***BY ORDER OF THE SECRETARY OF THE AIR FORCE***

***AIR FORCE MANUAL 11-2HC-130J, VOLUME 3***

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***Flying Operations***

***HC-130J – OPERATIONS PROCEDURES***

**COMPLIANCE WITH THIS PUBLICATION IS MANDATORY**

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This volume implements Air Force Policy Directive (AFPD) 11-2, *Aircrew Operations*, and supports AFPD 11-4, *Aviation Service*; Air Force Instruction (AFI) 11-200, *Aircrew Training, Standardization/Evaluation, and General Operations Structure*; and Air Force Manual (AFMAN) 11-202 Volume 3, *Flight Operations*. It applies to all civilian employees and uniformed members of the Regular Air Force, Air Force Reserve (AFR) and Air National Guard (ANG) performing aircrew duties in HC-130J aircraft. This volume applies to all Air Force Major Commands (MAJCOMs) operating the HC-130J. For the purpose of this manual, the Office of the Director, Air National Guard is considered a MAJCOM. Where such guidance applies to both ANG and AFR the term Air Reserve Component (ARC) is used. This publication does not apply to the United States Space Force. The authorities to waive wing or 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 DAFMAN 90-161, *Publishing Process and Procedures*, 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 requestor's commander for non-tiered compliance items. Refer recommended changes and questions about this publication to through command channels to Air Combat Command Personnel Recovery Aviation Branch (ACC/A3JO) using the Department of the Air Force (DAF) Form 847, *Recommendation for Change of Publication*. Ensure all records generated as a result of processes prescribed in this publication adhere to AFI 33-322, *Records Management and Information Governance Program*, and are disposed of in accordance with the Air Force Records Disposition Schedule which is located in the Air Force Records Information Management System. This

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## *SUMMARY OF CHANGES*

This interim change revises AFMAN 11-2HC-130JV3 by updating several areas including Combat Search and Rescue-Coordinator (CSAR-C) procedures, flying duty period, fuel planning, departure procedures, minimum equipment list (MEL), and definitions. A margin bar (|) indicates newly revised material.

# Chapter 1

# OVERVIEW

**1.1. General.** This volume prescribes procedures for operating HC-130J aircraft under most circumstances. This AFMAN directs readers to the Air Force Tactics Techniques and Procedures (AFTTP) 3-3.HC-130, throughout, for ACC approved methods of accomplishing specific tactics, techniques, & procedures (TTP). Sections of the AFTTP referenced in this AFMAN are to be considered directive in nature. Although this publication provides guidance for aircraft operations under most circumstances, it is not a substitute for sound judgment. When necessary to protect the crew and aircraft from a situation not covered by this AFMAN, and when immediate action is necessary, the aircraft commander (AC) has ultimate authority and responsibility for the course of action to be taken. 88th Test and Evaluation Squadron (88 TES) aircraft and aircrew may deviate from the contents of this volume as outlined in individually approved test plans required for test and evaluation purposes. This volume, with its complementary unit-specific local procedures supplement, prescribes standard operational and weapons employment procedures to be used by all aircrews operating USAF HC-130J aircraft. ACC/A3JO has overall responsibility for the administration of this volume.

**1.2. Key Words Explained.**

1.2.1. "Will", "shall", & "must" indicate a mandatory requirement.

1.2.2. "Should" is used to indicate a preferred, but not mandatory, method of accomplishment.

1.2.3. "May" indicates an acceptable or suggested means of accomplishment.

**1.3. Deviations.** The AC will report deviations and exceptions taken without waiver, through Standardization/Evaluation (Stan/Eval) channels to the MAJCOM Director of Operations (A3) within 48 hours, followed by a written report, if requested. (T-2)

**1.4. Supplements.**

1.4.1. Each MAJCOM may supplement this AFMAN according to AFI 11-200 and DAFMAN 90-161. *Publishing Process and Procedures*.

1.4.2. Local Supplements. Operations groups will define local operating procedures to this AFMAN in a unit supplement, **Chapter 10**. **(T-2)** Send draft local operating procedures to Air National Guard Bureau Combat Air Forces Branch (NGB A2/3/6/10OC) (ANG units), Air Force Reserve Command Combat Division (AFRC/A3D) (AFR units), Air Combat Command Personnel Recovery Division (ACC/A3J) (ACC units) or 19th Air Force Graduate Training Division (19AF/A3M) (Air Education and Training Command (AETC) units) for coordination.

**1.5. Waivers.**

1.5.1. Approved waivers to this AFMAN will expire upon the publication date of any rewrite of this manual, or the expiration date listed on said waiver, whichever occurs first. **(T-2)**

1.5.2. For matters where this AFMAN is the source document, waiver authority is listed where applicable.

# Chapter 2

# ROLES AND RESPONSIBILITIES

## 2.1. Roles and Responsibilities.

2.1.1. Major Command (MAJCOM). MAJCOMs provide guidance and approve waivers (as required), where specified throughout this instruction.

2.1.2. Pilot in Command (PIC). The PIC is the aircrew member designated by Competent authority, regardless of rank, as being responsible for, and is the final authority for the operation of the aircraft. The PIC will ensure the aircraft is not operated in a careless, reckless, or irresponsible manner that could endanger life or property. **(T-3)** The PIC will ensure compliance with this publication and the following:

2.1.2.1. HAF, MAJCOM, and Mission Design Series (MDS)-specific guidance.

2.1.2.2. Flight Information Publications (FLIP) and Foreign Clearance Guide (FCG).

2.1.2.3. Air Traffic Control (ATC) clearances.

2.1.2.4. Notices to Airmen (NOTAMs).

2.1.2.5. Aircraft Technical Orders (TO); and, 1.7.2.6. Combatant Commander instructions and other associated directives.

2.1.2.6. Aircrew Complement. **Table 2.1** and **Attachment 6** list HC-130J minimum crew complements by type of crew and by event/mission respectively. The waiver authority for any crew complement reductions to **Table 2.1** and **Attachment 6**, down to the minimum crew complement specified in the flight manual (1 pilot, 1 copilot, & 1 loadmaster), is the squadron commander (SQ/CC).

2.1.2.7. Operational risk management (ORM) assessments will be made available for OG/CCs when considering crew complement reductions. **(T-3)**

2.1.3. Crew Roles and Responsibilities. Specific crew position roles and responsibilities are per **paragraph 2.3** of this manual.

2.1.4. Additional crew members (ACM). See DAFMAN 11-401, *Aviation Management*.

2.1.5. Mission Essential Personnel (MEP). See DAFMAN 11-401.

## 2.2. Interfly and Intrafly.

2.2.1. Interfly is the temporary exchange or substitution of aircrew members and/or aircraft between MAJCOMs. Approval authorities for aircrew interfly are the requesting and supporting operations OG/CCs. The OG/CC and sister service equivalent are the approval authorities for qualified C-130 variant aircrew members from other variants within the USAF or other US military services. AFMAN 11-2HC-130J Volume 1, *HC-130J Aircrew Training*, specifies difference qualification training requirements.

2.2.2. Intrafly is the exchange and/or substitution of aircrew members from separate units under the same MAJCOM to accomplish flying missions. Normally, intrafly should be used only to relieve qualified manpower shortfalls. The OG/CC possessing the aircraft is the approval authority, delegable to SQ/CC.

2.2.3. Blanket ACC Interfly and Intrafly approval is granted for:

2.2.3.1. Weapons School instructor cadre, students, and assigned, attached, or augmenting aircrew.

2.2.3.2. Developmental test (DT) and/or operational test (OT) assigned or attached aircrew.

2.2.3.3. Formal training unit (FTU) assigned and attached aircrew, students, and military or contract aircrew augmenting FTU mission.

2.2.3.4. All exercises, training, capabilities development efforts.

2.2.3.5. Higher headquarters unit visits, staff assistance visits, aircrew qualification checks, formal visits, operational readiness inspections, and operational readiness exercises.

2.2.3.6. Senior supervisory and staff aircrew members approved in accordance with DAFMAN 11-401.

2.2.3.7. Aircrew conducting operational or humanitarian missions.

2.2.3.8. Defense Contract Management Agency (DCMA) personnel for Functional Check Flights (training or actual Functional Check Flight (FCF)).

2.2.4. Differences training may be required between different series aircraft. See AFMAN 11-2HC-130JV1.

2.2.5. For Regular Air Force (RegAF) flying with ANG units, see DAFMAN 11-401 for additional information.

**Table 2.1. Aircrew Complement by Type of Crew.**

| **Crew Position** | **Basic Crew** | **Augmented Basic Crew** | **Combat Crew** [1] | **Augmented Combat Crew** [1] |
|---|---|---|---|---|
| Aircraft Commander (AC) | 1 | 2 [2] | 1 | 2 [2] |
| Co Pilot (CP) [3] | 1 | 1 | 1 | 1 |
| Combat Systems Officer (CSO) [3] | 0 | 0 | 1 | 2 |
| Loadmaster (LM) [3] | 1 | 2 | 2 | 3 |

**Notes:**

1. A combat crew complement (type determined by anticipated mission/vulnerability period duration) should be scheduled. Aircrew complement may be reduced to **Attachment 6** quantities for no-notice rescue taskings if required. If new capabilities or mission events require crew complements exceeding the requirement in this **Table 2.1**., the SQ/CC will determine the

type and number of crew members required if not otherwise specifically stated in published guidance (i.e., Tactics bulletin or flight crew information file (FCIF) detailing the new capability/mission event). **(T-3)**

2. Both ACs should be qualified in all phases of the mission. Planned transfer of AC duties will be briefed to the crew prior to step for scheduled missions or prior to assuming alert. **(T-3)** For no-notice rescue taskings, brief transfer plan before takeoff. **(T-3)**

3. A crew's full complement of CPs, CSOs, or LMs need not be qualified in all phases of the mission as long as **Attachment 6** requirements are met.

**2.3. Aircrew Positions.** All crew members will perform normal crew duties as outlined in appropriate flight manuals and other chapters of this manual.

