORT

(Use reverse for tactical missions)

FOR USE WITH T.O. 1-1B-40, NAVAIR 01-1B-40, AND TM 55-1500-342-23

Form Approved OMB No. 0704-0188

DATE (YYYYMMDD) 20150301	AIRCRAFT TYPE EC-130H	FROM KDMA	HOME STATION KDMA
MISSION KDMA043I15365A	SERIAL NO. 73-1585	TO KDMA	PILOT Capt Awesome

REMARKS

Takeoff

O 13.8 / 7529

I 15.2 / 8437

A 9.0 / 5012

T 38.0 / 20978

Land

O 3.4 / 1863

I 4.6 / 2559

T 8.0 / 4422

REF	ITEM	WEIGHT	INDEX OR MOM/1000
1	BASIC AIRCRAFT (From Chart C)	103458	53977
2			
3	CREW (No.) 18	3600	1378
4	CREW'S BAGGAGE		
5	STEWARD'S EQUIPMENT		
6	EMERGENCY EQUIPMENT	843	645
7	EXTRA EQUIPMENT		
8			
9	OPERATING WEIGHT	107901	55993
10	TAKEOFF FUEL / Gal.)	38000	20976
11	WATER INJ.		
12	TOTAL AIRCRAFT WEIGHT	145901	76969

LOAD ADJUSTER NUMBER Chart "E" + Math

CORRECTION/MOST FWD/MOST AFT

13 DISTRIBUTION OF ALLOWABLE LOAD (PAYLOAD)

14 ZERO FUEL WT 107901

ZERO FUEL WT INDEX OR MOM 55993

ZERO FUEL % M.A.C.

COMPT OR ARM	ITEM	CHANGES (+ or -) WEIGHT	CHANGES (+ or -) INDEX OR MOM/1000	PASSENGERS NO.	PASSENGERS WEIGHT	COMPT OR ARM	CARGO	CARGO	COMPT OR ARM
	CREW	-1600	-866					NO LOAD	
	B W/M	+3574	+1801						
TOTAL WEIGHT REMOVED		-1600	-866						
TOTAL WEIGHT ADDED		+3574	+1801						
NET DIFFERENCE		+1974	+935						

LIMITATIONS

CONDITION	TAKEOFF	LANDING	/ FUEL
ALLOWABLE GROSS WEIGHT	155000	155000	
TOTAL AIRCRAFT WT. (Ref. 12)	145901		
(Ref. 9) + (Ref. 23)		115901	
OPERATING WT. (Ref. 9)			
ALLOWABLE LOAD (Ref. 13) (use smallest figure)	9099	39099	
/ Zero Fuel or Limiting Wing Fuel			

PERMISSIBLE C.G. TAKEOFF	FORWARD	22.3	AFT	30.0
PERMISSIBLE C.G. LANDING	FORWARD	18.1	AFT	30.0
PERMISSIBLE C.G. ZERO FUEL WT.	FORWARD	16.5	AFT	29.5

COMPUTED BY SIGNATURE //SIGNATURE// TSgt/41 ECS

WEIGHT AND BALANCE AUTHORITY SIGNATURE

PILOT SIGNATURE

REF	ITEM	WEIGHT	INDEX OR MOM/1000
15			
16	TAKEOFF CONDITION (Uncorrected)	145901	76969
17	TAKEOFF C.G. IN % M.A.C. OR IN	527.5 / 24.3	
18	CORRECTIONS (If required)	+1974	+935
19	TAKEOFF CONDITION (Corrected)	147875	77904
20	TAKEOFF C.G. IN % M.A.C. OR IN	526.8 / 23.9	
21	ZERO FUEL WT (Ref. 14)	107901	55993
22	LESS AIR DROP LOAD		
23	ESTIMATED LANDING FUEL	8000	4422
24	ESTIMATED LANDING CONDITION	115901	60415
25	ESTIMATED LANDING C.G. IN % M.A.C. OR IN	521.2 / 20.5	

DD FORM 365-4, AUG 96 PREVIOUS EDITION MAY BE USED.

Table 11.1. Crew Weight and Moment Table.

NUMBER OF CREW	LOCATION	WEIGHT	MOMENT/1000
4	3B-1E	800	175
5	4B-1E	1000	209
6	5B-1E	1200	243
7	5B-1D-1E	1400	306
8	5B-2D-1E	1600	369
9	5B-2D-2E	1800	441
10	5B-2D-3E	2000	512
11	5B-2D-3E-1G	2200	610
12	5B-2D-3E-2G	2400	709
13	5B-2D-3E-2G-1H	2600	814
14	5B-2D-3E-2G-2H	2800	920
15	5B-2D-3E-2G-2H-1J	3000	1052
16	5B-2D-3E-2G-2H-2J	3200	1184
17	6B-2D-3E-2G-2H-2J	3400	1218
18	6B-2D-3E-2G-2H-2J-1L	3600	1378
19	6B-2D-3E-2G-2H-2J-2L	3800	1538
20	6B-2D-3E-2G-2H-2J-2L-1M	4000	1704
21	7B-2D-3E-2G-2H-2J-2L-1M	4200	1738

11.12. Flight Engineer (FE) Abbreviations and Formulas.

11.12.1. General Abbreviations. Contained in **Attachment 1** of this AFMAN.

11.12.2. Standard Formulas.

11.12.2.1. Time, Speed and Distance formulas.

11.12.2.1.1. DISTANCE = (SPEED X TIME in min) / 60.

11.12.2.1.2. SPEED = (DISTANCE X 60) / TIME in min.

11.12.2.1.3. TIME in min = (DISTANCE X 60) / SPEED.

11.12.2.1.4. SM = NM X 1.152.

11.12.2.1.5. NM = SM / 1.152.

11.12.2.1.6. TASK = EASK X SMOE.

11.12.2.1.7. EASK = TASK / SMOE.

11.12.2.2. General Fuel Formulas.

11.12.2.2.1. POUNDS = GALLONS X FUEL DENSITY.

11.12.2.2.2. GALLONS = POUNDS / FUEL DENSITY.

11.12.2.2.3. F/Pd = (FF X TIME in min) / 60.

11.12.2.2.4. FF = (F/Pd X 60) / TIME in min.

11.12.2.2.5. DISTANCE = NMPP X F/Pd.

11.12.2.2.6. NMPP = DISTANCE / F/Pd.

11.12.2.2.7. F/Pd = DISTANCE / NMPP.

11.12.2.2.8. FF = TASK / NMPP.

11.12.2.2.9. TASK = NMPP X FF.

11.12.2.2.10. F/Pd = (FF X DISTANCE) / TASK.

11.12.2.2.11. Charted TASK = Logged TASK / SMOE for cruise altitude.

11.12.2.2.12. Charted FF = FF / SMOE for cruise altitude.

11.12.2.2.13. Fahrenheit = 1.8 X Celsius + 32; Celsius = (Fahrenheit - 32) / 1.8.

11.12.2.3. Weight and Balance Formulas.

11.12.2.3.1. Arm = Moments / Weight.

11.12.2.3.2. Moments = Arm X Weight.

11.12.2.3.3. Weight = Moments / Arm.

11.12.2.3.4. Average Arm = Total Moment / Total Weight.

11.12.2.3.5. CG (% of MAC) = (Average Arm - LEMAC) / MAC.

Section 11C—Hostile Environment Repair Procedures

11.13. General. Authority to use the Hostile Environment Kit and Repair Procedures is granted by Operations Group Commanders/Deputy Commanders for Operations when the aircraft is directed into a hostile or potentially hostile environment or in extreme cases where recovery of the aircraft or completion of the mission dictates their use. This authority is documented on the FRAG or Air Tasking Order. The operations group commander/deputy commander for operations may delegate this authority as necessary in cases where: (1) The unit is geographically separated from the parent unit, or (2) The unit is deployed or otherwise not co-located with the operations group commander/deputy commander for operations. All normal avenues of repair/recovery should be exhausted (when practical) prior to use of the Hostile Environment Repair Procedures. Procedures identified with an asterisk (*) are not considered Hostile Environment Repair and may be accomplished with the PIC's concurrence. When Hostile Environment Repair Procedures are actually employed, inform Numbered Air Force Stan/Eval. Include a brief description of the circumstances and conditions leading to the decision to approve Hostile Environment Procedures.

11.13.1. Hostile Environment Repair Kit (HERK). Safe and efficient accomplishment of the hostile environment repair procedures is facilitated by the use of a repair kit. **Table 11.2** includes the items normally contained in such kits. Units may identify repair kit inventory

and issue procedures in the local supplement to this volume. **CAUTION:** When installing or removing recommended jumper wires electrical arcing is possible.

Table 11.2. Hostile Environment Repair Kit Inventory.

ITEM	STOCK NUMBER
Note: Stock numbers may change without notice. Numbers should be verified with supply organizations when ordering.	
1. ELECTRICAL TAPE	5970004194291
2. VISE GRIP PLIERS, 8 ½" (2 EA.)	5120004941911
3. ALLEN WRENCH, 5/32, 6 point (long)	5120001985413
4. CHANNEL LOCK PLIERS, 10"	5120002780352
5. GENEVA LOCK WRENCH	5120007158467
6. STARTER WRENCH	5120006843605
7. SMALL BLADE COMMON SCREWDRIVER	5120002363127
8. IGNITION RELAY CANNON PLUG	5935000139655
9. SPEED SWITCH CANNON PLUG	5935012309542
10. BRAKE SHUTTLE VALVE PLUG, #6 MS (2 EA.)	4730002033709
11. BRAKE PLUG, #8 MS (2 EA.)	4730002028341
12. BRAKE LINE CAP, #8 (2 EA)	4730002898634
13. PIG REPAIR PUTTY (REPLACES OYLTYTE)	8030012652895
14. WIRE BUNDLE TIES (20)	5975010132742
15. WOOD PLUG (LARGE)	5510002559492
16. WOOD PLUG (SMALL)	5510002559493
17. BRASS BAR 7/16 (STOCK BY FOOT) (Cut two 4 inch lengths per kit)	9530002289235
18. BRASS BAR 3/8 (STOCK BY FOOT) (Cut two 4 inch lengths per kit) (Use with Maintenance Free Battery)	9530002289234
19. BRASS BAR 5/16 (STOCK BY FOOT) (Cut one 2 inch length per kit)	9525002289233
20. #10 GAUGE WIRE WITH ALLIGATOR CLAMPS A. INCH WIRE (ORDER BY FOOT) & B. ALLIGATOR CLAMPS (PACK OF 6 EA.)	6145006006051 5999002045206
21. #16 GAUGE JUMPER WIRE WITH TERMINALS (2 7 INCH WIRE (ORDER BY FOOT) & *B. PINS FROM SPEED SWITCH CANNON PLUG	6145000138651 5935012309542
22. #4 GAUGE JUMPER WIRE WITH TERMINALS (18 LONG) A. WIRE (ORDER BY FOOT) & B. 3/8 INCH TERMINALS	6154007563030 5940005574338

23. #16 GAUGE JUMPER WIRE WITH TERMINALS (10 INCHES LONG) A. WIRE (ORDER BY FOOT) & B. TERMINALS	6145000138651 59400014347780
24. OVERSPEED SOLENOID VALVE CAP, #4 (1 EA)	4730002785006
25. OVERSPEED SOLENOID VALVE PLUG, #4 (1 EA)	4730005424994
26. #10 WIRE AND CANNON PLUGS WIRED TO (12 INCHES LONG) A. #10 WIRE, B. CONNECTOR, & C. CONNECTOR	6145006006051 5935011865487 5935011686755
**27. APU DUMMY ACTUATOR ROD A. BEARING ACTUATOR ROD & B. NUT, APU ACTUATOR ROD END	3120001071678 5310008810944
Notes: * The cannon plug are required to be ordered and the pins removed from the plug for use. Each cannon plug contains six pins. ** The APU dummy actuator rod is required to be locally manufactured IAW T.O. 1C-130H-2-4, Figure 11-5.	