2.3.1. The following duties are divided between all crew positions:

2.3.1.1. Communication/navigation/identification-management unit (CNI-MU) programming/updating.

2.3.1.2. Mission planning.

2.3.1.3. Monitoring of fuel status (fuel should be checked at least once every 30 minutes).

2.3.1.4. Anti-hijacking.

2.3.1.5. Obtaining or maintaining security of aircraft and equipment.

2.3.2. Navigation duties are the responsibility of the pilot monitoring (PM) and/or the CSO depending on which phase of flight or event is occurring and crew position workload requirements.

2.3.2.1. Navigation duties include: Time over target/time of arrival (TOT/TOA) control, CNI-MU LEGS page programming/updating, radar/terrain clearance, weather avoidance, off-course maneuvering guidance, threat plotting & avoidance, turnpoint briefs (magnetic course & minimum safe altitude (MSA), start climb point (SCP) & night vision goggle (NVG) altitudes, and handling any variables affecting planned objective areas.

2.3.2.1.1. If navigation is passed between crew members, the crew member handing off navigation will brief the crew member receiving navigation on all applicable duties listed in **paragraph 2.3.2.1**. **(T-3)**

2.3.2.1.2. When not primary for navigation, the CSO/PM will verify all planned threat avoidance in tactical data link (TDL) (P)rimary, terrain awareness and warning system (TAWS) (S)econdary) or Radar (T)ertiary. **(T-3)**

2.3.3. Combat Search and Rescue-Coordinator (CSAR-C) Responsibility and Authorities. A certified CSAR-C, acting in that capacity during a CSAR mission (to include Air Tasking Order (ATO) assigned alert), is responsible for mission execution. They are the authority for determining aircraft flight regime, configuration, and requirements for employment to accomplish the mission.

2.3.4. Detachment Commander (DETCO) Responsibility and Authorities. SQ/CCs or operations officers (SQ/DOs) may designate a DETCO when more than one aircraft or crew is

deployed away from home station. If no DETCO is designated, the senior AC or CSO will be the DETCO. **(T-3)** DETCO duties include, but are not limited to:

2.3.4.1. Briefing crews on local procedures.

2.3.4.2. Coordinating with command & control (C2), any ground or air assets (commonly referred to as "users"), and other influences that may have an impact on the mission.

2.3.4.3. Confirming that drop zones (DZ) or landing zones (LZ) have current surveys (when necessary).

2.3.4.4. Ensuring personnel have ample and adequate billeting, dining, and transportation.

2.3.4.5. Providing maintenance (MX) personnel with aircraft and fuel requirements.

2.3.4.6. Submitting timely reports on aircraft movements.

2.3.4.7. Keeping the applicable C2 or executing agencies informed of mission progress.

2.3.5. Aircraft Commander (AC) Responsibility and Authority. The Flight Authorization designates an AC for all flights. ACs are:

2.3.5.1. In command of all persons on board the aircraft, to include instructors, evaluators, passengers, teams, and MX personnel.

2.3.5.2. Responsible for the welfare of their aircrew and passengers.

2.3.5.3. Vested with the authority necessary to manage their crew and safely accomplish the mission.

2.3.5.4. The final mission authority and makes decisions not specifically assigned to a higher authority.

2.3.5.5. The final authority for accepting any waivers affecting the crew or mission.

2.3.5.6. Responsible for the timely reporting of aircraft movements.

2.3.5.7. Final responsibility for the safe conduct of the mission rests with the AC.

2.3.5.7.1. If the AC refuses a mission, it will not depart until the conditions have been corrected so that the mission can operate safely. **(T-2)**

2.3.5.7.2. Commanders and DOs will not alert another AC and crew to take the same mission under the same conditions. **(T-2)**

2.3.6. Combat Systems Officer (CSO) Responsibility and Authority. The CSO is the primary manager of all TDL, lightweight airborne recovery system (LARS), HAAD planning/programming, aerial refueling tanker operations, self-contained approach (SCA) programming, defensive systems, and electro-optical/infrared (EO/IR) sensors.

2.3.7. Loadmaster (LM) Responsibilities and Authorities. The LM is responsible for load planning, verifying proper aircraft configuration, aircraft preflight, operation of aircraft equipment, weight and balance calculations, safe movement of cargo and personnel into and out of the aircraft, ensuring and performing proper loading, tie-down, and offloading of cargo/equipment, handling of troops/passengers, verifying cargo/passengers against necessary documentation, and execution of aerial delivery operations.

2.3.7.1. A LM must remain in the cargo compartment when passengers are on board unless otherwise directed by the AC. **(T-3)**

2.3.7.2. Performs scanner duties during visual search operations, aerial refueling tanker operations, formation operations, and on flight profiles/routes where any visual threat to the aircraft exists (i.e., profiles in a surface to air weapons engagement zone (WEZ) or air-to-air threat).

2.3.8. Air freight and Other Servicing Agency Responsibility. Normally all air freight, fleet service, and servicing personnel are authorized to perform assigned duties in all HC-130J aircraft when escorted by an authorized individual.

2.3.8.1. Air freight personnel are responsible for completion of cargo documentation, palletizing, and movement of cargo to and from the aircraft.

2.3.8.2. They advise the LM of destination, size, weight, and type of cargo (classified, hazardous, etc.), to permit proper positioning; coordinate traffic activities that may affect loading and off-loading; and assign sufficient air freight loading personnel for cargo handling.

2.3.8.3. Air freight personnel are responsible for safe movement of material handling equipment and cargo to and from the aircraft.

2.3.8.4. Air freight personnel, under the direction of the LM, prepare the aircraft for loading or stowing loading equipment if the aircraft is not to be reloaded, tie-down, and physically on and off-load cargo. If cargo, aircraft equipment, or aircraft structure are damaged during loading or off-loading, or if loading personnel are injured, the LM will notify the AC, command post, or terminal operations officer. (T-2)

2.3.8.5. At locations with no air terminal or traffic personnel, the shipper assumes responsibilities.

2.3.9. Outside Observer/ACM Duties and Authority. Available crew members will assist in clearing during taxi operations, and any time the aircraft is below 10,000 ft. mean sea level (MSL) as crew duties permit. **(T-3)**

2.3.10. Mission Commander (MC) Responsibility and Authorities. See AFTTP 3-3.HC-130 for definition of MC. SQ/CCs or SQ/DOs may designate a MC on any mission (training or combat). MCs may be dual hatted as DETCO as defined in **paragraph 2.3.4** MC duties include, but are not limited to:

2.3.10.1. Overall formation execution.

2.3.10.2. Mission decisions: weather, employment, aircraft bump criteria, late takeoff criteria, timeline adherence, threat go/no-go criteria, and package integration.

## 2.4. Duty Day.

2.4.1. Flight Duty Period (FDP) and Crew Rest. See AFMAN 11-202V3.

2.4.1.1. FDP includes both military duty and civilian work. It begins when the individual reports for their first official duty (military or civilian).

2.4.1.2. When crew members perform other official duties prior to flight-related duties (including civilian work for ARC crew members), FDP begins when reporting for those other duties.

2.4.2. Flight Duty Period (FDP) Restrictions.

2.4.2.1. Aircrews will not perform aerial refueling tanker operations below 3,000 ft. above ground level (AGL), pilot proficiency training, air-to-air refueling (AAR)-receiver operations or FCFs after 12 hours. **(T-3)** Aircrews will not perform aerial refueling tanker operations at or above 3,000 ft. AGL after 14 hours. **(T-3)** If both autopilots are not operational, cannot be coupled to the flight director or its use is denied for more than 4 hours, FDP will be 12 hours. **(T-3)** If the autopilot fails after departure, aircrews will continue to the next scheduled stop and then comply with the basic FDP limitations. **(T-3)**

2.4.2.2. **(ANG/AFR Only)** : FDP is in accordance with AFMAN 11-202V3 for all mission events, FCF & pilot proficiency training missions originating from home station, and space center launch & recovery support missions. Waiver authority is the applicable OG/CC. For off station and contingency missions, all FDP restrictions listed in **paragraph 2.4.2.1** apply to ARC.

2.4.2.3. To qualify for augmented crew FDP, aircraft sleeping provision must include a minimum of two suitable sleeping provisions.

2.4.2.3.1. If mission requirements allow, a comfort pallet provides ideal sleeping provisions.

2.4.2.3.2. If a comfort pallet is not available, or mission requirements do not allow its use, litters and/or unit issued hammocks may be used as a suitable sleeping provision

2.4.2.4. Once established, a basic FDP will not be changed to an augmented FDP, regardless of crew composition. **(T-3)**

2.4.3. Alert Duty. Alert duty is defined as any period during which an alert crew may be on call to perform a specific mission. Aircrew will be placed into crew rest prior to alert status. **(T-3)** Publish flight authorizations for the alert crew to cover the entire alert duty period. Prior to entering crew rest, aircrew will be given an expected alert assumption time. **(T-3)**

2.4.3.1. Normal sleeping hours defined in AFMAN11-202V3_ACCSUP, *Flight Operations* in most situations are not applicable to rescue aircrew. The unit commander may define normal sleeping hours that best suit their units. Unit commanders should coordinate with other appropriate and co-located rescue unit commanders to ensure personnel across the Personnel Recovery Task Force (PRTF) are on the same schedule.

2.4.3.2. Alert crews will conduct a briefing at the beginning of each alert period. **(T-3)** The briefing will be updated every 24 hours to include weather, notices to airmen (NOTAMs), recently published flight crew information files, special instructions (SPINS), and appropriate items as determined by the SQ/CC, flight lead, or AC. **(T-3)** Daily briefing updates during normal waking hours do not constitute a beginning to the crew duty day.

2.4.3.3. Alert crews are authorized to prepare takeoff and landing data (TOLD) using the most restrictive weather conditions expected during the alert period. This TOLD will be used only for alert scrambles. **(T-3)** If the alert aircraft is flown for other reasons, TOLD will be computed using existing weather conditions. **(T-3)** A DD Form 365-4

*Transport/Tactical Weight and Balance Clearance Form F*, will be completed and signed for the alert aircraft. **(T-2)** A canned DD Form 365-4 is authorized provided the aircraft configuration for the alert period does not change.

# Chapter 3

# PLANNING

## 3.1. General Procedures.

3.1.1. Call Signs. Use voice call sign listing or as specified in mission directives for all missions except local area training missions.

3.1.1.1. Use squadron or wing static call signs, as directed, for local area training missions.

3.1.1.2. Avoid using sequential call signs when more than one aircraft are conducting the same mission and not in formation.

3.1.1.3. Squadrons will not file CROWN (or equivalent) call signs when not qualified or tasked for CSAR-C. **(T-2)**

3.1.1.4. For aeromedical evacuation missions, replace normal call sign with "EVAC" plus the last five digits of the aircraft tail number when patients are on board.

3.1.1.5. When tasked to participate in search and rescue (SAR) operations, use the call sign "AIR FORCE RESCUE" plus the last five digits of the aircraft tail number.

3.1.2. Mission Clearance Decision. The agency with operational control (OPCON) or the AC may make the final decision to delay a mission when, in the opinion of either, conditions are not safe to start or continue a mission.

3.1.2.1. The commander with OPCON must authorize any diversion or rerouting of a mission, except in an emergency or when required by enroute or terminal weather conditions or facilities. In the event of an emergency or weather-related divert or reroute, the mission commander (MC) or AC must notify the controlling authority as soon as possible. **(T-3)**

3.1.2.1.1. The agency directing rerouting or diversion is responsible for determining if destination facilities are adequate for aircraft and aircrew.

3.1.2.1.2. The AC should still verify that destination facilities are adequate for aircraft and aircrew.

3.1.2.2. When directing an aircraft to an alternate airfield, the C2 authority is responsible for providing the aircrew enroute weather, existing and forecast weather for the alternate, notice to airmen (NOTAM), and appropriate airfield information from the airfield suitability and restrictions report (ASRR) before the AC is required to accept.

3.1.2.3. If the planned alternate becomes unsuitable while enroute, the AC should coordinate with the C2 authority for other suitable alternates. The C2 authority coordinates with customs and ground service agencies to prepare for arrival.

3.1.2.4. The AC is the final authority on selecting a suitable alternate.

3.1.3. Civilian Law Enforcement Support. The policy of the Department of Defense is to support civilian law enforcement officials to the maximum extent permissible by law.

3.1.3.1. Reference AFI 10-801, *Defense Support of Civil Authorities*, for procedures and specific restrictions for the use of Air Force personnel, equipment, facilities, and services for civilian law enforcement organizations.

3.1.3.2. Coordinate all requests from civilian law enforcement authorities through the appropriate C2 channels.

3.1.4. Sensitive Mission Operations. Certain missions require special flight planning procedures or deceptive measures. Mission operating directives, MAJCOM/CC operations orders, or other tasking orders direct use of these procedures.

3.1.4.1. Brief crew members on modification to normal procedures prior to execution of the operation. **(T-3)** For these types of missions, the MAJCOM/CC or commander of Air Force forces (COMAFFOR) will approve missions requiring coordination with non-ACC agencies prior to execution. **(T-2)**

3.1.4.2. The planning agency tasked with the mission normally provides aircrew with the following information:

3.1.4.2.1. Departure procedures.

3.1.4.2.2. Enroute procedures to include tracks, altitude reservations (ALTRVs), military assumes responsibility for separation of aircraft (MARSA), tanker rendezvous, and emergency divert procedures.

3.1.4.2.3. Arrival procedures.

3.1.4.2.4. All communications requirements.

**3.2. Alert Aircraft.** When mission requirements dictate, units may place an aircraft on alert status.

3.2.1. Prepare the aircraft in accordance with established Technical Orders (T.O.s).

3.2.2. The aircraft will be accepted by an aircrew, remain under the control of operations, and be monitored by MX. **(T-3)**

3.2.3. When sealing an aircraft, accomplish pre-flight inspections in accordance with **paragraph 4.4.4**. **Note:** Placing a unit on alert does not in itself place the unit's aircraft on alert status.

3.2.4. Consider alert aircraft off-limits to all personnel except alert crew members. **(T-3)** No maintenance will be performed on the aircraft without approval of the unit/mission commander. **(T-3)**

3.2.5. LMs should be alerted before the rest of the crew when cargo loading warrants (i.e., T.O. 1C-130(H)J-9, *Cargo Loading Manual*, section VI cargo). Base aircrew FDP on the LMs show time.

3.2.6. Maintain aircraft on alert status as follows:

3.2.6.1. Park the aircraft in a designated alert parking area to expedite taxi and takeoff.

3.2.6.2. When operationally feasible, have an aircrew other than the alert aircrew preflight the alert aircraft. If this is not feasible, follow procedures outlined in **paragraph 2.4.1**.

3.2.6.3. Aircraft preflight times should align with the start of the alert period eliminating the need to update the preflight during the alert period.

3.2.6.4. The CC with OPCON of the alert aircraft may approve flying the aircraft for other than alert missions. Aircrews should consider the following:

3.2.6.4.1. Alert requirements can be met with sufficient fuel and FDP to meet mission requirements.

3.2.6.4.2. Communication is maintained with the primary controlling agency.

3.2.6.4.3. Controlling agencies are notified any time the alert aircraft departs the local area.

3.2.6.4.4. Units must prepare a DD Form 365-4, *Weight and Balance Clearance, Form F*, for the alert aircraft. **(T-2)**

3.2.7. Alert crews are authorized to load takeoff and landing data (TOLD) using the worst weather conditions expected for the alert period. Use the TOLD for alert scrambles. If the alert aircraft is flown for other reasons, use TOLD for the existing weather conditions.

**3.3. Mission Planning.** Refer to AFTTP 3-1.Threat Guide, *Threat Reference Guide,* AFTTP 3-3.HC-130 for in-depth mission planning and employment considerations. For deliberate missions, a minimum of one full day should be allocated for mission planning.

3.3.1. Pilots and/or CSOs are responsible for accomplishing and verifying mission planning materials, loading data into the aircraft (manually or via the data transfer card), and verifying required ramp fuel load.

3.3.2. Computer flight plans (CFPs) generated from mission planning software are the official source of performance, navigation, and climatic data, including enroute wind information. Each mission segment should utilize best wind data available. Use only MAJCOM validated CFPs.

3.3.2.1. Apply flight plan winds automatically via a MAJCOM approved mission planning environment (MPE) plug-in or manually from a DD Form 175-1, *Flight Weather Briefing*. **(T-3)**

3.3.2.2. Aircrews will verify the CFP for route definition and accuracy preflight, paying particular attention to adherence with over-flight clearances. **(T-3)**

3.3.3. Aircrews must conduct a daylight route survey for all unpublished training routes prior to NVG or instrument meteorological conditions (IMC) operations. **(T-3)**

3.3.4. During contingency or combat operations, aircrew and mission planners will account for the potential of IMC in the low-level environment. **(T-3)** Aircrews will be prepared to conduct a low-level in visual meteorological conditions (VMC) or IMC with appropriate planning for terrain, altimeter setting accuracy, and decreased visual references. **(T-3)** Refer to AFTTP 3-3.HC-130 for IMC planning considerations.

3.3.5. Weather. All mission should be planned to avoid areas of severe weather. Comply with the following procedures and prohibitions:

3.3.5.1. ACs will inform LMs of expected moderate or greater turbulence. **(T-3)**

3.3.5.2. LMs will direct all passengers to sit, and fasten seat belts during times of experienced or expected moderate or greater turbulence. **(T-3)**

3.3.5.3. Lunar Illumination Criteria. There is no minimum illumination requirement to conduct NVG modified contour low-level operations. When below 10 percent effective illumination, risk mitigation procedures must be identified and briefed. **(T-3)** See AFTTP 3-3.HC-130 for mission planning and execution techniques in a low illumination environment. **Note:** Lack of sufficient illumination may prevent NVG modified contour low-level operations in otherwise VMC conditions.

3.3.6. Aircraft Lighting. in accordance with AFMAN 11-202V3, AFMAN 11-218, *Aircraft Operations and Movement on the Ground*, and applicable T.O.s.

3.3.6.1. Cargo compartment lighting is dictated by the tactical situation and will be coordinated between the AC and LM(s). **(T-3) Note:** Cargo compartment emergencies may require overt lighting. The nature of the emergency and the tactical situation dictates what level of lights is used, and whether the LM continues the use of NVGs.

3.3.6.2. Lights-out operations during peacetime are conducted in accordance with AFMAN 11-202V3 and local procedures.

3.3.6.3. Total lights out operations are authorized with concurrence of the controlling agency in restricted airspace and warning areas.

3.3.6.4. Lights-out contingency operations are conducted in accordance with special instructions (SPINS).

3.3.7. Alternate Airfield Selection. Aircrews need only to plan fuel to an alternate when AFMAN 11-202V3 or guidance in this AFMAN require the filing of an alternate.

3.3.7.1. When only one alternate is mandatory, aircrews will use the closest suitable airfield meeting mission requirements (such as special requirements for hazmat or patients) and AFMAN 11-202V3 weather criteria. **(T-3)**

3.3.7.2. If two alternates are mandatory, aircrews will use the two closest suitable airfields meeting AFMAN 11-202V3 weather criteria and fuel plan to the more distant of the two. **(T-3)**

3.3.7.3. When selecting an alternate, suitable military airfields are preferred.

3.3.8. Fuel Planning.

3.3.8.1. General. A fuel plan is required for all flights except local area flights with established standard fuel loads. The CFP and Performance Manual are the primary method of fuel planning. All preflight planning must be verified with aircraft mission computer (MC) performance prior to departure. **(T-3)** Missions should be planned at altitudes, routes and airspeeds to minimize fuel usage.

3.3.8.1.1. HC-130J Management. All HC-130J flight operations will use fuel planning and en route fuel management procedures. **(T-2) Note**: The flight planning computer configuration is approved by MAJCOM and the Special Operations Mission Planning Office. Uncertified, untested, or beta versions of developing software will not be used for actual mission planning. **(T-2)**

3.3.8.1.2. CAUTION*:* Critical fuel decisions should not be predicted on the information provided by the Communication/Navigation/Identification System Processors (CNI-SP) calculations alone. Performance Manual charts should be crosschecked before proceeding on a fuel critical course of action.

3.3.8.2. Alternate Selection. Plan fuel to an alternate only when AFMAN 11-202V3, or this manual require the filing of an alternate.