11.14. Battery Dead or Damaged. CAUTION: If the aircraft battery is damaged, disconnect and remove it from the aircraft. Use caution to avoid acid burns if the battery is leaking. When swapping batteries, the battery connector should be installed as rapidly as possible to preclude excess arcing. **CAUTION:** When flying with a dead or otherwise disabled battery, ensure the DC Power Switch remains in the "BATTERY" position. **NOTE:** If another aircraft is available, temporarily place its operable battery (or INU battery when available) in the disabled aircraft until at least one engine is operating. On INU equipped aircraft, the INU battery may be swapped with the aircraft battery and used for engine start. An alternative is to bypass the INU Reverse Current Relay. (See **para 11.15.**)

11.14.1. Jumping Battery—Aircraft to Aircraft.

11.14.1.1. Position aircraft nose to nose to allow the DC power cable (or cables) to reach.

11.14.1.2. Join both aircraft DC power cables by use of extender plug or brass bars listed in **Table 11.2.**

11.14.1.3. Place cable from operating aircraft DC winch receptacle to external DC power receptacle of disabled aircraft.

11.14.1.4. DC power switch on disabled aircraft to "External DC" position. **CAUTION:** Reduce DC load on disabled aircraft as much as possible to preclude the possibility of overloading the DC cargo winch current limiter.

11.14.1.5. Start GTC on disabled aircraft.

11.14.1.6. ATM and Generator Switch – ON.

11.14.1.7. Jump battery relay using failed battery relay procedure. (See **para 11.16**).

11.14.1.8. When battery relay is closed, remove jumper cables and continue with checklist.

11.14.2. If a usable replacement aircraft battery or another aircraft is not available, obtain two 12-volt or one 24-volt battery and jumper cables, or suitable heavy-duty cable, modified as required. (DC cargo winch cable may be used.)

11.14.2.1. Use option one to connect the external batteries to the battery connector, or option two to connect the external batteries to the external DC power receptacle (see **Figure 11.2**).

11.14.2.2. Insert stock into battery connector for option one.

11.14.2.3. Connect jumper cables to aircraft and batteries.

11.14.2.4. DC Power Switch – "Battery" for option one; "EXT DC" for option two. **NOTE:** With DC power switch placed in the EXT DC position (option two), check the EXT DC PWR light ON. If the light is not illuminated, check all connections and battery polarity.

11.14.2.5. Start GTC.

11.14.2.5.1. Control Switch – Start, Run.

11.14.2.5.2. Bus Tie Switch – Tied.

11.14.2.6. ATM and generator – ON, checked.

11.14.2.7. If option two was utilized, jump battery relay using failed battery relay procedure. (See **para 11.16**).

11.14.2.8. Start an engine and place the generator switch to ON.

11.14.2.9. Disconnect jumper cables.

11.15. Bypassing the INU Reverse Current Relay (RCR). NOTE: This method should only be used if the INU battery cannot be swapped into the aircraft battery position.

11.15.1. If the aircraft battery is damaged, disconnect and remove it from the aircraft. Use caution to avoid acid burns if the battery is leaking.

11.15.2. Open the Pilot's upper circuit breaker panel.

11.15.3. Jump the INU RCR by installing a #10 jumper wire from the APP terminal to the BATT terminal of the reverse current relay (see **Figure 11.9**).

11.15.4. Check the DC voltmeter in the ESS DC BUS position to verify the bus is powered.

11.15.4.1. If the ESS DC BUS is not powered, bypass the relay as follows:

11.15.4.1.1. Remove all power from the aircraft.

11.15.4.1.2. Disconnect the INU battery.

11.15.4.1.3. Bypass the INU RCR by installing a #4 jumper wire from the GEN terminal to the BAT terminal of the reverse current relay (see **Figure 11.9**).

11.15.4.1.4. Connect the INU battery.

11.15.5. Start GTC. **WARNING:** Fire protection is not available for the GTC, until the Battery Relay is jumped.

11.15.5.1. Place Bleed Air Valve switch to OPEN.

11.15.6. Place ATM and generator switch to ON. Check Voltage and Frequency.

11.15.7. Remove #10 jumper wire from the INU Reverse Current Relay (RCR).

11.15.8. Jump the battery relay using Failed Battery Relay procedure. (See **para 11.16**). **WARNING:** If the INU RCR has been bypassed by installing the #4 jumper wire the ISOLATED DC bus nor the ESSENTIAL DC bus can be isolated using bus isolation procedures in the flight manual.

11.16. Failed Battery Relay.

11.16.1. DC power switch – BATTERY.

11.16.2. Jump battery relay by momentarily touching terminals "A-1" to "A-2" using the #10 jumper wire (see **Figure 11.3**).

11.16.3. Check the battery voltage on voltmeter to verify closing of relay. (The voltmeter should read bus voltage.)

11.16.4. If battery relay fails to close, bypass the relay as follows:

11.16.4.1. Remove all power from the aircraft.

11.16.4.2. Disconnect the aircraft battery and INU battery.

11.16.4.3. Install a #4 jumper wire between terminals "A-1" and "A-2".

11.16.4.4. Connect the aircraft battery and INU battery. **WARNING:** Fire protection is not available for the GTC until the aircraft battery bus is powered. If an engine fire or nacelle overheat is indicated and battery relay has opened, install a #4 jumper wire from terminals "A-1" and "A-2" to power the battery bus. **CAUTION:** When flying with a dead or otherwise disabled battery, ensure the DC Power Switch remains in the "BATTERY" position.

11.17. Failed RCR between Isolated and Essential DC Bus.

11.17.1. Open pilot's side circuit breaker panel.

11.17.2. Install a #10 jumper wire between the SW post and the APP post (see **Figure 11.3**).

11.17.3. If the RCR fails to energize, bypass the relay as follows:

11.17.3.1. Remove all power from the aircraft.

11.17.3.2. Disconnect the aircraft battery.

11.17.3.3. Install a #4 jumper wire between the BATT and GEN terminals (see **Figure 11.3**).

11.17.3.4. Connect the aircraft battery. **WARNING:** The potential for electrical shock, and electrical arcing exists when performing this procedure. This procedure should only be performed in-flight as an absolute last resort effort to restore Essential DC bus power. **WARNING:** The Essential DC bus cannot be isolated using bus isolation procedures contained in the flight manual. **NOTE:** When the #4 jumper wire is used on the RCR, the ISOL DC ON BAT light remains ON, even though the Essential DC bus is powering the Isolated Bus.

11.18. *GTC Stalls and Fails to Accelerate to "On Speed".

11.18.1. Hold fingers over the acceleration limiter holes (see **Figure 11.4**) while an assistant starts the GTC. Place and remove fingers over the holes several times during the start cycle until the start cycle sustains itself.

11.19. GTC Fails to Rotate (No Start Light).

11.19.1. Check the following prior to proceeding with the hostile environment repair procedure: GTC control circuit breaker, GTC fire handle, Isolated DC bus powered, and check GTC doors to ensure they are fully open.

11.19.2. For a failed door actuator, (doors open and close but do not fully open) disconnect the GTC door actuator at attachment point on inside of upper door. Prop doors open (use broom handle, fuel dipstick, etc.). Disconnect door actuator cannon plug and install jumper wire from pin "D" to pin "E" and attempt restart.

11.19.2.1. When finished with the GTC, attach door actuator to upper door, remove jumper wire, and install cannon plug back on actuator. Use door switch to close door.

11.19.3. For failed door actuator (doors not open or not opened enough to allow disconnecting of actuator), remove four (4) screws in upper door. This releases the door actuator attaching bracket on which the door bypass switch is located. Prop doors open and attempt start. **NOTE:** Ensure bypass switch is fully extended.

11.19.3.1. When finished with GTC, close and secure the doors using two of the four bypass switch mounting bracket screws.

11.19.4. If the limit switch is suspected faulty, at upper forward area of the intake, disconnect the two wires to the door bypass switch and connect the two input leads together. This bypasses the limit switches.

11.19.4.1. Start GTC.

11.20. GTC Fails to Rotate (Start Light On).

11.20.1. Remove all electrical power.

11.20.2. Open pilot's side circuit breaker panel.

11.20.3. Check GTC starter current limiter; (see **Figure 11.3**) if bad or suspect; replace as follows:

11.20.3.1. Disconnect battery.

11.20.3.2. Remove and replace current limiter with spare.

11.20.3.3. If no spares are available, open copilot's upper circuit breaker panel cover, remove cargo winch current limiter and use as a replacement.

11.20.4. If current limiter is good, check GTC starter for broken wires and repair as necessary (see **Figure 11.4**).

11.20.5. Connect battery and attempt to start. If no rotation, rap starter relay and attempt another start.

11.20.6. If GTC still does not rotate, place the GTC control switch to START momentarily to energize the relay, then release the switch to RUN. Place a #4 jumper wire between post A1 and A2 of the GTC relay (see **Figure 11.3**) until the start light goes out, then remove the jumper wire.

11.21. *GTC Fuel Vapor Lock.

11.21.1. Use petcock drain on bottom of aircraft below GTC to drain fuel while motoring GTC, then attempt start (see **Figure 11.5**).

11.21.2. If no fuel is present at petcock drain, check GTC fuel shutoff valve opening by momentarily positioning GTC control switch to "START" then "OFF".

11.21.3. If fuel shutoff valve fails to operate, remove cannon plug and open the valve manually.

11.21.4. Remove fuel line at GTC burner can and motor GTC until a steady stream of fuel is noted. This procedure may require several attempts to attain desired results.

11.21.5. Reconnect the line and attempt another start.

11.22. *GTC Rotates - Negative Ignition.

11.22.1. Check oil quantity.

11.22.2. Attempt a start while depressing and holding the oil primer button. Release the button when the GTC lights off.

11.23. Starting GTC with Failed Oil Pressure Switch.

11.23.1. Failed oil pressure switch can be detected during the start cycle by observing no ignition firing noise during start attempt and that fuel is present at the fuel pressure regulator drain and no detectable fuel pressure present in the fuel nozzle hose. (See **Figure 11.4**)

11.23.2. Remove oil line to the oil pressure switch and momentarily rotate GTC. (Oil should spurt from the line opening.)

11.23.3. Remove oil pressure switch cannon plug and place jumper wires from pin "A" to pin "B" for ignition and from pin "C" to pin "D" for fuel. Secure the jumper wires with tape.

11.23.4. Attempt to start the GTC. If the oil pressure switch was faulty the start should be successful.

11.24. Leaking Brakes.

11.24.1. Disconnect brake lines from both sides of the brake shuttle valve.

11.24.2. Use plugs and caps from the HERK kit to seal the brake lines and shuttle valve.

11.24.3. Secure disconnected hose ends to prevent interference with landing gear movement during retraction and extension. **NOTE:** Both landing and takeoff performance calculations are affected by a disconnected brake. Recommend using RCR of 5 for all performance calculations.

11.25. Moving an Aircraft with Flat Main Landing Gear Tire. WARNING: Use this procedure only as a last resort to move an aircraft out of a hostile environment. Reduce aircraft weight as much as possible by unloading cargo, defueling, or burning off fuel. Some fuel may

be transferred out of the wing corresponding to the flat tire and into the opposite wing. Be aware of wing tip and propeller ground clearance.

11.25.1. Install main gear towing/jacking fitting on the strut with the flat tire.

11.25.2. Install a 10,000 lbs chain around the top of the strut above the upper track shoes.

11.25.3. Connect a tie down device to the towing fitting. Connect the chain to the device and tighten.

11.25.4. Open the Schrader valve at the top end of the MLG strut and bleed all air pressure from the strut. **WARNING:** Do not open Schrader valve more than ¾ of a turn. It may be necessary to use the valve stem to bleed the pressure from the strut. Do not allow the lower nut to loosen. If the lower nut becomes loose it may allow the Schrader valve to blow out of the strut body.

11.25.5. Compress the strut by any means possible such as the use of a "J" bar, chocks, milk stool or taxiing the aircraft onto shoring in order to elevate the flat tire.

11.25.6. When the strut has been compressed to the maximum extent possible, tighten the tie down device.

11.25.7. Remove the flat tire if time and situation permits.

11.25.8. Flight should be made with the landing gear extended and the landing gear control circuit breaker pulled. When safely airborne, pull the touchdown relay circuit breaker. Refer to the flight manual for airspeed limitations with landing gear extended. After landing, reset the touchdown relay circuit breaker.