3.3.8.2.1. When only one alternate is required, use the closest suitable airfield meeting mission requirements (such as special requirements for hazmat or patients) and AFMAN 11-202V3, weather criteria.

3.3.8.2.2. If two alternates are required, use the two closest suitable airfields meeting AFMAN 11- 202V3, weather criteria and fuel plan to the more distant of the two.

3.3.8.2.3. When selecting an alternate, suitable military airfields are preferred if within 100 NM of destination.

3.3.8.3. Fuel Planning Profiles. En route cruise airspeed should be planned at a constant TAS in accordance with the Performance Manual. Missions planned using Long Range Cruise (LRC) provide little flexibility in the air when faced with actual fuel critical situations requiring the conservation of additional fuel. Divert profiles should be fully fuel planned and represent what will actually be flown. Altitudes should be no higher than the Air Traffic Control (ATC) cruise ceiling per the Performance Manual or fuel freezing temperature limitations, whichever is lower.

3.3.8.3.1. CFP Planning Profile. The HC-130J performance module of Portable Flight Planning System (PFPS) (or follow on system) is certified to calculate accurate fuel planning information. Crews should use the appropriate mission planning worksheet (usually C130JHI.frm or C130JHI.xls) when printing the CFP so both the route of flight and fuel planning information can be recorded. Use the fuel planning blocks on the top of the flight plan for fuel planning. **(T-3)** Pilots/CSO will ensure an accurate Recovery Fuel is input on the CFP Pre-mission/Configuration/Fuel screen so calculated Continuation Fuels used during in-flight fuel monitoring are valid. **(T-3)** When alternates are required, crews may need to accomplish and print two iterations of the flight plan to incorporate an accurate Recovery Fuel. For example: after the first calculation, pilots will extract the en route fuel to the alternate from the last line of the flight plan and add this to the initial Recovery Fuel. A second flight plan will be calculated once the Pre-mission/Configuration/Fuel screen is updated with the correct Recovery Fuel. **(T-3)** If an alternate is required, use the Turnpoint/Additional Points screen to insert the designated airfield as a DVT (divert) type after the intended landing airfield.

3.3.8.3.2. HC-130J Mission Computer Profile. The HC-130J mission computer plans a complete climb, cruise, descent, approach, and landing profile based on the inserted LEGS DATA and PERF CLIMB, CRUISE and DESCENT factors. Accurate leg fuels, as calculated by the Mission Computer, are dependent on crew ensuring that airspeed, altitude, winds, temperature, and fuel flow are correctly represented for each leg of the route and updated/corrected as in-flight conditions change. Because the flight profile is more than a planning tool, crews must use good judgment when inputting

forecast/planned information versus actual performance and conditions. During preflight, each waypoint's fuel on board (FOB) for remaining legs will be compared against the flight planned Continuation Fuel to ensure there is sufficient fuel to continue the mission as planned in order to meet or exceed destination fuel requirements. **(T-3)** Once the flight plan is activated, the FOB on the PERF INIT WEIGHT page is calculated (not sensed) using sensed Fuel Flow over Time. The CNI-MU will provide a FUEL QTY ERROR advisory when the PERF INIT WEIGHT FOB and totalizer readings differ by more than 2,500 lbs for more than 10 minutes. Reserve Fuel (FIXED on PERF INIT WEIGHT) should be set to the Recovery Fuel value. The CNI supplies a Low Calculated Fuel advisory when the calculated EXTRA fuel on the PERF INIT WEIGHT page falls below zero. Destination and Alternate Landing Fuel can be obtained from the MC. Flight crews will use the MC to evaluate and verify destination landing fuel status after mission changes and reroutes and whenever a divert airfield is required and/or extensive weather avoidance routing is required. **(T-3)**

3.3.8.4. Fuel Planning Procedures. Aircrew and mission planners will manage aviation fuel as a limited commodity and precious resource. **(T-2)** Fuel optimization will be considered throughout all phases of mission planning and execution. **(T-3)** Excessive ramp and recovery fuel adds to aircraft gross weight and increases fuel consumption. Do not ferry extra fuel beyond optimum requirements for safe mission accomplishment and training objectives. Aircrew and mission planners will optimize flight plans and flight routing for fuel efficiency. **(T-3)** In-flight procedures such as climb/descent profiles and power settings should also be considered for efficient fuel usage. Aircrew should employ aviation fuel optimization measures without compromising flight safety or jeopardizing mission/training accomplishment.

3.3.8.4.1. Routes should be planned at 300 or 290 Knots True Airspeed (KTAS), whichever is optimal for planned gross weight (260 KTAS below 10,000 MSL), except for oceanic crossings.

3.3.8.4.2. For oceanic crossings, routes should normally be planned at LRC combined with a step-climb profile unless circumstances preclude otherwise. LRC airspeed is a function of altitude and gross weight, and subsequently corrected for Temp Dev and drag (Reference: Performance Manual: Specific Range Charts). For oceanic crossings, aircrew will ensure the leg fuel burn rates entered into the Communication/Navigation/Identification Management System (CNI-MS) coincide with those on the flight plan, either via transfer card or manually input.

3.3.8.4.3. Using all available planning tools (including Advanced Computer Flight Plan (ACFP) if feasible) and guidance in this chapter. PICs will approve the required ramp fuel load (RRFL). **(T-3)**

3.3.8.4.4. Ensure ramp fuel is correct upon arrival at aircraft.

3.3.8.4.5. Minimize use of Auxiliary Power Units (APUs). Use ground power units when practical.

3.3.8.4.6. Delay engine start time.

3.3.8.4.7. Minimize aircraft weight through optimized fuel loads and reduction of equipment not necessary to accomplish the mission.

3.3.8.4.8. Flight Plan Changes and Diversion. When mission requirements or ATC dictate a change to the planned mission or route, the fuel must be recalculated to ensure safe completion of the flight. **(T-2)** It is not practical to complete a new flight plan fuel log so the MC is the primary method of deciding if a mission change or reroute can be accommodated.

3.3.8.4.8.1. For an unplanned or directed en route divert, the FROM/TO page, with an associated cruise ground speed, can be used to determine an estimated time en route (ETE). Using a 4,500 lbs/hour (hr) or LRC speed from OPTIMAL CRZ 1/2 fuel burn, crews should be able to decide if the new routing is achievable without adverse effects on destination fuel. Do not accept a reroute that adversely depletes the destination Reserve Fuel as prescribed in this chapter.

3.3.8.4.8.2. If the en route change does not affect the intended destination, then in-flight fuel monitoring will consist of comparing the MC predicted Remaining Fuel with Flight Plan Continuation Fuel at the next point common to the reroute and the original flight plan. After any route alteration, crews should actively monitor fuel state by recording the Fuel Remaining values at abeam positions of the original flight plan and using the "Abeam" function of the INDEX/FIX INFO PAGE to cross-check fuel status.

3.3.8.4.9. Declare *"**Emergency Fuel**"* to ATC when it is determined that the aircraft will land with less than 3,000 lbs. **(T-2)**

3.3.8.4.10. Declare *"**Minimum Fuel**"* to ATC when it is determined that the aircraft will land with less than the calculated Recovery Fuel. **(T-2)** When Recovery fuel is entered into the CNI-MU on the PERF INIT WEIGHT page under FIXED, the aircraft provides a LOW CALCULATED FUEL advisory when extra fuel is zero or less.

3.3.8.5. Air to Air Refueling Fuel Planning Procedures. When the mission includes in-flight refueling (single or double AAR), crews should use the AFSOC Form 4139, *Special Operations C-130 Inflight Refueling Worksheet* figure in conjunction with the approved CFP to perform the fuel analysis. With the exception of those items identified on the AFSOC Form 4139, all items are outlined in **Table 3.1** *3.3.8.6. Category (CAT) I/High Level Airland Profile.

3.3.8.5.1. Abort Fuel Planning. An abort base is required for all refueling tracks. The departure base may be used. The designated abort base must meet alternate airfield weather requirements in accordance with AFMAN 11-202V3. All route segments, which include an in-flight refueling, should be planned with sufficient fuel onboard to fly from the departure airfield or previous End Air Refueling (EAR) point to an EAR point, and if required, divert so as to arrive overhead the abort airfield with sufficient fuel to hold, accomplish a descent/approach and land with Required Recovery Fuel (Item 10) without receiving an on-load. **Note:** Air refueling divert entries and fuel on-loads should be entered in the EAR waypoint line.

3.3.8.5.1.1. Altitudes should be no higher than the air traffic control (ATC) cruise ceiling per the performance manual. Account for pre-planned winds during fuel planning analysis.

3.3.8.5.1.2. For fuel analysis use a high-level form offered by the certified MPE

that provides the information necessary to meet the requirements of **paragraphs 3.3.8.6** & **4.16**. (non-air refueled) or AFSOC Form 4139, (if air refueled).

3.3.8.5.1.3. When planning category (CAT) I sorties crews will, at a minimum, obtain wind data for their planned flight level and for 10,000 ft. MSL. Aircrews should consider obtaining flight level winds for 5,000 ft. above and below their planned flight level. **(T-3)**

3.3.8.5.2. If AAR is required, multiple iterations of the flight plan will need to be printed. A singular flight plan for every segment of the flight (e.g., "T/O to EAR #1 to DVT", "ARIP #1 to EAR #1 to Dest") will be needed. **(T-3)** In order to get accurate Continuation Fuel on the CFP, use the following process. Crews may optionally use a single consolidated flight plan to conduct the AAR fuel iterations.

3.3.8.5.2.1. The initial segment flight plan will include all waypoints from takeoff through the Air-to-Air Refueling Exit Point (AREP), then routing to the AAR #1 Abort Base. **(T-3)**

3.3.8.5.2.2. Do not include any tanker onloads on this flight plan.

3.3.8.5.2.3. Create a second flight plan starting with the air-to-air refueling initial point (ARIP). This flight plan will include all waypoints from the ARIP through the destination. **(T-3)**

3.3.8.5.2.4. If an alternate is mandatory, aircrew will use the turn point/additional points screen to insert the designated airfield as a divert (DVT) type after the intended landing airfield. **(T-3)**

3.3.8.5.2.5. Continuation Fuel. Each leg is calculated using the following formula:

*Continuation Fuel = Fuel Remaining (beginning of leg) – Landing Fuel + Recovery Fuel*

3.3.8.5.3. Include a tanker onload at the AREP.

3.3.8.5.4. Perform similar iterations if more than one AAR is required.

3.3.8.5.4.1. Aircrews will account for any Recovery Fuel, Thunderstorm/Icing Fuel, Approach Fuel, Contingency Fuel, CAT I Fuel, Required Depressurization Fuel, and Tanker AAR Abort Fuel using the FIXED, VAR, or +EXTRA entries. As part of inflight fuel management, crews will update at least one of following: the FIXED/VAR/+EXTRA entries as conditions change and events are completed (Helicopter Air to Air Refueling (HAAR), FARP, etc.) **(T-3)**

3.3.8.5.4.1.1. "UNIDENTIFIED EXTRA" cannot be negative. **(T-3)** If necessary, add fuel to the planned ramp fuel (item B) or the planned onload (items C, D, E, or F). Alternatively, move the air refueling track or add another air refueling.

3.3.8.5.4.1.2. All "RESERVE" blocks will indicate 10% of the CAT I time from takeoff to end air refueling, not to exceed +45 minutes. **(T-3)** Aircrews will compute reserve fuel at terminal fuel flow (TFF). **(T-3)**

3.3.8.5.4.1.3. The enroute air refueling "(EAR) #1 T.O. A/R #2 ABORT BASE" section accounts for an unsuccessful fuel transfer. Aircrews will plan

an abort base for all AAR-receiver operations. **(T-3)** The departure base may be used. The designated abort base must meet alternate airfield weather requirements. **(T-3)**

3.3.8.5.4.1.4. All "HOLDING" blocks. Aircrews will use 3,000 lbs. if the "AR" abort base is in Alaska or at latitudes greater than 59 degrees N/S. **(T-3)**

3.3.8.5.4.1.5. "PLANNED RAMP FUEL" must be greater than required ramp fuel. **(T-3)**

3.3.8.5.5. DELETED

3.3.8.5.5.1. DELETED

3.3.8.5.5.2. DELETED

3.3.8.5.5.3. DELETED

3.3.8.5.5.4. DELETED

3.3.8.6. Fuel Requirements. ACs are responsible for determining the required ramp fuel load (RRFL). **(T-3)** Units should ensure all local and off station training missions flying low-level will initially takeoff with main tanks full to reduce the effects of wing upbending and increase the center wingbox service life. Training missions requiring less fuel than can fill the main tanks will ensure the aircraft is in primary fuel management for takeoff. **(T-3)**

3.3.8.6.1. Optimizing Fuel Loads. Aircrews will:

3.3.8.6.1.1. Mission plan for the required ramp and recovery fuel. **(T-3)**

3.3.8.6.1.2. Minimize use of APUs. **(T-3)** Use ground power units when practical.

3.3.8.6.1.3. Delay engine start time. **(T-3)** Units should establish and implement local engines start time standards.

3.3.8.6.1.4. Minimize aircraft weight through optimized fuel loads and reduction of equipment not necessary to accomplish the mission. **(T-3)**

3.3.8.6.1.5. Establish C2 and flight following procedures to ensure timely notification of mission changes/cancellations to avoid unnecessary or unproductive flight time. **(T-3)**

3.3.8.6.2. DELETED

3.3.8.6.2.1. DELETED

3.3.8.6.2.2. DELETED

3.3.8.6.3. DELETED

3.3.8.6.3.1. DELETED

3.3.8.6.3.2. DELETED

3.3.8.6.3.3. DELETED

3.3.8.6.3.3.1. DELETED

3.3.8.6.3.3.2. DELETED

3.3.8.6.3.4. DELETED

3.3.8.6.4. DELETED

3.3.8.6.4.1. DELETED

3.3.8.6.4.2. DELETED

3.3.8.6.5. DELETED

3.3.8.6.6. DELETED

3.3.8.6.6.1. DELETED

3.3.8.6.6.2. DELETED

**Figure 3.1. HC-130J Fuel Load Requirements.**

**Figure 3.1. HC-130J Fuel Load Requirements.**

| | | | | |
|---|---|---|---|---|
| 1 | **En Route Fuel** | ***STTO*** | Fuel required for engine start, taxi, and takeoff. Normally, 800 lbs. For known taxi delays or additional engine running ground time in excess of 30 minutes, add 30 lbs/min. | REQUIRED RAMP FUEL LOAD |
| | | ***Climb*** | Fuel required from takeoff through climb to initial cruise altitude. If a manual calculation is required, the applicable Performance Manual's Fuel to Climb charts will be used. Unless required for mission accomplishment, plan to climb no higher than ATC cruise ceiling per the Performance Manual. | |
| | | ***Cruise*** | Fuel required from Top of Climb to overhead intended destination. If a manual calculation is required, the applicable Performance Manual's charts will be used. (Include planned mission orbits ex SAR) | |
| | | ***Appr*** | Fuel required for approach, and landing from overhead destination. Normally 700 lbs, which accounts for one instrument approach of no longer than 10 minutes. For longer approaches, follow-on visual, and/or radar pattern work, compute fuel burn at 80 lbs/min. | |
| 2 | **Fuel Reserve** | | Always plan a 45 minute fuel reserve at destination or alternate (if alternate is required). Normally 3,000 lbs, or calculate using Four Engine Maximum Endurance Fuel Flow at 10,000 ft MSL. | RECOVERY FUEL |
| 3 | **Alternate and MAP** | ***Alternate*** | Fuel required from intended destination to alternate, or most distant alternate when two are required. Flown at optimum crusie altitude at LRC airspeed. | |
| | | ***MAP*** | (2,000 lbs) Fuel for a missed approach and second approach at the alternate airfield. Entry only required when the visibility-only criteria is used to determine the suitability of the original destination. | |
| 4 | **Holding in Lieu of Alternate** | | For Remote or island destination holding in lieu of an alternate, use 8,000 lbs or 2+00 calculated at Four-Engine Maximum Endurance Fuel Flow at 20,000 ft MSL | |
| 5 | **Min Landing** | | 3,000 lbs (always required) if it is determined that the aircraft will land with less than this amount, a fuel emergency exists and ATC must be informed. This entry is separate from Fuel Reserve. | |
| 6 | **Identified Extra** | ***Weather Avoidance*** | 1,500 lbs if forecast thunderstorms are scattered or numerous along the route of flight. | |
| | | ***Icing*** | 1,000 lbs if the route of flight has known or forecast icing conditions. | |
| | | ***Tankered Fuel*** | Fuel for succeeding legs without refueling. (Next leg requires Tanker AAR, FARP, limited fuel available at destination, etc.) If tankered fuel is not required, include in Unidentified Extra. | |
| 7 | **Depressurization Fuel** | | Additional fuel burned from ETP to FSAF, with a 45 minute reserve at 10,000 ft MSL. Calculate at 1,000 lbs/hour or Four-Engine Long Range Cruise Fuel Flow at 10,000 ft MSL. Plan on burning all other fuel except Fuel Reserve (item 2) and Min Landing Fuel (item 5). Calculate by adding [Normal En Route Fuel from T/O to ETP] + [Low altitude en route fuel from ETP to FSAF] + [Fuel Reserve (item 2)] + [Min Landing (item 5)]. | |
| | | | If calculated depressurization fuel is less than Mission Fuel (item 8), then no entry is required. | |
| | | | If calculated depressurization fuel exceeds Mission Fuel (item 8), then add the difference here. | |
| 8 | **Mission Fuel** | | En Route Fuel (item 1) + Fuel Reserve (item 2) + Alternate and MAP (item 3) + Holding in Lieu of Alternate (item 4) + Min Landing (item 5) + Identified Extra (item 6). | |
| 9 | **Required Ramp** | | Required Ramp Fuel Load (RRFL). Minimum fuel required as engine start to complete tasked missions. Calculate by adding En Route (item 1), En Route Reserve (item 2), Alternate & MAP (item 3), Holding in Lieu of Alternate (item 4), Min Landing (item 5), and Identified Extra (item 6). | |
| 10 | **Actual Ramp** | | Actual ramp fuel load prior to starting engines. | |
| 11 | **Unidentified Extra** | | Difference between Required Ramp Fuel (item 9) and Actual Ramp fuel (item 10). | |
| 12 | **Recovery Fuel** | | The minimum planned landing fuel at intended destination. This is the sum of the Fuel Reserve (item 2) Alternate & MAP (item 3), Holding in Lieu of Alt (item 4), and Min Landing (item 5). **This fuel is critical to calculating accurate continuation fuels for each leg; it must be updated in the permission configuration screen of the CFP. this value should be set in the CNI-MU on the PERF INIT WEIGHT page under FIXED (Defined in TO as "Reserve Fuel").** | |

3.3.9. Threat Analysis. Refer to AFTTP 3-1.Threat Guide for in-depth information on threat system capabilities and limitations. Refer to AFTTP 3-1.IPE and AFTTP 3-1.HC-130 for threat mitigation planning and TTPs.

3.3.9.1. Communication Threat Planning. During contingency operations, or exercise participation, aircrews will obtain the most up to date information on enemy systems that

may affect communication, navigation, and identification friend or foe (IFF) equipment in the mission area. **(T-3) Note:** HAVE QUICK II and single channel ground and airborne radio system (SINCGARS) anti-jam capability is not secure and aircrews will not use it for classified transmissions unless used in conjunction with a secure voice system. **(T-3)**

3.3.10. Aircraft Equipment.

3.3.10.1. Aircraft Mission Kits. Units will maintain one mission kit per aircraft for operational or contingency missions. **(T-3)**

3.3.10.1.1. Prior to off-station departures (for operational/contingency missions), the AC is responsible for confirming a current mission kit is on board the aircraft. Units must ensure electronic flight bags (EFBs) or kit contains items listed in **Table 3.1**. **(T-3)** Aircraft laptops or approved onboard MPE loaded with current publications listed in **Table 3.1** fulfill SECTION I – Publications requirements, provided that the computer is operable for the entirety of the mission.