11.26. Failed Engine Driven Hydraulic Pump.

11.26.1. Disconnect the failed engine driven hydraulic pump from the gearbox and secure to any available structure with safety wire. Do not disconnect hydraulic lines.

11.26.2. Install a starter pad in place of the failed hydraulic pump.

11.26.3. If time and resources permit, the pump may be removed from the nacelle as follows:

11.26.3.1. With the ESS DC bus powered, place the corresponding hydraulic pump switch to the OFF position. This closes the hydraulic shutoff valve.

11.26.3.2. Disconnect and plug all hydraulic lines to the pump.

11.26.3.3. Remove the failed pump and install a starter pad in its place. **CAUTION:** The hydraulic pump switch remains in the OFF position as long as the hydraulic pump is removed.

11.27. Failed Fuel Valve(s).

11.27.1. Locate the failed valve(s) and remove the cannon plug(s).

11.27.2. Manually open or close the valve(s) by actuating the manual arm. **NOTE:** On some aircraft, the dump mast shutoff valves are manually closed to refuel. Insure these valves are reopened prior to flight.

11.28. Failed Speed Sensitive Switch.

11.28.1. Pull Ignition Control Circuit Breaker on Copilot's Lower Circuit Breaker Panel.

11.28.2. Open lower left side engine cowling on the affected engine.

11.28.3. Remove the speed sensitive control cannon plug (see **Figure 11.6**).

11.28.4. Install the pre-wired cannon plug from the Hostile Environment Repair Kit and secure it in place (see **Figure 11.6.** and **Figure 11.8**). **CAUTION:** Pre-wired cannon plugs used as jumpers are required to be wired as shown in **Figure 11.8.**

11.28.5. Secure all engine cowling.

11.28.6. Begin the start sequence (in normal ground idle) while watching tachometer.

11.28.7. At 16 percent engine RPM, reset the Ignition Control Circuit Breaker.

11.28.8. At 94 percent RPM, pull the Ignition Control Circuit Breaker. **NOTE:** The secondary fuel pump pressure light illuminates and the pumps are in parallel operation until the Ignition Control Circuit Breaker is pulled.

11.28.9. After landing, use normal ground idle only and shutdown the affected engine as follows:

11.28.10. Ignition Control Circuit Breaker – RESET.

11.28.11. Condition lever – GROUND STOP. **NOTE:** When the Ignition Control Circuit Breaker is reset prior to engine shutdown, approximately two seconds is required for the fuel control shutoff valve to close. If the engine continues to run when the condition lever is placed in GROUND STOP, place the condition lever to FEATHER.

11.28.12. When the fuel flow indicator drops to zero and RPM is decreasing, pull the Ignition Control Circuit Breaker.

11.29. Failed Ignition Control Relay.

11.29.1. Pull the Ignition Control circuit breaker.

11.29.2. Open the lower left engine cowling and locate the ignition control relay (see **Figure 11.6**).

11.29.3. Disconnect the cannon plug from the relay and install the prewired cannon plug from the repair kit. **CAUTION:** Wire pre-wired cannon plugs used as jumpers as shown in **Figure 11.8.**

11.29.4. Close and secure cowling.

11.29.5. During engine start proceed as follows:

11.29.5.1. At 16 percent RPM, reset the Ignition Control circuit breaker.

11.29.5.2. At 65 percent RPM, pull the Ignition Control circuit breaker.

11.29.6. For engine shutdown following landing, proceed as follows:

11.29.6.1. Reset the Ignition Control circuit breaker.

11.29.6.2. Place the condition lever to GROUND STOP.

11.29.6.3. When fuel flow drops to zero and RPM decreases, pull the Ignition Control circuit breaker.

11.30. Failed Speed Sensitive Valve. CAUTION. This procedure renders the torquemeter shroud anti-icing system inoperative. Icing conditions should be avoided.

11.30.1. Open the lower left side engine cowling on the affected engine.

11.30.2. Disconnect the air supply line to the speed sensitive valve (see **Figure 11.6**) at the bottom of the filter element installed in the line and install a #6 plug in the open line.

11.30.3. Disconnect the torque meter shroud anti-icing line at the left side of the balance line fitting and secure it.

11.30.4. Disconnect the line from the top side of the speed sensitive valve and connect it to the balance line fitting where the torque meter shroud anti-icing line was connected.

11.30.5. Secure any loose hardware then close and secure engine cowling. **NOTE:** Do not start the affected engine first. Select another engine for the first engine to be started in order to supply bleed air to the affected engine.

11.30.6. Place the Engine Inlet Duct Anti-icing switch for the affected engine to ON.

11.30.7. Start the affected engine while watching RPM and standing by to activate the Prop and Engine Anti-icing Master switch.

11.30.8. At 94 percent engine RPM, place the Prop and Engine Anti-icing Master switch to MANUAL. The acceleration bleed valves should close at this time. **WARNING:** When the "Prop and Engine Anti-ice Master Switch" is selected to the MANUAL position, the engine anti-ice and prop anti-ice/de-ice systems actuate if their respective switches are turned on. These switches are normally turned on during the Before Takeoff Checklist but should be delayed using this procedure unless absolutely necessary for safe operation. Turning these switches to the on position with the Prop and Engine Anti-icing Master Switch selected to MANUAL activates the systems and robs the engines of torque. Overheating of the blade/spinner anti-ice/de-ice systems occurs if the aircraft remains on the ground for longer than the two cycle operating limit. **NOTE:** In this configuration the affected engine has continuous anti-icing and an associated reduction in torque is noted.

11.30.9. After landing, shutdown the engine in normal ground idle. **CAUTION:** Do not use "Low Speed Ground Idle" during ground operations. To do so may cause the engine to stall/over temp.

11.31. Failed Fuel Shutoff Valve on Fuel Control.

11.31.1. Open lower left side cowling on affected engine.

11.31.2. Remove the defective fuel control shutoff actuator (Geneva lock) from the fuel control (see **Figure 11.6**).

11.31.3. Insert a small common (flat) screwdriver into the spline end of the fuel control and rotate in a counterclockwise direction until the fuel control opens. There should be no fuel leakage from where the actuator was removed.

11.31.4. Close the engine cowling and secure all fasteners. **NOTE:** During engine start, abnormal situations such as excessive fuel coming from drain mast, tailpipe torching and a higher than normal start TIT can be expected.

11.31.5. For engine shutdown, place the condition lever to FEATHER rather than GROUND STOP for the affected engine.

11.32. Failed Engine Fuel Drip Valve.

11.32.1. Use enrichment on next engine start. The sudden surge of pressure should close the drip valve.

11.32.2. If enrichment fails to close the drip valve, shutdown the engine and plug or crimp the drip valve drain valve closed.

11.33. Prop Fails To Rotate (No Light In Button). CAUTION: Insure the oil shutoff valve circuit breaker is set (in).

11.33.1. If it is determined or suspected that no power is available to the starter button, proceed as follows:

11.33.1.1. Select another engine which is not operating and close its bleed air valve. (This bleed valve is required to remain closed throughout the start cycle.)

11.33.1.2. Start the defective engine normally while simultaneously holding in the starter button for the selected non-operating engine. Hold both buttons in until 60 percent RPM.

11.34. Alternate Fuel Management with Inboard Main Tanks Empty (External Tanks Containing Fuel).

11.34.1. The external tanks may be filled to maximum capacity provided the outboard main tanks and both auxiliary tanks are full.

11.34.2. Takeoff configuration will be engines 1 and 4 on tank to engine from their respective tanks. **(T-3).** Engines 2 and 3 will be on cross-feed from the auxiliary tanks with the cross-feed separation valve open. **(T-3). WARNING:** Do not place the auxiliary or external tank dump pump switches to the dump position while those tanks are supplying fuel to the engines.

11.34.3. As soon as practical after takeoff, close the cross-feed separation valve and place all engines on cross-feed from the auxiliary tanks.

11.34.4. When auxiliary tank fuel is reduced to 4,000 - 4,500 pounds per side, terminate cross-feed operation from the auxiliary tanks and place all engines on cross-feed from the external tanks. **CAUTION:** Do not reduce internal fuel (main and auxiliary) to less than 25,000 pounds if external tank fuel exceeds 4,700 pounds per side.

11.34.5. When the external tanks are empty, place engines 2 and 3 on cross-feed from the auxiliary tanks and place engines 1 and 4 on tank to engine from their respective outboard main tanks. Close the external tank cross-feed valves and place the external tank fuel boost pump switches to OFF.

11.34.6. When the auxiliary tank fuel is 1,000 pounds per side, open the outboard cross-feed valves to place all engines on cross-feed.

11.34.7. When the auxiliary tanks are empty, close the auxiliary tank cross-feed valves and place the auxiliary tank fuel boost pump switches to OFF.

11.34.8. Observe flight manual touch down rate of sink and outboard tank fuel quantity landing limitations.

11.34.9. Following completion of landing ground roll, leave the main tank cross-feed valves open and maintain at least two engines in normal ground idle until the airplane is parked.

11.35. Failed Bleed Air Valve (Engine Fails To Rotate).

11.35.1. Place the bleed air valve switch to "OPEN". Open horse collar and "tap" the motor mechanism on the bleed air valve.

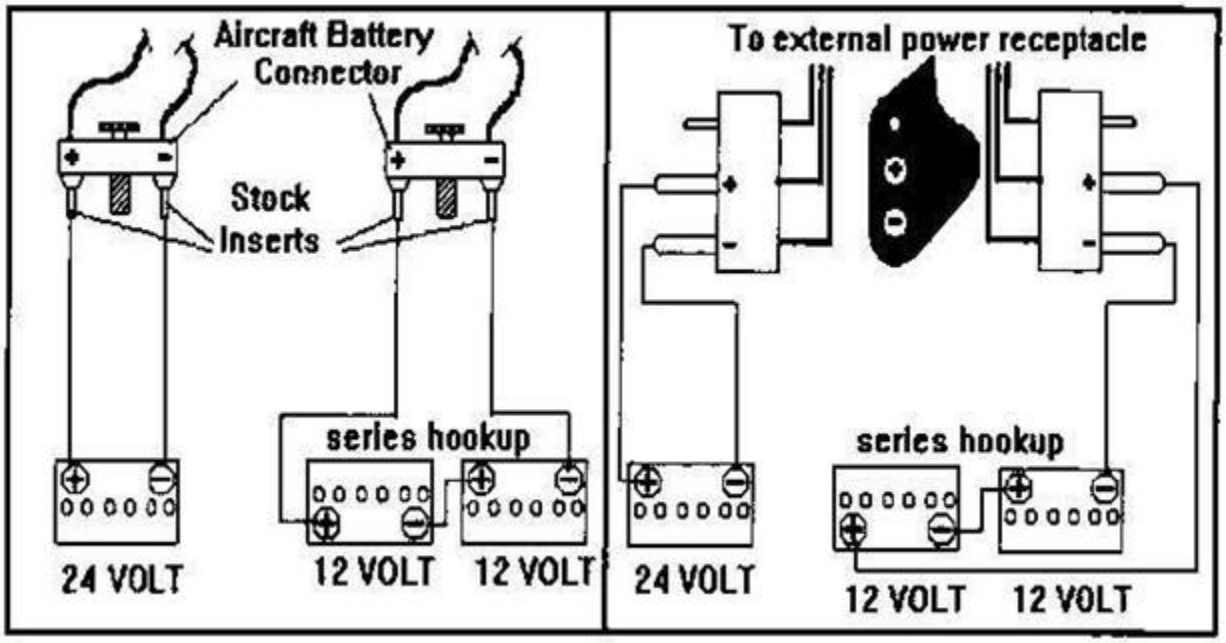
11.35.2. If the valve still fails to open, remove the motor from the valve. Manually open the valve and secure the lever to one of the mount holes with safety wire. **WARNING:** Once bleed air valve has been secured in the open position, it is not possible to close the valve for wing isolation procedure. Engine shut down is required to isolate wing.

11.35.3. Close the horse collar and attempt engine start.

11.36. Severe Fuel Leaks.

11.36.1. Fuel leaks caused from punctures or small arms fire can be plugged by using the wooden plugs and Pig Putty from the kit. If a high number of plugs are used, it may be necessary (as time permits) to break or cut them off near the wing surface to reduce drag.

Figure 11.2. Alternate DC Power Connections.



OPTION ONE **OPTION TWO**

Figure 11.3. Reverse Current Relay.

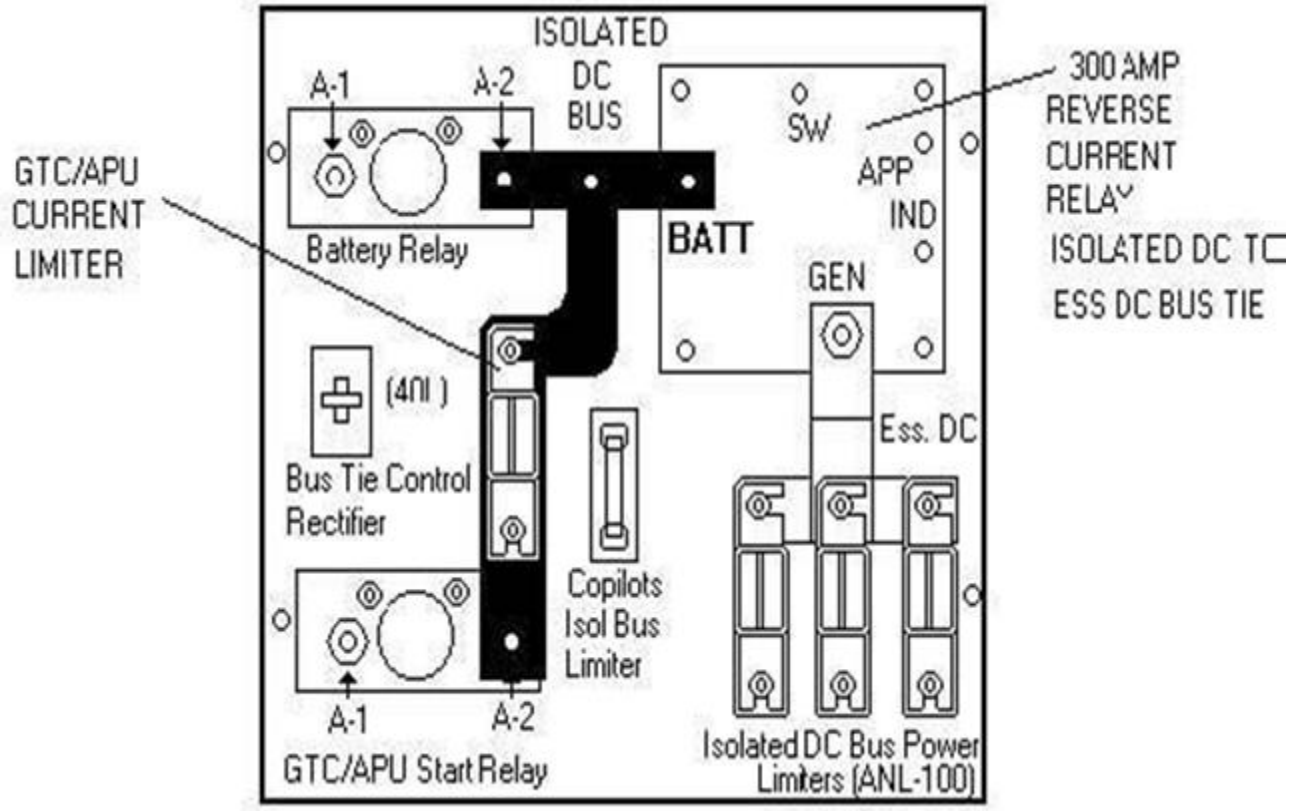


Figure 11.4. Gas Turbine Compressor.

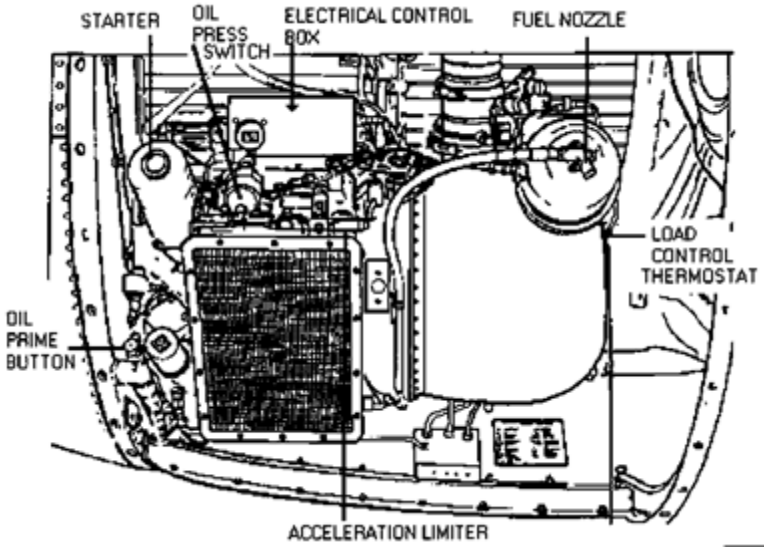


Figure 11.5. GTC Fuel Supply.

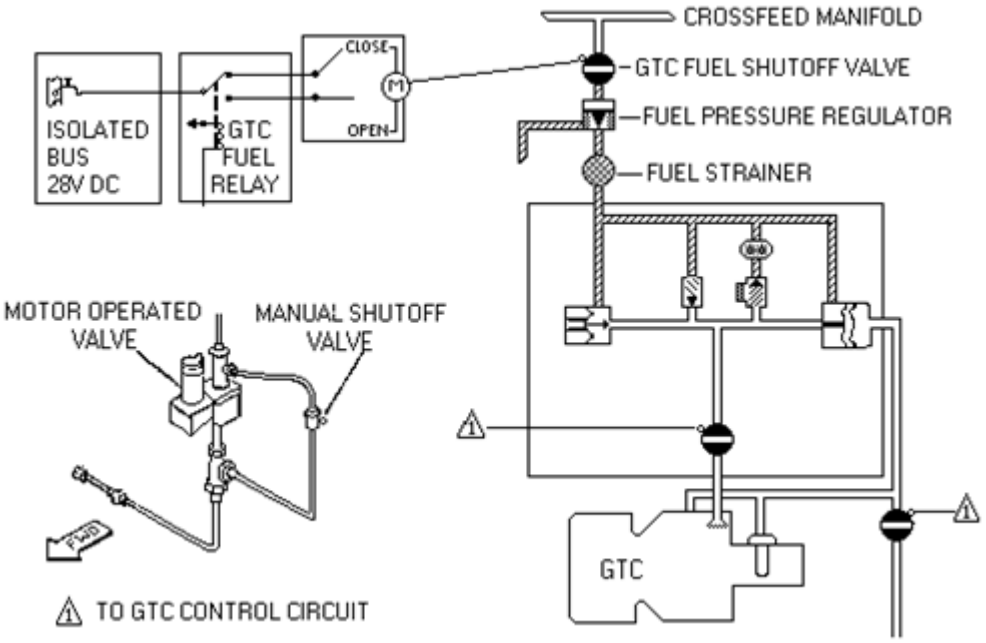


Figure 11.6. Engine Accessory Locations.

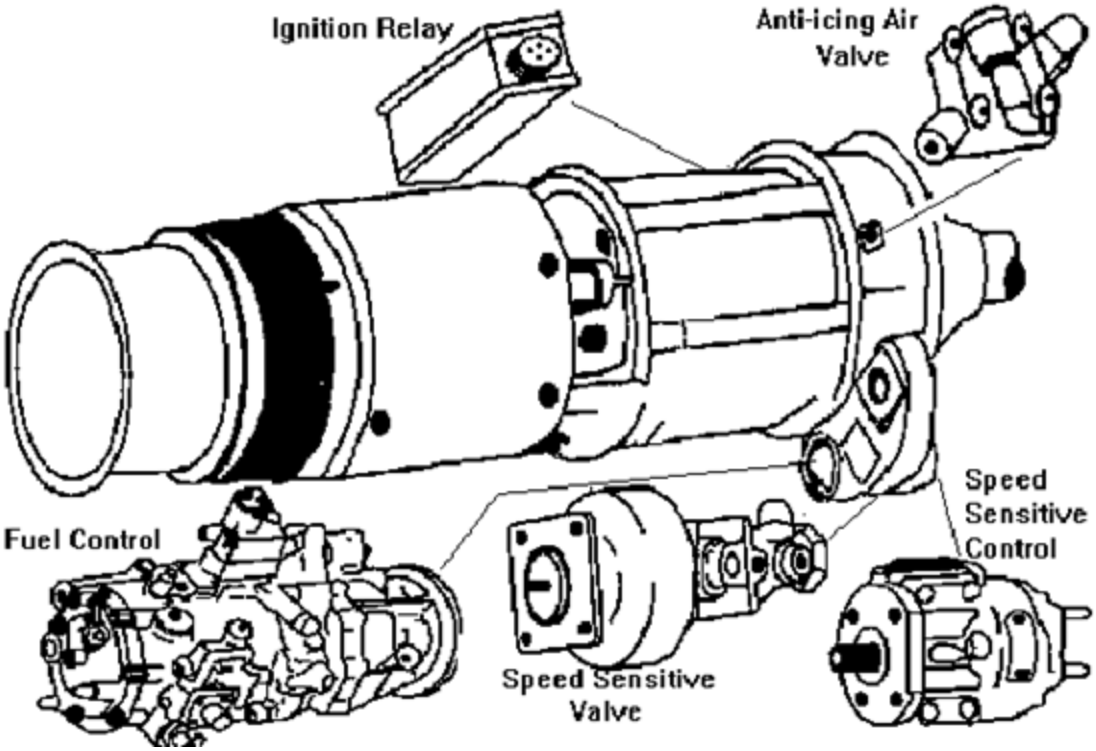


Figure 11.7. Gear Box Accessory Locations.

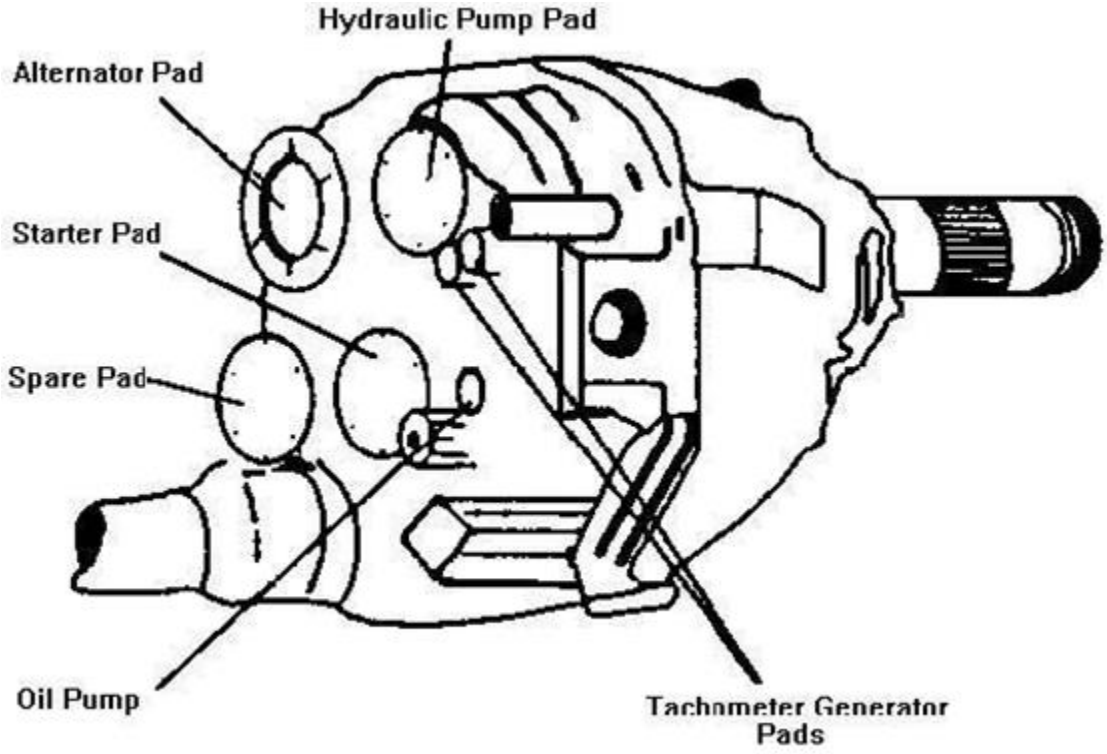


Figure 11.8. Prewired Cannon Plugs (Speed Sensitive Control and Ignition Relay).