**Table 3.1. Aircraft Mission Kit.**

| **SECTION I - Publications** | |
|---|---|
| 1. AFMAN 11-2HC-130JV1 *HC-130 Aircrew Training*<br>2. AFMAN 24-604 *Preparing Hazardous Materials for Military Air Shipments*<br>3. AFI 11-253 *Managing Purchases of Aviation Fuel and Ground Services*<br>4. DoDI 4515.13 *Air Transportation Eligibility*<br>5. DoD 4515.13R *Air Transportation Eligibility*<br>6. AFSOCMAN 11-201 *Hostile Environment Repair Procedures*<br>7. OPREP-3 *Report Format* | |
| **SECTION II – Forms** | |
| AF Forms<br>664, *Aircraft Fuels Documentation Log*<br>457, *USAF Hazard Report*<br>651, *Hazardous Air Traffic Report*<br>711B, *USAF Mishap Report*<br>2282, *Statement of Adverse Effect – Use of Government Facilities*<br>4015, *HARP Computation*<br>4018, *CARP Computation*<br>4052, *C-141/C-130/C-5 Refueling Computation*<br>4108, *C-130 Fuel Log*<br>4116, *C-130 Navigator Flight Plan and Log*<br>AFSOC Form<br>4119, *C-130 Fuel Planning Worksheet*<br>4139, *Special Operations C-130 Inflight Refueling Worksheet* | DD/US Gov Forms:<br>SF 44, *Purchase Order-Invoice-Voucher*<br>DD 1385, *Cargo Manifest*<br>DD 1748-2, *Airdrop Malfunction Report*<br>DD 1801, *DoD International Flight Plan*<br>DD 2130-2, *C-130 E/H/J Load Plan*<br>DD 2131, *Passenger Manifest*<br>CBP 6059B, *Customs Declaration*<br>CBP 7507, *General Declaration (Outward/Inward) Agriculture, Customs, Immigration, and Public Health* |
| **This publication was rescinded SECTION III – Miscellaneous** | |
| 1. Foreign Nation Customs Forms (when/where applicable)<br>2. Locally Required Forms<br>3. Box Car Seals | |

3.3.10.1.2. Unit Commanders will establish mission kit contents for local training and Contiguous United States (CONUS) missions. **(T-3)**

3.3.10.1.3. Items required by a unit or wing directive to be carried by individual crew members need not be duplicated in the mission kit. Units will maintain sufficient quantities of directives and planning documents to allow implementation of evacuation and contingency plans. **(T-3)**

3.3.10.2. Local/Route Navigation Kits. Units must ensure navigation kits contain sufficient materials to cover the planned mission and global operations as required. **(T-3)**

3.3.10.2.1. EFBs may be used as the primary source for navigation kits.

3.3.10.2.2. Units should develop local overlays for EFB products.

3.3.10.2.3. If EFBs are not present or practical, units will pair a navigation kit with each aircraft, which must contain sufficient materials to cover the planned mission. **(T-3)**

3.3.10.2.4. Units must ensure navigation kits contain the minimum contents with guidance provided by the following:

3.3.10.2.4.1. Flight Information Planning (FLIP), General Planning (GP), Area Planning (AP)/1, AP/2, AP/3, AP/4. **(T-3)**

3.3.10.2.4.2. Instrument Flight Rules (IFR) Supplement. **(T-3)**

3.3.10.2.4.3. Visual Flight Rules (VFR) Supplement. **(T-3)**

3.3.10.2.4.4. Flight Information Handbook (FIH). **(T-3)**

3.3.10.2.4.5. Enroute charts (High and Low). **(T-3)**

3.3.10.2.4.6. Area charts (Terminal). **(T-3)**

3.3.10.2.4.7. Instrument approach plates (High, Low, and Jeppesen). **(T-3)**

3.3.10.2.4.8. Standard Terminal Arrival Route (STAR). **(T-3)**

3.3.10.2.4.9. Maps and charts required for mission execution. **(T-3)**

3.3.10.3. Minimum Aircraft Operating Equipment Requirements. See **Attachment 2** for minimum aircraft operating equipment requirements.

## 3.4. Map/Chart/Product Preparation.

3.4.1. Chart Size Requirements. Aircrews will create planned low-level routes on highest quality of 1:250,000 (Joint Operations Graphic (JOG) or Tactical Pilotage Chart (TPC). **(T-3)** Use a JOG or larger scale chart for overland threat penetration operations, mountainous modified contour NVG low-level operations, and the objective areas, unless not available, or of an inferior quality to a TPC. **(T-3)**

3.4.2. MAJCOM approved MPE is the primary means to calculate all terrain clearance altitudes. Aircrews should verify all altitudes using chart elevations.

3.4.2.1. WARNING: Aeronautical charts do not depict man-made obstacles less than 200 ft. AGL or a change in terrain until it exceeds the chart contour interval. The worst situation would occur if a 199 ft. tower sat on terrain with an elevation just below the next higher

contour. For a 1:500,000 (TPC) with a contour interval of 500 ft., this would result in an uncharted obstacle existing 698 ft. above charted terrain. Additionally, the highest spot elevation on any given leg may not be the highest terrain as in the case of gradually rising elevations.

3.4.2.2. Whenever available (e.g., in most instances) Level II or greater digital terrain elevation data (DTED) should be utilized when determining controlling obstacle elevations. Likewise, selection of vector vertical obstruction data (VVOD) overlay should be implemented; do not utilize the option to hide towers above 200 ft. when determining controlling obstacles.

3.4.2.3. For local training routes, if a modified contour NVG route has been planned using a JOG and elevations and altitudes are verified, the route may be flown with reference to a TPC.

3.4.2.4. See **paragraph 4.16** for CAT I chart requirements.

3.4.3. Minimum Hardcopy Chart Requirements for Mission Planning and Flight. Aircrews will carry at least one hardcopy chart that covers all enroute and objective mission areas. **(T-3)** EFBs, pilot tablets, and CSO laptops with charts meeting paper version requirements, may be used as a primary means of navigation.

3.4.3.1. The pilot, copilot, and CSO (when onboard) must participate in pre-mission route analysis. **(T-3)**

3.4.3.2. All turn point labels (MPE, hardcopy chart, CNI-MU waypoints) should match to aid in crew coordination.

3.4.3.3. See **paragraph 4.16** for CAT I hardcopy chart requirements.

3.4.4. Chart Symbology Requirements. Consult AFTTP 3-3.HC-130, for expanded information on chart preparation.

3.4.4.1. All hard copy low-level navigation charts require the following:

3.4.4.1.1. Classification. **(T-3)**

3.4.4.1.2. Chart type. **(T-3)**

3.4.4.1.3. Digital aeronautical flight information file (DAFIF). **(T-3)**

3.4.4.1.4. Course line. **(T-3)**

3.4.4.1.5. Corridor. **(T-3)**

3.4.4.1.6. MSA obstacles. **(T-3)**

3.4.4.1.7. Emergency route abort altitude (ERAA) obstacles. **(T-3)**

3.4.4.1.8. ERAA and classification will be annotated at the top and bottom of each page. **(T-3)**

3.4.4.2. For IMC Airdrops, annotate Start Descent Point (SDP) in accordance with AFTTP 3-3.HC-130 guidance and SCP annotation convention.

3.4.4.3. See **paragraph 4.16** for CAT I chart symbology requirements.

3.4.4.4. NVG Modified Contour Low-Level Chart Requirements. NVG altitudes and SCPs must be annotated on all charts used for NVG modified contour low-level operations. **(T-3)** See AFTTP 3-3.HC-130 for addition information on SCP calculation and NVG Altitudes.

3.4.4.4.1. The pilot (P)/CSO will brief all SCPs during route study. **(T-3)**

3.4.4.4.2. Clearly identify controlling obstacles on charts. Place SCPs and associated NVG altitudes at the required distance to go where the start climb (S/C) is to be initiated. **(T-3)** Annotate as follows: — S/C 3500/17/12. Example indicates a S/C to 3,500 ft. MSL NVG altitude, started at 17 nautical miles (NM) to go and at NVG altitude by 12 NMs to go.

3.4.5. SCA Chart Requirements. Construct SCAs with the guidance provided in AFTTP 3-3.HC-130.

## 3.5. Unit Developed/Locally Developed Checklists.

3.5.1. Checklist Inserts. Inserts should be placed at the end of the appropriate checklist or in an in-flight guide. Units must have a POC on all checklist inserts. **(T-2)** The only pages (or inserts) authorized in checklist are:

3.5.1.1. C-130 series T.O. aircrew checklists. **(T-2)**

3.5.1.2. MAJCOM approved checklists. **(T-2)**

3.5.1.3. Briefing guides. **(T-2)**

3.5.1.4. Unit approved information guides with the guidance provided in AFI 11-215, *Flight Manuals Program*.

3.5.2. Checklists and In-flight Guides.

3.5.2.1. Aircrew must use T.O. 1C-130(H)J-1 checklists unless specified by FCIF. **(T-2)**

3.5.2.2. Units may construct locally approved in-flight guides using AF Form 4124, *Flight Crew Information Guide,* or group standardization & evaluations (OGV) approved format.

## 3.6. Flight Plan/Data Verification.

3.6.1. See **paragraph 3.3.2** for CFP policy.

3.6.1.1. The AC and Copilot/CSO will verify all routes and flight altitudes for proper terrain clearance, including routes furnished by other agencies. **(T-3)**

3.6.1.2. Aircrews will verify CFPs for route of flight and fuel computation accuracy before departure. **(T-3)**

3.6.2. Use the certified MPE to the maximum extent practical. Flight crews may manually compute flight plans. The AC has final responsibility for flight plan accuracy and diplomatic clearance compliance.

3.6.3. All waypoint data retrieved from a database should be verified by one or more of the following methods with the exception of area navigation (RNAV), which must only come from a database:

3.6.3.1. Latitude and longitude from current FLIP. **(T-3)**

3.6.3.2. Bearing and distance from a flight plan. **(T-3)**

3.6.3.3. Ground based navigation aids (NAVAIDs). **(T-3)**

3.6.4. When conducting DZ/LZ operations, both pilots or a pilot and CSO will verify CNI-MU computed air release point (CARP)/LZ information with a valid DZ/LZ survey. **(T-3)** Refer to DAFMAN 13-217, *Drop Zone, Landing Zone and Helicopter Landing Zone Operations,* for DZ/LZ survey information, requirements, and applicability.