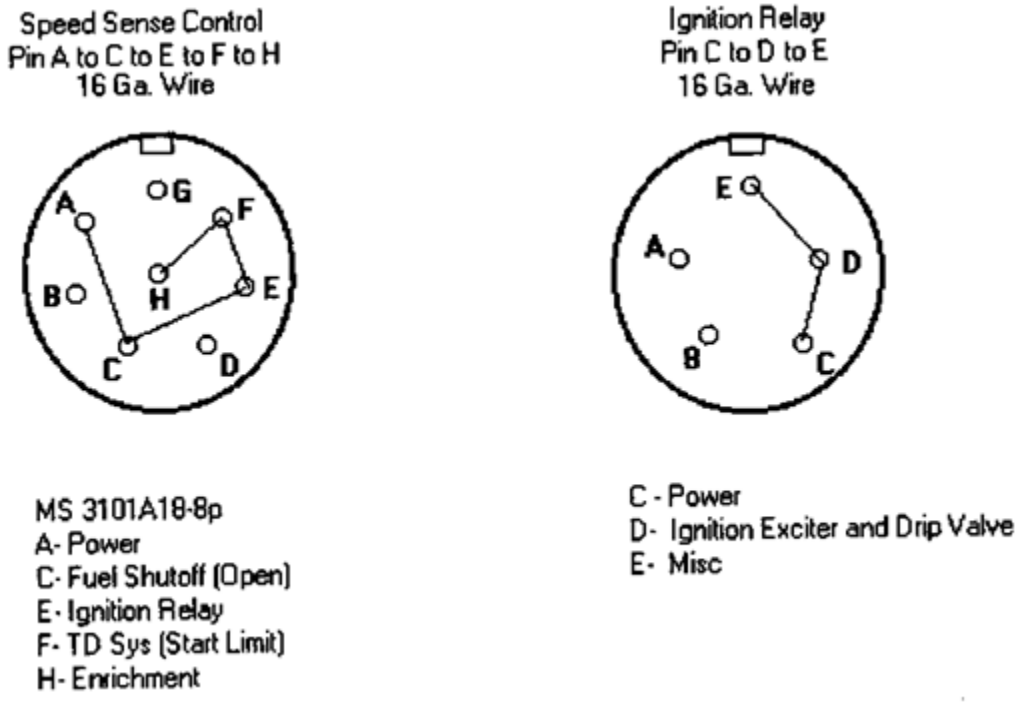
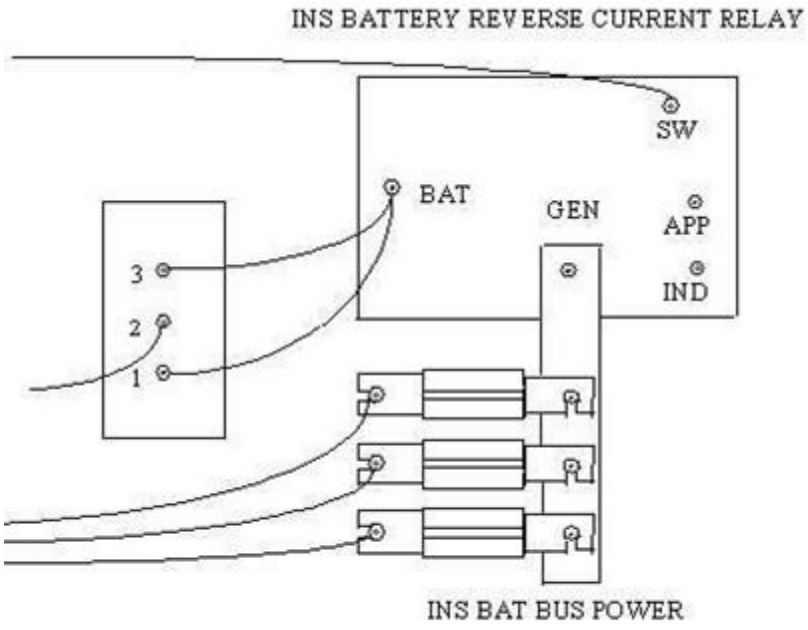


Figure 11.9. Bypassing the INU Reverse Current Relay.



Chapter 12

AIRBORNE MAINTENACE TECHNICIAN (AMT) PROCEDURES

12.1. General. The AMT is responsible to the AC for management of the mission crew/cargo compartment and COMPASS CALL mission equipment. The AMT is responsible for aircrew members stationed in the mission crew/cargo compartment, and any passengers. The AMT:

12.1.1. Performs and supervises scanner duties.

12.1.2. Coordinates mission equipment requirements and any special procedures necessary to ensure optimum mission accomplishment.

12.1.3. Initializes, maintains, and troubleshoots mission systems during flight as required.

12.1.4. Documents all write-ups in aircraft forms and thoroughly debriefs appropriate ground personnel.

12.1.5. Ensures MEPs and passengers have appropriate AFE equipment, are briefed on emergency procedures, and seated prior to stations time.

12.1.6. At the PIC's direction, completes anti-hijacking screening for all passengers in accordance with AFI 13-207.

12.1.7. Ensures the GTC is shutdown prior to enplaning or deplaning passengers unless proper hearing protection is used.

12.1.8. When mission requirements are not available or are not clearly defined, the AMT is required to check all PME, AME, and QRCs.

12.1.9. On all sorties the AMT will ensure sufficient fresh water is available for the crew and passengers. **(T-3).** Establish crew drinking requirements in unit supplements to this volume.

12.2. Weight and Balance. The flight engineer calculates all weight and balance data.

12.3. Emergency Exits and Safety Aisles. At least one unobstructed emergency exit is available for each 20 passengers (This does not restrict over water flights if the overhead escape hatches are available for egress). Seats erected across an emergency exit are not considered as an obstruction.

12.4. Passenger Handling.

12.4.1. The AMT is the key figure for good passenger relations. There are certain rules that should be observed.

12.4.1.1. Address passengers by proper titles.

12.4.1.2. Avoid arguments and controversial subjects, national or international politics, criticism of other personnel or organizations.

12.4.2. In-flight Procedures.

12.4.2.1. Passengers may move about the cabin after reaching cruise altitude. However, exercise judgment on the number of passengers allowed out of their seats at any one time. Encourage passengers to remain seated with their seat belts fastened. Due to concern for their safety, passengers are not allowed to lounge or sleep on cargo or baggage.

12.4.2.2. Make frequent checks on the cabin temperature.

12.4.2.3. Do not allow passengers to tamper with emergency equipment. Passengers are not permitted access to checked baggage.

12.4.2.4. On long flights, particularly during hours of darkness, use all possible means to make passengers comfortable. Dim and extinguish unnecessary compartment lights.

12.4.2.5. Passengers may visit the flight deck only when approved by the AC. Use good judgment when requesting this authority.

12.4.2.6. When passengers are carried, an AMT is required to be in the cargo compartment for all takeoffs and landings.

Chapter 13

FUEL PLANNING

13.1. General. This chapter provides general fuel planning considerations and procedures. Publish local procedures in the supplement to this volume.

13.2. Fuel Conservation.

13.2.1. Conservation of fuel requires everyone's active participation. Do not carry extra fuel for convenience. Unidentified extra fuel should not exceed required ramp fuel load (RRFL) by more than 2,200 pounds.

13.2.2. Extra fuel (identified extra) may be added to RRFL:

13.2.2.1. When fuel availability is limited or not available at enroute stops.

13.2.2.2. For known holding delays in excess of standard.

13.2.2.3. For anticipated off course weather avoidance.

13.2.3. To maximize fuel, consider the following:

13.2.3.1. Use optimized CFPs when possible.

13.2.3.2. Long-range cruise (LRC) and/or optimum altitude should be flown (when possible).

13.2.3.3. Limit the use of the GTC when possible.

13.2.3.4. Delay engine start.

13.2.3.5. Cruise CG should be aft if practical.

13.2.3.6. Fly enroute descents when possible.

13.2.4. Fuel Loads.

13.2.4.1. Use appropriate flight planning software or T.O. 1C-130H-1-1 for fuel planning. Use 100 percent engine and constant altitude performance. Apply T.O. 1EC-130H-1 drag index to software or T.O. 1C-130H-1-1 computations. Items for fuel analysis are explained in **Table 13.1.**

13.3. Fuel Planning.

13.3.1. Entering Arguments.

13.3.1.1. Weight. Add OPERATING WT, CARGO/ PAX WT, and RAMP FUEL to obtain RAMP WT. Subtract TAXI fuel to obtain TAKEOFF WT.

13.3.1.2. TEMP DEV – Temperature Deviation. Compare the forecast temperature at cruise altitude to the standard temperature for that altitude. The algebraic difference is TEMP DEV.

13.3.2. Fuel Computations. Refer to Fuel Planning guidance in **Table 13.1.** and the local supplement for fuel computations.

Table 13.1. Fuel Load Components.

Enroute		Fuel for flight time from departure to overhead destination or initial penetration fix at cruise altitude (including time for planned orbit, escort, search, recovery, appropriate climb, weather recon, etc. when applicable).
Enroute Reserve		Enroute Reserve + Overhead Reserve (2,000 lbs.) must meet the following requirement: IAW AFI 11-202V3, para 2.2.3. aircraft must carry enough usable fuel on each flight to increase the total flight time between refueling points by 10% or 20 minutes whichever is greater (maximum 45 minutes.). **(T-2)**. Computed at maximum endurance and 10,000 ft MSL (may be calculated using more
Overhead	Alternate and Missed Approach	**Alternate:** Fuel for flight time from overhead destination or initial penetration fix to alternate, or most distant alternate when two are required. Compute at terminal fuel flow. Required whenever alternate is required to be filed. **Missed Approach:** 2,200 lbs. Required if destination is below ceiling or visibility minimums for planned destination approach.
	Reserve	Entry required. Minimum 2,000 lbs. (Applicable for Enroute Reserve Requisite)
	Holding	For alternates located in Alaska or located at latitudes greater than 59 degrees N/S, use 1,500 lbs. See AFI 11-202V3, as supplemented, for remote/island destination requirements.
	Approach and Landing	Entry required. Approach: 1,000 lbs (2,000 lbs for high altitude approach). **Minimum Landing Fuel:** 4,000 lbs.
Identified Extra	Stored Fuel	Ramp fuel for succeeding legs without refueling.
	Off-Course Maneuvers	Fuel for anticipated off-course maneuvering for terrain clearance, thunderstorm avoidance, and ATC requirement. Compute at 100 lbs/min for departure, 50 lbs/min enroute.
	Icing	500 lbs/hour of anticipated icing.
	Known Holding Delays	Fuel for anticipated/planned excess holding time. Compute at terminal fuel flow.
Taxi and Takeoff		Normally 1,300 lbs. For known taxi delays or additional engine-running ground time in excess of 20 minutes, add 50 lbs/min.
Unidentified Extra		Difference between ramp and actual ramp fuel. Normally, should not exceed 2,200 lbs. (fuel conservation)

Chapter 14

AIR-TO-AIR REFUELING (AAR)

14.1. General. Air to air refueling (AAR) operations will be performed according to ATP-56C, *Air-To-Air Refueling* and T.O. 1EC-130H-1. **(T-2).** Mission planning should include consideration of tanker range limitations, abort base availability, and enemy threats at refueling altitudes. Mission requirements dictate the type of fuel management used (primary or secondary). The following procedures are in addition to the normal procedures in the refueling manuals and applicable directives.

14.2. Crew Policy.

14.2.1. Non-AC-certified pilots may only perform contacts with an IP in the seat from pre-contact to contact. If training an unqualified or noncurrent pilot, the IP is required to occupy a pilot seat before initiation of the AAR checklists.

14.2.2. Instructor pilots and pilots in instructor upgrade (under direct IP supervision) may perform boom limit demonstrations.

14.3. Flight Planning. Planners should coordinate with tanker unit planners, AMC Tanker Airlift Control Center (TACC), or Air Operations Center (AOC) tanker planners to the maximum extent possible.

14.3.1. Airspace. AAR may be conducted on established tracks published in FLIP, tracks published in an ACO, or random tracks coordinated between tanker and receiver.

14.3.1.1. When using tracks/anchors defined by an ATO, OPT/DPT planners coordinate with tanker planners and thoroughly brief aircrews on all aspects of the refueling.

14.3.1.2. Not using a previously identified track usually requires coordination of an Altitude Reservation (ALTRV). Plan and coordinate the ALTRV IAW FLIP requirements. Tanker planners and TACC can provide assistance with ALTRV coordination.

14.3.1.3. In all cases, the route to and from the AAR track/anchor should allow divert to a suitable abort airfield that meets the requirements of **Chapter 6** of this volume and AFI 11-202V3.

14.3.2. Fuel planning may be completed using either an approved computer planning program or manually using procedures in **Chapter 10**. A standard fuel flow of 6,000 PPH may be used from the ARIP to EAR.

14.4. Procedures/Restrictions.

14.4.1. Performing AAR Maneuvers. AAR-qualified aircrews may perform normal maneuvers at any time, and are encouraged to do so to enhance continuation training opportunities. Toboggan, contact, and practice emergency separation maneuvers do not require instructor supervision, except as mentioned in **para 14.2.** However, when any member of either the tanker or receiver crew is in training, close coordination with the tanker is required to ensure compliance with training restrictions.

14.4.2. Inoperative Fuel Quantity Indicators. Refer to **Table 4.4.** for allowable combinations of inoperative fuel quantity indicators. After refueling any tank(s) with inoperative fuel quantity indicators, the flight engineer and navigator closely monitor fuel burn rates. Immediately bring any discrepancies between actual and expected fuel burn to the AC's attention.

14.4.2.1. If the inoperative indicator is on a main tank, the first indication of a discrepancy between actual and expected fuel quantity may be a need for excessive aileron trim. If this condition arises, pilots should assume they have less than expected fuel, and adjust the mission accordingly. Consider any fuel left in that tank(s) to be reserve fuel.

14.4.2.2. During normal operations, all fuel quantity indicators are required to be operational for those tanks to be refueled. During contingency or emergency operations, tanks with inoperative quantity indicators may be refueled with a known quantity of fuel from tanks with operative indicators. Both primary and secondary shutoff mechanisms need to be working properly for the tanks with the inoperative indicators. Transfer the fuel in 1,000 lb increments and closely monitor fuel distribution and aircraft trim. Comply with flight manual fuel balance limits.

14.4.3. Gross Weight Limitations. When mission requirements dictate air to air refueling to gross weights above 155,000 pounds, a MAJCOM waiver is required IAW the aircraft flight manual. Gross weights above 155,000 pounds are restricted to that amount needed to arrive at destination or next refueling point with required fuel reserves. Refer to aircraft Weight Limitations Chart for load factor limits and max recommended airspeeds. Consider refueling performance, and 3- and 4-engine cruise ceiling when operating at heavy gross weights.

14.4.4. Manual Boom Latching. Only use manual boom latching procedures during fuel emergencies, actual contingency operations or when refueling with a KC-10 with an operable IDS system (with tanker concurrence).

14.5. Communication.

14.5.1. Secondary refueling frequencies need not be monitored unless instructed by the tanker. Pilots are required to monitor the primary AAR frequency, interphone, and flight crew hot mic. However, at least one flight deck crewmember is required to monitor UHF guard throughout the refueling.

14.5.2. During all AARs, the AC will designate one aircrew member as primary monitor for the controlling agency radio frequency. **(T-3).** This aircrew member will write down any clearance issued by ATC to the tanker for the receiver aircraft, and compare it to the end AAR clearance issued by the tanker. **(T-3).** If there is a discrepancy, query the ATC controller prior to accepting post-AAR clearance.

Chapter 15

COMBAT MISSION PLANNING

15.1. General. Refer to the following AFTTP 3-1 for details pertaining to combat mission planning:

15.1.1. **(U)** AFTTP 3-1.General Planning, *General Planning and Employment Considerations* (Secret).

15.1.2. **(U)** AFTTP 3-1.Threat Guide, *Threat Reference Guide and Counter-tactics* (Secret).

15.1.3. **(U)** AFTTP 3-1.EC-130H, *Tactical Employment—EC-130H* (Secret).

15.1.4. **(U)** AFTTP 3-1.HC/MC-130, *Tactical Employment, C/HC-130* (Secret).

15.2. Responsibilities.

15.2.1. The PIC and MCC jointly share responsibility for mission planning.

15.2.2. Deployment Planning Team (DPT). When a deployment order is received, the 755 OSS stands up a DPT to support squadron deployments. The DPT plans the movement of aircraft to the deployed location and subsequent employment until a Mission Planning Cell (MPC) is established. ACC Air Operations Squadron assistance may be utilized if applicable.

15.2.3. Mission Planning Cell (MPC). The MPC conducts mission planning for COMPASS CALL employment. Wartime MPC concepts provide an integrated team of aircrew, intelligence, and computer support personnel. The deployed commander activates the MPC and assigns a team chief. The deployed operations officer determines MPC augmentation requirements. The team chief assigns responsibilities to individual team members IAW operational needs.

15.2.4. Intelligence Support. Intelligence briefings are presented IAW AFI 14-105, *Unit Intelligence Mission and Responsibilities*, as supplemented, and intelligence Operating Instructions.

15.2.4.1. Intelligence personnel support DPT with an initial situation/threat briefing upon activation and any update briefings, as necessary. **(T-3).** They shall also provide an intelligence pre-deployment briefing to aircrews. **(T-3).**

15.2.4.2. Intelligence personnel support MPC with an initial situation/threat briefing, extract pertinent ATO information, analyze threats to mission aircraft, build/maintain target database and establish targeting priorities IAW mission directives. They provide continuous, in-depth analysis of the situation and update MPC. Intelligence personnel conduct the intelligence portions of mission brief and debrief.

15.2.4.3. Intelligence personnel serve as liaison between COMPASS CALL, the Intelligence, Surveillance and Reconnaissance (ISR) community and mission package planners. **(T-3).**

15.2.4.4. Intelligence personnel provide COMPASS CALL Mission Crew Simulator (CCMCS) support for scenario development, scenario briefing and scenario debriefing. **(T-3).**

Chapter 16

TACTICAL/THREAT AVOIDANCE PROCEDURES

16.1. General. Use these procedures and the flight manual when operating into airfields where an identified or suspected ground threat exists. In a threat situation, aircrew members are required to understand their limitations and those of their equipment. The procedures contained herein are not all encompassing. Therefore, aircrews should use good judgment and sound airmanship to successfully accomplish the mission.

16.1.1. This chapter deals primarily with the takeoff/departure and approach/landing phase of flight. AFTTP 3-1.EC-130H (Secret) contains a more detailed discussion of threat avoidance in takeoff/departure, approach/landing, and enroute operations and in the orbit area.

16.1.2. Carefully consider performance data and energy management, particularly in mountainous terrain at heavy gross weights or with less than full engine capability. Failure to manage energy levels may cause a stall or require a go-around. Consideration should be given to planning increased airspeeds. Another accepted technique is to calculate, and have visible to both pilots, stall speeds for 0, 30 and 60 degrees of bank and 3-engine service ceiling. **WARNING:** Uncoordinated flight reduces stall margins and can cause an abrupt departure from controlled flight. **CAUTION:** Uncoordinated flight increases airframe structural loading and should be avoided unless an actual threat exists.

16.1.3. Threats and emission control requirements permitting, use all available aids (e.g., map reading, CANS, and tactical air navigation) to remain position oriented. Aircrew members share responsibility for enroute navigation, terrain avoidance and threat lookout. Attention should be focused outside the aircraft, emphasizing threat detection and situational awareness. Limit duties which distract attention from outside the aircraft to mission essential items only.

16.2. Tactical Arrivals. See AFTTP 3-1.EC-130H (Secret) for discussion of advantages/disadvantages and flight parameters for each arrival. These maneuvers may be flown on continuation training and operational missions. In all cases plan to roll out on final at approach speed no lower than 300 ft AGL.

16.2.1. Overhead. Initiate overhead recoveries at 200 knots indicated airspeed (KIAS) and 1,500 ft AGL or traffic pattern altitude, whichever is higher, unless local procedures or tactical situation dictate otherwise. Break as the tactical situation permits with approximately a 45 degree angle of bank and retard the power to flight idle after the bank is established. Make a level turn to downwind with power reapplied as necessary to maintain 150 KIAS on inside downwind. Maintain 140 KIAS (or approach speed if higher) through the final turn until wings level on final.

16.2.2. Downwind. Enter a downwind leg for the active landing runway, normally maintaining 200 KIAS and 1,000 ft AGL or traffic pattern altitude, whichever is higher. Displace downwind to make one continuous turn to final. Initiate turn to final ½ NM past the approach end of the runway with a 45-degree angle of bank. Retard power to flight idle after bank is established. Make a level turn until reaching 140 KIAS or approach airspeed,

whichever is higher. Configure flaps and gear as speed decelerates through airspeed limits. Slow to final approach speed on final.

16.2.3. Selection of Maneuver. The desired outcome of the tactical arrival is to place the aircraft on final (never less than 300 ft and 0.25 miles from the runway) wings level, above threshold speed so that a safe landing may be executed.

16.3. Tactical Departures . See AFTTP 3-1.EC-130H (Secret) for discussion of advantages/disadvantages and flight parameters for each arrival.

16.4. Ground Operations.

16.5. COMPASS CALL Hand-Off Guide. This checklist is a locally derived aid intended to streamline coordination between two COMPASS CALL crews when one aircraft is replacing the other aircraft on a designated orbit.

Chapter 17

SEARCH AND RESCUE

17.1. General. The EC-130H crew will defer to their C2 agency for prioritization between their tasked mission and the CSAR mission. **(T-2).** However, the crew is required to be prepared to act as on-scene commander until CSAR forces arrive. Crews then assist CSAR forces in any way necessary.

17.1.1. The following general instructions apply to all search missions:

17.1.1.1. Brief crew members who did not attend the operations briefing on the purpose of the mission.

17.2. Crew Duties. EC-130H crews divide duties amongst themselves per their pre-mission planning. If re-tasked to a CSAR mission, crews should split duties as follows:

17.2.1. The MCC supervises and coordinate activities of crew members during the mission, as follows:

17.2.1.1. Plan the search with the mission crew.

17.2.1.2. Discuss the radio communication procedures with the crew.

17.2.1.3. Communicate mission deconfliction with C2 agency

17.2.2. The AC coordinates crew member activities during prosecution of the mission by:

17.2.2.1. Ensuring completion of the Search and Rescue Checklist (in local In-Flight Guide) prior to commencing any CSAR support.

17.2.2.2. Notifying TAC C2 of arrival on scene and estimated endurance.

17.2.2.3. If required, assuming on-scene commander duties until relieved by TAC C2 or another aircraft. As other aircraft arrive, do the following:

17.2.2.3.1. Establish contact on channels other than Guard.

17.2.2.3.2. Obtain aircraft type identification, endurance and rescue capability.

Assign altimeter setting, frequencies, search areas, patterns and altitude separation.

17.2.2.4. Maintaining radio communications with other supporting aircraft and the controlling agency as directed by the MCC.