3.6.5. If mission conditions prevent installation of a current database, SQ/CCs may allow crews to continue a mission with an expired database to the first location capable of loading a current database. Crews must confirm waypoint data with another source (e.g., FLIP, CFPS, EFB) and manually crosscheck the waypoints with NAVAIDS, if available.

**3.7. Preflight Brief.**

3.7.1. All crew members on a flight will attend the mission briefing for that flight. **(T-3)**. If pre-mission requirements preclude attendance to the briefs it is at the ACs discretion to allow the crew member to fly. The AC is then responsible to ensure those crew members are sufficiently briefed to perform the mission.

3.7.2. The briefing should be clear, concise, and designed to provide aircraft/mission essential information. The AC or MC will present a logical briefing that promotes safe, effective mission accomplishment and covers all specific areas/events. The AC or MC may delegate portions or all the briefing to any individual they determine. Refer to applicable briefing guides in the AFFTP 3-3.HC-130 for briefings. **(T-2)**

3.7.2.1. DELETED

3.7.2.2. DELETED

3.7.3. Training/Instructor/Flight Examiner Briefing. Before any training or evaluation missions, the AC or instructors/flight examiner will brief the crew on the following items:

3.7.3.1. An outline of the requirements and objectives for each student or examinee. **(T-3)**

3.7.3.2. Planned profile and seat changes. **(T-3)**

3.7.4. Briefing Guides. ACC approved HC-130J briefing guides are located in AFTTP 3-3.HC-130.

**3.8. Go/No-Go.**

3.8.1. Flight Crew Information File (FCIF). Crew members will review the FCIF before all missions or ground aircrew duties and update the FCIF currency record with the latest FCIF item number, date, and crew member's initials. **(T-3)** If an electronic sign-in system is used (e.g., Patriot Excalibur (PEX), verify FCIF currency appropriately utilizing that system. **(T-3)**

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

3.8.1.2. Certify FCIF review for crew members not assigned or attached to the unit operating a mission by entering the last FCIF number and their initials beside their name

on the file copy of the flight authorization or file copy of their crew orders. This applies to all crew members if the electronic sign-in system is not operational at alert time.

**3.9. Post Flight Maintenance Debrief.**

3.9.1. Post Flight Maintenance Notification. After landing, the AC and any crew members documenting a maintenance discrepancy will debrief MX personnel on the condition of the aircraft and subsystems as required. **(T-3)**

3.9.1.1. Notify MX in accordance with the following conditions:

3.9.1.1.1. **Alpha-1** . No maintenance actions required. The aircrew may seal the aircraft for alert once the aircraft servicing is complete. A new preflight is not required until the end of the preflight validity period.

3.9.1.1.2. **Alpha-2** . Maintenance action required. If the preflight validity period has time remaining, the aircrew may seal the aircraft after a thorough inspection of maintenance actions.

3.9.1.1.3. **Alpha-3** . Prolonged maintenance required. If major maintenance is accomplished, accomplish preflight inspections in accordance with **paragraph 4.4.4**. **(T-3)** If minor maintenance is accomplished and the preflight validity period has time remaining, the aircrew may seal the aircraft after a thorough inspection of maintenance actions.

3.9.1.2. **Forms** . Complete the AFTO Form 781, *ARMS Aircrew/Mission Flight Data Document*, after each flight.

3.9.1.2.1. A printer may be used in lieu of pre-printed forms. Ensure paper and ink quantities are sufficient for mission requirements.

3.9.1.2.2. In addition to the procedures in T.O. 00-20-1, *Aerospace Equipment Maintenance Inspection, Documentation, Policies, and Procedures*, and DAFMAN 11-401, the LM will assist the pilot in maintaining the AFTO Form 781 and verify the exceptional release is signed before flight and resigned, if necessary, at enroute stops. **(T-3)**

3.9.1.2.3. Aircrew will document all fuel on loaded/offloaded in the AFTO Form 781H, *Aerospace Vehicle Flight Status and Maintenance Document*. **(T-3)**

3.9.1.2.4. After each flight, ensure the number of discrepancies (if any) are entered on the AFTO Form 781A, *Maintenance Discrepancies and Work Document*. **(T-3)** List landings, and flight duration time(s), etc., on the AFTO Form 781H. **(T-3)** Review all AFTO Form 781A discrepancies and ensure symbols, date discovered, and clear detailed entries are entered and the "discovered by" blocks are signed for each discrepancy. **(T-3)**

3.9.1.2.4.1. The AC will complete the aircraft forms, determine those discrepancies considered as mission essential, and indicate them by entering "ME" in block letters in the lower left hand corner of the discrepancy block. **(T-3)**

3.9.1.2.4.2. Enter "MC" for mission contributing discrepancies to indicate any discrepancies that, if not corrected, would substantially affect mission accomplishment, but are not mission essential.

3.9.1.2.5. At stations where there is no MX, and MX support is necessary, the AC will ensure a thorough debrief is provided to the controlling C2 agency prior to entering crew rest. **(T-3)**

3.9.2. Aircrew Debriefing. The AC will conduct a debriefing after each mission. **(T-3)**

3.9.2.1. If a CSAR-C is onboard, the AC will provide the CSAR-C the opportunity to lead the debrief for their portion of the sortie. **(T-3)** Crew members may be excused from debrief at the discretion of the AC/CSAR-C.

3.9.2.2. For all training flights, instructors will:

3.9.2.2.1. Review training requirements fulfilled for each student and aircrew member. **(T-3)**

3.9.2.2.2. Complete required training documentation prior to next flight. **(T-3)**

# Chapter 4

# NORMAL OPERATING PROCEDURES

## 4.1. General.

4.1.1. Landing Gear and Flap Operating Policy. The Pilot Flying (PF) commands configuration changes. The PM verifies appropriate airspeed and configuration prior to performing the commanded action. The PM operates the landing gear, auxiliary pump and the flaps or as briefed by the AC.

4.1.2. Portable Electronic Devices. in accordance with AFMAN 11-202V3.

4.1.3. Unsecured/Hanging Flight deck Objects. Comply with the following:

4.1.3.1. Do not place items on the center pedestal that cover or hide any switch or light from view. **(T-3)**

4.1.3.2. Do not place any items behind the power levers. **(T-3)**

4.1.3.3. Do not place any items (checklists, charts, etc.) on the flight deck glare shield. **(T-3)**

4.1.3.4. Do not hang any item that will obstruct egress on the flight deck escape ladder, higher than the second from the bottom rung. **(T-3)**

4.1.4. Simulated Instrument Flight. Do not use artificial vision restricting devices for any phase of flight. **(T-2)** Log simulated instrument flight in accordance with DAFMAN 11-401.

4.1.5. Seat Belts. Crew members occupying the pilot and copilot positions will have seat belts fastened with the guidance provided in AFMAN 11-202V3, and the following: **(T-3)**

4.1.5.1. All occupants will be seated with seat belts and shoulder harnesses (if available) fastened during taxi, takeoffs, and landings with the exception of evaluators, instructors, mission commanders, crew members performing scanner duties, outside observers during taxi, LMs, and medical personnel performing required duties. **(T-3)**

4.1.5.2. Individuals will have a designated seat (spot for combat loading procedures) and required restraint available. **(T-3)**

4.1.5.3. LMs will provide a safety belt for all occupants over 2 years of age. **(T-3)** Occupants will fasten seat belts and shoulder harnesses (if available) securely when moderate or greater turbulence is encountered or anticipated, or in areas of forecast clear air turbulence. **(T-3)**

4.1.5.4. Floor loading is authorized in accordance with AFTTP 3-3.HC-130 Combat Loading.

4.1.5.5. Give consideration to oxygen requirements and life raft provisions during floor loading.

4.1.6. Training Aircraft Not Capable of Flight. If an aircraft is not capable of departure within a time that allows for useful training, but no more than four hours to be accomplished, the mission may be altered or cancelled at the discretion of the AC.

4.1.7. Simulator Only Maneuvers. The following maneuvers will only be accomplished in the simulator:

4.1.7.1. Full stalls. **(T-3)**

4.1.7.2. Rudder force reversals. **(T-3)**

4.1.7.3. Spins. **(T-3)**

4.1.7.4. Runaway trim malfunctions. **(T-3)**

4.1.7.5. Hydraulic system loss by turning engine driven hydraulic pumps off. **(T-3)**

4.1.7.6. Two-engine approaches, landings and missed approaches. **(T-3)**

4.1.7.7. Unusual Attitudes and Spatial Disorientation. **(T-3)**

4.1.8. Degraded Systems Training (DST). DST is used to prepare crews to accomplish missions simulating certain equipment inoperative (or intentionally turned off for emission control). For non-local routes, aircrews will identify and brief leg segments to accomplish DST training. **(T-3)** The following restrictions must be adhered to when conducting DST:

4.1.8.1. Visibility must be 5 statute miles (SM) minimum. **(T-3)**

4.1.8.2. One radar altimeter must be operational and on. **(T-3)**

4.1.8.3. The low power color radar (LPCR) must be operational. **(T-3)**

4.1.8.4. A mission instructor pilot or CSO must be present. **(T-3)**

4.1.8.5. One Heads Down Display (HDD) at any crew position must be selected and monitored by an instructor (P/CSO) for DST of the navigation system. **(T-3)**

4.1.8.6. AC will brief the following items:

4.1.8.6.1. Equipment simulated inoperative. **(T-3)**

4.1.8.6.2. Aircrew coordination. **(T-3)**

4.1.8.6.3. Disorientation and emergency procedures. **(T-3)**

4.1.9. Training Restrictions. **Attachment 3** provides a summary of restrictions to specific aircraft maneuvers or configurations during training sorties.

## 4.2. Aircrew Equipment.

4.2.1. Aircrew Uniforms and Equipment. Comply with AFMAN 11-202V3, AFI 11-301V1, *Aircrew Flight Equipment (AFE) Program*, and guidance in this chapter.

4.2.1.1. The AC, or designated representative, will ensure appropriate serviceable protective clothing, aircrew flight equipment, survival, and Dash 21 equipment for the entire mission are aboard the aircraft and all personnel are briefed or trained in their use before departing home station or enroute stations. **(T-3) Note:** Local training missions only require a preflight inspection prior to the first flight of the day.