17.2.3. The navigator optimizes aircraft placement and coordination with TAC C2 agencies by:

17.2.3.1. Monitoring assigned radios and pass relevant information as directed by the MCC.

17.2.3.2. Keeping a log of all turn times, directions and locations.

17.2.3.3. Being prepared to increase speed when directed by MCC to facilitate faster DF.

17.2.3.4. Being prepared to provide time remaining on station when requested.

17.3. Communications with a Distressed Aircrew. If tasked, establish direct communications with the downed aircrew as soon as possible. Accomplish this on the prescribed CSAR frequency per the SPINS or EPA.

17.3.1. Communications procedures should instill confidence in the distressed crew so they know professional assistance is at hand.

17.3.1.1. Coordinate immediate action items first and supplemental items as the mission progresses. Communications may be lost or the downed crew may be forced to discontinue communications.

17.3.1.2. Avoid long transmissions and provide pertinent data at periodic intervals to assure the distressed crew that contact is being maintained. Make all messages clear and concise. Know what to say and use a tone of confidence.

17.3.1.3. If all efforts to contact the distressed aircraft fail, transmit pertinent information and instructions in the blind, assuming the distressed aircraft is receiving but unable to acknowledge.

17.3.2. Initial Communications Procedures.

17.3.2.1. Attempt initial contact with distressed aircraft as soon as practical on the primary method of communication per the SPINS or EPA.

17.3.2.2. Identify yourself and advise that you are enroute to support.

17.3.2.3. Instruct the distressed crew to use the present frequency as primary and not to break contact. Designate a secondary frequency.

17.3.2.4. Verify the nature of emergency and intentions of the downed aircrew.

17.4. Departing Search Area.

17.4.1. If leaving the search area because of lack of fuel, identify another aircraft as on-scene commander. If other search aircraft have not arrived, reconfirm position, and advise survivors when further assistance will arrive, if known.

17.4.2. Notify TAC C2 agency, on-scene SAR aircraft of off station time and any unaccomplished tasks.

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Attachment 1

GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION

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Abbreviations and Acronyms

AAR—Air to Air Refueling

AC—Aircraft Commander

ACC—Air Combat Command

ACCA—Aircrew Contamination Control Area

ACDE—Aircrew Chemical Defense Ensemble

ACF—Acceptance Check Flight

ACM—Additional Crew Member

ADI—Attitude Direction Indicator

ADIZ—Air Defense Identification Zone

ADVON—Advanced Echelon

AERPS—Aircrew Eye-Respiratory Protection System

AEW/CC—Air Expeditionary Wing Commander

AFE—Aircrew Flight Equipment

AFI—Air Force Instruction

AFMAN—Air Force Manual

AFRIMS—Air Force Records Information Management System

AFTO—Air Force Technical Order

AGE—Aircraft Ground Equipment

AGL—Above Ground Level

AHAS—Aviation Hazard Advisory System

AIR—Aviation Into-Plane Reimbursement

AITG—Airborne Integrated Terminal Group

ALTRV—Altitude Reservations

AMT—Airborne Maintenance Technician

ANO—Analysis Operator

AO—Acquisition Operator/Aeronautical Order

AOC—Air Operations Center

AOR—Area of Operations

AP—Area Planning

APOD—Aerial Port of Debarkation

ARIP—Air Refueling Initiation Point

ARMS—Aviation Resource Management

ARTC—Air Route Traffic Control

ARTCC—Air Route Traffic Control Center

ASIP—Aircraft Structural Integrity Program

ASR—Air Surveillance Radar

ASRR—Airfield Suitability and Restriction Report

ATA—Actual Time of Arrival

ATC—Air Traffic Control

ATC/SCC—Air Traffic Control System Command Center

ATIS—Area Terminal Information System

ATM—Air Turbine Motor

ATO—Air Tasking Order

AV—Avionics Viability Program

AVP—Avionics Viability Program

AVPOL—Aviation Petroleum Lubricants

BAI—Back Up Aircraft Inventory

BAM—Bird Avoidance Model

BASH—Bird/Wildlife Aircraft Strike Hazard

BDHI—Bearing, Distance, Heading Indicator

BWA—Biological Warfare Agent

C2—Command and Control

CANS—Computer Aided Navigation System

CARA—Combined Altitude Radar Altimeter

CAS—Calibrated Air Speed

CBCONOPS—Chemical-Biological Concept of Operations

CBRNE—Chemical, Biological, Radiological, Nuclear and High Yield Explosives

CCMCS—COMPASS CALL Mission Crew Simulator

CCT—Combat Control Team

CFL—Critical Field Length

CFP—Computer Flight Plan

CG—Center of Gravity

CHOP—Change in Operational Control

CIRVIS—Communications Instructions for Reporting Vital Intelligence Sightings

CNDC—Canadian National Defense Contract

COMACC—Commander Air Combat Command

COMAFFOR—Commander Air Force Forces

COMSEC—Communications Security

CONUS—Continental United States

CRA—Country Risk Assessment

CRG—Contingency Response Group

CRM—Crew Resource Management

CSAR—Combat Search and Rescue

CVR—Cockpit Voice Recorder

CWA—Chemical Warfare Agent

DA—Decision Altitude

DAO—Defense Attaché Officer

DEPORD—Deployment Order

DER—Departure End of Runway

DESC—Defense Energy Support Center

DETCO—Detachment Commander

DEV—Deviation

DFSC—Defense Fuel Supply Center

DH—Decision Height

DME—Distance Measuring Equipment

DNIF—Duty Not Involving Flying

DO—Director of Operations

DOD—Department of Defense

DOV—Standardization / Evaluation

DPT—Deployment Planning Team

DR—Dead Reckoning

DSN—Defense Switched Network

DSR—Deployed Status Reports

DV—Distinguished Visitor

EAS—Equivalent Air Speed

ECG/CC—Electronic Combat Group Commander

ECG/EGV—Electronic Combat Group Standardization and Evaluation

ECG/SE—Electronic Combat Group Safety

EEBD—Emergency Escape Breathing Device

EMI—Electromagnetic Interference

EMP—Electromagnetic Pulse

ENAME—Europe, North Africa and Middle East

EP—Evaluator Pilot

EPOS—Emergency Passenger Oxygen System

EOD—Explosive Ordinance Disposal

ERCC—Engine Running Crew Change

ERO—Engine Running On/Off Load

ETA—Estimated Time of Arrival

ETCAS—Enhanced Traffic Collision Avoidance System

ETI—Estimated Time to Intercept

ETP—Equal Time Point

EUCOM—United States European Command

EWO—Electronic Warfare Officer

EZ—Exchange Zone

FAA—Federal Aviation Administration

FAF—Final Approach Fix

FAS—Fuel Automated System

FBI—Federal Bureau of Investigation

FBO—Fixed Base Operation

FCF—Functional Check Flight

FCG—Foreign Clearance Guide

FCIF—Flight Crew Information File

FDP—Flight Duty Period

FDR—Flight Data Recorder

FIH—Flight Information Handbook

FIR—Flight Information Region

FL—Flight Level

FLIP—Flight Information Publication

FMC—Fully Mission Capable

FMP—Flight Manual Program

FMS—Flight Management System

FOL—Forward Operating Location

FP/FN—Basic Qualified Pilot/Basic Qualified Navigator

FRAG—Fragmentation

FSS—Flight Service Station

GCAS—Ground Collision Avoidance System

GCCS—Global Command and Control System

GCE—Ground Crew Ensemble

GCU—Generator Control Unit

GDSS—Global Defense Support System

GMT—Greenwich Mean Time

GNC—Global Navigational Chart

GP—General Planning

GPS—Global Positioning System

GTC—Gas Turbine Compressor

GW—Gross Weight

HAA—Height Above Airport

HAT—Height Above Touchdown

HATh—Height Above Threshold

HATR—Hazardous Air Traffic Report

HERK—Hostile Environment Repair Kit

HF—High Frequency

HQACC/A3—Headquarters Air Combat Command/Director of Operations

HQACC/A3R—Headquarters Air Combat Command/Information Operations Division

HQACC/A3T—Headquarters Air Combat Command/Flight Operations Division

HQACC/A3TV—Headquarters Air Combat Command/Standardization Branch

HQAFFSA—Headquarters Air Force Flight Safety Agency

HQAFSC/SEF—Headquarters Air Force Safety Center Aviation Center

HQUSAF/A3OT—Headquarters United States Air Force/Operations Training Division

HSI—Horizontal Situation Indicator

HVAC—Heating Ventilation and Air Conditioning

IACC—Integrated Aircrew Chemical Coverall

IAP—Initial Approach Point

IAW—In Accordance With

ICAO—International Civil Aviation Organization

IDS—Independent Disconnect System

IFF/SIF—Identification Friend or Foe/Selective Identification Feature

IFR—Instrument Flight Rules

ILS—Instrument Landing System

IMC—Instrument Meteorological Conditions

INU—Inertial Navigation Unit

IOAT—Indicated Outside Air Temperature

IP—Instructor Pilot

IPE—Individual Protective Equipment

ISR—Intelligence, Surveillance and Reconnaissance

ITAS—Indicated True Airspeed

JCS—Joint Chiefs of Staff

C/JFACC—Combined/Joint Force Air Component Commander

JNC—Jet Navigational Chart

JNCA—Jet Navigational Chart–High Altitude

KIAS—Knots Indicated Airspeed

LBT—Low Band Transmit

LPU—Life Preserver Unit

LRU—Long Range Cruise

LSAF—Last Suitable Airfield

MAC—Mean Aerodynamic Chord

MAF—Mobility Air Force

MAJCOM—Major Command

MAJCOM A3—Major Command Director of Operations

MAJCOM A3/DO—Major Command Director of Operations/Director of Operations

MARSA—Military Assumes Responsibility for Separation of Aircraft

MC—Mission Contributing

MCC—Mission Crew Commander

MCS—Mission Crew Supervisor

MDA—Minimum Descent Altitude

MDS—Mission Design Series

ME—Mission Essential

MEA—Minimum Enroute Altitude

MEL—Minimum Equipment List

MEP—Mission Essential Personnel

MESL—Minimum Essential Subsystem List

MHE—Material Handling Equipment

MLG—Main Landing Gear

MNPS—Minimum Navigation Performance Specifications

MOCA—Minimum Obstruction Clearance Altitude

MOPP—Mission-Oriented Protective Posture

MPC—Mission Planning Cell

MPD—Mobility Pilot Development

MRE—Meal Ready to Eat

MSA—Minimum Safe Altitude

MSC—Multi Service Corporation

MSL—Mean Sea Level

MTOGW—Maximum Take Off Gross Weight

MVA—Minimum Vectoring Altitude

MXG/CC—Maintenance Group Commander

NACO—National Aeronautical Charting Office

NAF/OV—Numbered Air Force Standardization and Evaluation

NAS—Naval Air Station

NATO—North Atlantic Treaty Organization

NAVAIDS—Navigational Aids

NDB—Non-Directional Beacon

NM—Nautical Miles

NMAC—Near Mid-Air Collision

NSN—National Stock Number

NORAD—North American Aerospace Defense Command

NOTAM—Notice to Airmen

OAT—Outside Air Temperature

OCF—Operational Check Flight

OCONUS—Outside the Continental United States

OCS—Obstacle Clearance Surface

OEI—One Engine Inoperative

OIC—Officer in Charge

ONC—Operational Navigational Chart

OP/ON—Observer Pilot/Observer Navigator

OPCON—Operational Control

OPORD—Operation Order

OPR—Office of Primary Responsibility

OROCA—Off Route Obstruction Clearance Altitude

OSC—On Scene Commander

OSD—Office of Secretary of Defense

OSI—Office of Special Investigation

OWS—Operational Weather Squadron

PAPI—Precision Approach Path Indicator

PF—Pilot Flying

PFD—Primary Flight Display

PFPS—Portable Flight Planning Software

PIC—Pilot in Command

PPH—Pounds Per Hour

PM—Pilot Monitoring

PMSV—Pilot to Meteorologist Service

POK—Passenger Oxygen Kit

POL—Petroleum, Oil and Lubricants

PPS—Precision Positioning Service

PQP—Previously Qualified Pilot

PRM—Precision Runway Monitor

QA—Quality Assurance

RA—Resolution Advisory

RCR—Reverse Current Relay/Runway Condition Reading

RDD—Radiation Dispersal Device

RDS—Records Disposition Schedule

RIK—Replacement In Kind

RNP—Required Navigation Performance

ROC—Required Obstacle Clearance

ROE—Rules of Engagement

RRFL—Required Ramp Fuel Load

RSC—Runway Surface Covering

RVR—Runway Visual Range

RVSM—Reduced Vertical Separation Minimum

RVIP—Rendezvous Initial Point

SAR—Search and Rescue

SATCOM—Satellite Communication

SCI—Sensitive Compartmented Information

SCIF—Sensitive Compartmented Information Facility

SDP—Special Departure Procedure

SF—Standard Form

SID—Standard Instrument Departure

SIGMET—Significant Meteorological Information

SII—Special Interest Items

SITCO—Shell International Trading Company

SITREPS—Situation Reports

SM—Statute Miles

SOC—Squadron Operations Center

SOUTHCOM—Southern Command

SPINS—Special Instructions

SPR—Single Point Refueling

SPS—Standard Positioning Service

SSO—Senior Staff Officer

STAN/EVAL—Standardization and Evaluation

STT—Special Tactics Teams

TACAN—Tactical Air Navigation

TACC—Tanker Airlift Control Center

TAS—True Airspeed

TCAS—Traffic Alert and Collision Avoidance System

TDY—Temporary Duty

TEMPO—Temporary Group

TERPS—Terminal Instrument Procedures

TIT—Turbine Inlet Temperature

T.O—Technical Order

TOAT—True Outside Air Temperature

TOLD—Takeoff Landing Data

TPC—Tactical Pilotage Chart

TR—Transformer Rectifier

UAB—Underwater Acoustical Locator Beacon

UHF—Ultra High Frequency

USAF—United States Air Force

USAFE—United States Air Forces in Europe

USMC—United States Marine Corp

USN—United States Navy

UV—Ultra Violet

VASI—Visual Approach Slope Indicator

VCSL—Voice Call Sign Listing

VFR—Visual Flight Rules

VHF—Very High Frequency

VIP—Very Important Person

VMCA—Air Minimum Control Speed

VMCG—Ground Minimum Control Speed

VOR—Very High Frequency Omni-Directional Radio-Range

VR—Refusal Speed

VS1—Stall Speed

VSI—Vertical Speed Indicator

VVI—Vertical Velocity Indicator

WG/CC—Wing Commander

Terms

Additional Crew Member—Mobility aircrew members and authorized flight examiners possessing valid aeronautical orders who are authorized to accompany the normal crew complement required for that mission according to **Chapter 3**.

Aircraft Commander (AC)—A pilot that has received a mission evaluation to have authority for the operation of the aircraft and well-being of the crew, but is not necessarily designated as the Pilot in Command (PIC) in the event that multiple ACs are on board an aircraft.

Air Route Traffic Control Center (ARTCC)—The principal facility exercising enroute control of aircraft operating under instrument flight rules within its area of jurisdiction. Approximately 26 such centers cover the United States and its possessions. Each has a communication capability to adjacent centers.

Air Traffic Control (ATC)—A service operated by appropriate authority to promote the safe, orderly and expeditious flow of air traffic.

Augmented Crew—Basic aircrew supplemented by additional qualified aircrew members to permit in-flight rest periods.

Bird/Wildlife Aircraft Strike Hazard (BASH)—An Air Force program designed to reduce the risk of bird/wildlife strikes. Refer to AFI 91-212, *Bird/Wildlife Aircraft Strike Hazards (BASH) Management Program*.

Bird Watch Condition Low—Normal bird/wildlife activity [as a guide, fewer than 5 large birds (waterfowl, raptors, gulls, etc.) or fewer than 15 small birds (terns, swallows, etc)] on and above the airfield with a low probability of hazard. Keep in mind a single bird in a critical location may elevate the Bird Watch Condition (BWC) to moderate or severe.

Bird Watch Condition Moderate—Increased bird population (approximately 5 to 15 large birds or 15 to 30 small birds) in locations that represent an increased potential for strike. Keep in mind a single bird in a critical location may elevate the BWC to moderate or severe.

Bird Watch Condition Severe—High bird population (as a guide, more than 15 large birds or 30 small birds) in locations that represent an increased potential for strike. A single bird in a critical location may cause a severe BWC.

Border Clearance—Those clearances and inspections required to comply with federal, state, and local agricultural, customs, immigration, and immunizations requirements.

Category I Route—Any route that does not meet the requirements of a Category II route, including tactical navigation and over water routes.

Category II Route—Any route on which the position of the aircraft can be accurately determined by a radial/DME radio aid (VOR, TACAN) at least once each hour.

Command and Control (C2)—Exercise of direction and authority over assigned forces by a properly designated command echelon in the accomplishment of the mission.

Command and Control Center (CC) (C2)—The exercise of authority and direction by a properly designated commander over assigned and attached forces in the accomplishment of the mission. Command and control functions are performed through an arrangement of personnel, equipment, communications, facilities, and procedures employed by a commander in planning, directing, coordinating, and controlling forces and operations in the accomplishment of the mission (JP 1-02).

Conference Hotel—Communication conference available to help aircrews solve in-flight problems that require additional expertise.

Contingency Mission—Mission operated in direct support of an OPORD, operational plan (OPLAN), disaster or emergency.

Crew Ready—Term used by operations and maintenance supervision to declare an aircraft ready for flight crew members to arrive and begin duties. At a minimum, "crew ready" means: (1) all maintenance preflight duty and repair actions are complete, and (2) the Forms 781 are signed, to include the Exceptional Release (ER), and available to the flight crew at the aircraft.

Critical Phase of Flight—Takeoff, air refueling, approach and landing.

Deadhead Time—Duty time for crewmembers positioning or returning from a mission or mission support function and not performing crew duties.

Direct Instructor Supervision—Supervision by an instructor of like specialty with immediate access to controls (for pilots, the instructor must occupy either the pilot or copilot seat).

Due Regard—Operational situations that do not lend themselves to International Civil Aviation Organization (ICAO) flight procedures, such as military contingencies, classified missions, SAR missions, politically sensitive missions, or training activities. Flight under "Due Regard" obligates the military PIC to be his or her own ATC agency and to separate his or her aircraft from all other air traffic (see FLIP General Planning, section 7.)

Equal Time Point (ETP)—Point along a route at which an aircraft may either proceed to destination or first suitable airport or return to departure base or last suitable airport in the same amount of time based on all engines operating.

Execution Authority—Command-level approval for initiation of a mission or portion thereof after due consideration of all pertinent factors. Execution authority is restricted to designated command authority.

Familiar Field—An airport in the local flying area at which unit assigned aircraft routinely perform transition training. Each operations group commander designates familiar fields within their local flying area.

First Suitable Airfield (FSAF)—The first suitable airfield available after completing the category I route segment.

Fix—A position determined from terrestrial, electronic or astronomical data.

Hazardous Cargo or Materials (HAZMAT)—Articles or substances that are capable of posing significant risk to health, safety, or property when transported by air.

Instructor Supervision—Supervision by an instructor of like specialty (see also Direct Instructor Supervision).

Combined/Joint Force Air Component Commander—The commander within a unified command, subordinate unified command, or joint task force responsible to the establishing commander for making recommendations on the proper employment of assigned, attached, and/or made available for tasking air forces; planning and coordinating air operations; or accomplishing such operational missions as may be assigned. The joint force air component commander is given the authority necessary to accomplish missions and tasks assigned by the establishing commander. Also called C/JFACC. See also combined/joint force commander. (JP 3-0).

Last Suitable Airfield (LSAF)—The last suitable airfield available before beginning the category I route segment.

Local Training Mission—A mission scheduled to originate and terminate at home station, generated for training or evaluation and executed at the local level.

Maintenance Status—See Below

A-1—No maintenance required.

A-2 (Plus Noun)—Minor maintenance required, but not serious enough to cause delay. Add nouns that identify the affected units or systems, (i.e., hydraulic, ultra-high frequency (UHF) radio, radar, engine, fuel control, generator, etc.). Attempt to describe the nature of the system malfunction to the extent that appropriate maintenance personnel meet the aircraft. Use system codes in appropriate AFTO Forms 781 whenever possible to enhance OPSEC. When possible, identify system as mission essential (ME) or mission contributing (MC).

A-3 (Plus Noun)—Major maintenance. Delay is anticipated. Affected units or systems are to be identified as in A-2 status above.

A-4—Aircraft or system has suspected or known biological, chemical, or radiological contamination.

Mission Contributing (MC)—Any degraded component, system, or subsystem which is desired, but not essential to mission accomplishment.

Mission Essential (ME)—Any degraded component, system, or subsystem which is essential for safe aircraft operations or mission completion.

Off Station—The portion of the flight when the aircraft is departing from the orbit airspace and not engaged in the mission.

On Station—Ready to employ the weapon system.

Operational Control (OPCON)—Transferable command authority that may be exercised by commanders at any echelon at or below the level of combatant command. Operational control is inherent in combatant command (command authority). Operational control may be delegated and is the authority to perform those functions of command over subordinate forces involving organizing and employing commands and forces, assigning tasks, designating objectives, and giving authoritative direction necessary to accomplish the mission. Operational control includes authoritative direction over all aspects of military operations and joint training necessary to accomplish missions assigned to the command. Operational control should be exercised through the commanders of subordinate organizations. Normally this authority is exercised through subordinate joint force commanders and Service and/or functional component commanders.

Operational control normally provides full authority to organize commands and forces and to employ those forces as the commander in operational control considers necessary to accomplish assigned missions. Operational control does not, in and of itself, include authoritative direction for logistics or matters of administration, discipline, internal organization, or unit training. Also called OPCON (JP 1-02).

Operational Missions—Missions such as deployment, re-deployment, and operational readiness inspections (ORI) are considered operational missions.

Orbit—The airspace where an EC-130H aircraft conducts the mission.

Overwater Flight—Any flight that exceeds power off gliding distance from land.

Permit to Proceed—Aircraft not cleared at the first U.S. port of entry may move to another U.S. airport, on a permit to proceed issued by customs officials at the first port of entry. This permit lists the requirements to be met at the next point of landing (e.g. number of crew and passengers, cargo not yet cleared). PICs are responsible to deliver the permit to proceed to the customs inspector at the base where final clearance is performed. (Heavy monetary fines can be imposed on the PIC for not complying with permit to proceed procedures.)

Pilot in Command—Aircraft Commander (AC)-qualified pilot who is designated as in command of the aircraft and the overall mission, regardless of whether he or she is in the seat.

Prior Qualified Pilot—Pilot converted from another MDS. PQPs have no prior C-130 pilot qualification.

Show Time—The time a crew member is required to report for duty.

Significant Meteorological Information (SIGMET)—Area weather advisory issued by an ICAO meteorological office relayed to and broadcast by the applicable ATC agency. SIGMET advisories are issued for tornadoes, lines of thunderstorms, embedded thunderstorms, large hail, severe and extreme turbulence, severe icing, and widespread dust or sand storms. SIGMETs frequently cover a large geographical area and vertical thickness. They are prepared for general aviation and may not consider aircraft type or capability.

Special Tactics Team (STT)—A task-organized element of special tactics that may include combat control, pararescue, and combat weather personnel. Functions include austere airfield and assault zone reconnaissance, surveillance, establishment, and terminal control; terminal attack control; combat search and rescue; combat casualty care and evacuation staging; and tactical weather observations and forecasting.

Stations Time—A specified time that aircrew, passengers, and material are to be in the aircraft and prepared for flight. Passengers will be seated and loads tied down. **(T-3)**. The crew will have completed aircraft preflight inspections prior to stations time. **(T-3)**.

Terminal Fuel Flow (TFF)—The fuel flow rate expected during the last hour at cruise altitude. It is the difference between the fuel required for enroute time plus one hour and fuel required for enroute time. TFF may also be computed using T.O. 1C-130H-1-1 fuel flow table and the estimated aircraft weight at destination. Estimated gross weight is determined by subtracting fuel burn off from takeoff gross weight.

Zero Fuel Weight—Weight, expressed in pounds, of a loaded aircraft not including wing and body tank fuel. All weight in excess of the maximum zero fuel weight consists of usable fuel.