4.2.1.2. All crew members will have Nomex gloves in their possession. **(T-3)** LMs and anyone assisting them with their duties will wear gloves for all airdrops, cargo loading and unloading, winching, and pyrotechnic operations. **(T-3)**

4.2.1.3. Personnel will have the appropriate items of clothing in their possession when flying in Arctic and Antarctic regions. **(T-3) Exception:** Not applicable to transoceanic flights or when staging or transiting Elmendorf AFB, AK.

4.2.1.4. All personnel on aircraft will have civilian clothing to change into where directed by Foreign Clearance Guide (FCG), SPINS, or directive documents. **(T-3)** All personnel not performing flying duties may change into civilian attire 1 hour prior to landing.

4.2.2. Personal and Professional Equipment. Aircrews will not wear the following when in the aircraft or on the flightline:

4.2.2.1. Wigs or hairpieces. **(T-3)**

4.2.2.2. Rings. **(T-3)**

4.2.2.3. Ornaments, pins, clips, or other hair fasteners. **(T-3)**

4.2.2.4. Earrings. **(T-3)**

4.2.2.5. **Exception:** Female crew members may wear plain elastic hair fasteners or plastic barrettes, providing they do not interfere with the wearing of headsets, helmets, or the donning of oxygen equipment. Account for all devices before and after flight. **(T-3)**

4.2.3. Minimum Required Personal Equipment. Aircrews must carry the following on all flights:

4.2.3.1. Headset. **(T-3)**

4.2.3.2. Helmet. **(T-3)**

4.2.3.3. Oxygen mask. **(T-3)**

4.2.3.4. Operable flashlight. **(T-3)**

4.2.3.5. SQ/CCs may waive the requirement for a helmet and oxygen mask to be carried on all flights provided the squadron's policy on helmet and oxygen mask carry requirements is stated in **Ch 10**, Local Procedures, of this Manual.

4.2.4. Aircrew Publications Requirements. ACs will ensure the publications listed in **Table 4.1** are current and available on the aircraft for all missions. **(T-2)**

4.2.4.1. Aircrews may use EFBs as the primary means of meeting **Table 4.1** requirements.

4.2.4.1.1. EFBs must be government purchased devices enrolled in the Apple Device Enrollment Program, must contain the Mobile Device Management (MDM) and Mobile Content Management (MCM) controls as established by Air Combat Command Director of Cyberspace and Information Dominance (ACC/A6) (or MAJCOM/A6) and Air Command Standardization and Evaluations Branch (ACC/A3TV), and the unit/OGV FCIF library must be transferred to ACC/A3TV for enterprise management. **(T-2)**

4.2.4.1.2. Wing, OGV, and unit EFB POCs must ensure their local EFB program adheres to Air Combat Command Instruction (ACCI) 11-270, *Operations Mobile Devices*, or similar MAJCOM guidance for non-ACC units. **(T-2)**

4.2.4.1.3. EFBs will have at least a 75% charge at the beginning of each flight and will be used with the guidance provided in AFMAN 11-202V3 and applicable supplements.

4.2.4.1.4. Issued EFBs will be capable of a minimum of 4 hours of operations without charging. **(T-3)** Squadrons should replace EFBs that cannot maintain this standard.

4.2.4.1.5. Squadrons should issue appropriate charging cables, power banks, or power stations for EFBs for use during flight.

4.2.4.1.6. Future updates to airworthiness issues/approvals are issued by MAJCOM A3 via the FCIF process. All other minor software and accessory updates are updated in real time and can be viewed via the baseline configuration on the ACC EFB SharePoint® site.

4.2.4.2. Approved laptop computers and software are allowed in-flight in accordance with AFMAN 11-202V3.

4.2.4.2.1. When laptops are used in flight, DAFIF and VVOD must be current **(T-3)** Laptops do not replace existing navigation equipment and crew members will not use them as the sole means of navigation. **(T-3)**

4.2.4.2.2. Each user must have a backup chart or computer immediately available in case use of the system is denied. **(T-3)**

**Table 4.1. Minimum Aircrew Publication Requirements.**

| **PUBLICATION** | **AIRCREW** |
|---|---|
| T.O. 1C-130(H)J-1, *Flight Manual* | On Aircraft |
| T.O. 1C-130(H)J-1-1, *Flight Manual Performance Data* | On Aircraft |
| T.O. 1C-130(H)J-1-4, *Communication/Navigation/Identification Management System (CNI-MS) Operator Manual* | On Aircraft |
| T.O. 1C-130(H)J-9, *Cargo Loading Manual* | On Aircraft |
| T.O. 1C-130(H)J-5, *Weight and Balance* | On Aircraft |
| T.O. 1C-130(H)J-5-1, *Sample Basic Weight Checklist* | On Aircraft |
| T.O. 1C-130(H)J-5-2, *Loading Data Manual* | On Aircraft |
| T.O. 1C-130(H)J-1CL-1, *Pilot/CSO Checklist* | P, CP, CSO |
| T.O. 1C-130(H)J-1CL-2, *Loadmaster's Checklist* | LM |
| T.O. 1C-130(H)J-9CL-1, *Loadmaster's On/Offloading Procedures* | LM |
| AFMAN 11-202 Volume 3, *Flight Operations w/ MAJCOM Supp* | On Aircraft |
| AFI 11-2HC-130J VOL 3, *HC-130J Operations Procedures* | On Aircraft |
| DAFMAN 13-217, *Drop Zone, Landing Zone and Helicopter Landing Zone Operations* | On Aircraft |
| AFMAN 11-231, *Computed Air Release Point Procedures* | On Aircraft |

| | |
|---|---|
| ATP-3.3.4.2., *NATO Air to Air Refueling Procedures* | On Aircraft |
| AFTTP 3-3.HC-130, *Combat Aircraft Fundamentals HC-130* | On Aircraft |

4.2.5. Loadmaster Equipment Requirements. LMs are responsible for ensuring the following equipment is aboard the aircraft, when necessary, for off-station missions. Units should specify additional mission equipment requirements in local guidance. Additionally, units may add to contents of the kits described below.

4.2.5.1. Hostile Environment Repair Procedures (HERP) Kit. For predictive maintenance (PDM) inputs, carry a tool kit containing, as a minimum: Multi-tool (screw driver, pliers, wire cutter), safety wire, fuse pullers, and a 3/8" wrench.

4.2.5.2. Aerial Delivery Kits. The aerial delivery unit will include sufficient quantities of: 550 cord, 80 lb (¼" cotton tape), #5 (ticket 8/7) cord, both IR and overt chemical lights, cloth backed tape, masking tape, and 0.032 diameter steel safety wire. **(T-3)**

4.2.5.3. Container Delivery System (CDS) Kit. Units determine contents of this kit. However, it will contain a minimum of four Van Zelm ratchets and sufficient quantities of items to conduct drops. **(T-3)**

4.2.5.4. Blackout Kit/Rapids Kit. Units will ensure the kit includes a minimum of sufficient quantities/sizes of: IR and overt chemical lights, cloth backed tape, blackout covers, and a sufficient quantity of 1,000 lb. nylon. **(T-3)**

4.2.5.5. Canary Slides/Auxiliary Ground Loading Ramps. If Canary slides are not available/necessary, deploy with four auxiliary ground loading ramps per aircraft (some missions may require five per aircraft). **(T-3)**

4.2.5.6. Miscellaneous Supplies. Ensure that sufficient quantities of disposable cups, airsickness bags, earplugs, insecticide, trash bags etc., as mission requirements dictate.

4.2.5.7. Miscellaneous Equipment. LMs will ensure those items specified by AFI 11-2HC-130JV3, Addenda A, *HC-130J Configuration/Mission Planning*, are on board for the mission(s) being conducted while off-station. **(T-3)**

## 4.3. Life Support.

4.3.1. Oxygen. The AC must ensure oxygen on board for takeoff is sufficient to accomplish the planned flight from the equal time point (ETP) to a suitable recovery base, should oxygen be required (minimum 5 liters for all flights). **(T-2)**

4.3.1.1. Calculate crew requirements using the 100% Oxygen Duration Chart in the T.O. 1C-130(H)J at representative altitude for the flight planned.

4.3.1.2. Walk-around bottles are not a source of supplemental oxygen for any crew member during unpressurized operations that require supplemental oxygen.

4.3.1.3. Crew members will not remove the LMs emergency equipment (cargo compartment quick dons/smoke masks) for use by flight deck crew members. **(T-3)**

4.3.2. Life Rafts. On overwater flights, the AC will not carry more passengers and crew members than wing well life rafts will accommodate. **(T-3)**

4.3.3. Life Preserver Units (LPUs). Crew members will fit and adjust LPUs for overwater flights and wear them on overwater missions below 2,000 ft. (except for takeoffs, approaches, or landings). **(T-3)**

4.3.4. Anti-Exposure Suits. The LM will ensure anti-exposure suits are available for aircrew during overwater flights when route of flight extends beyond power-off gliding distance from land and the water temperature is 60°F or below (except when only the approach or departure is flown over water). **(T-3)**

4.3.4.1. If the water temperature ranges between 51°F and 60°F, the unit or mission commander may waive or extend the anti-exposure suit requirement after carefully considering factors such as:

4.3.4.1.1. Climate zone and existing weather throughout range of flight.

4.3.4.1.2. Operational requirements.

4.3.4.1.3. Time of flight over water.

4.3.4.1.4. Risk based on aircraft load and mission configuration.

4.3.4.1.5. Degree of surveillance over mission.

4.3.4.1.6. Location/availability/capability of SAR forces .

4.3.4.1.6.1. Consider anticipated time in the water prior to pick-up.

4.3.4.1.7. Winds and wave height and their impact on SAR forces.

4.3.4.1.8. Altitude and distance from land.

4.3.5. Parachutes and Restraint Harness. The LM will configure all aircraft with one parachute for each crew member when required. See AFI 11-2HC-130J V3 Addenda A for parachute requirements. **(T-3)**

4.3.5.1. Unit or mission commanders may authorize crew members to size and stow their parachutes in an easily accessible location. A restraint harness may be used in lieu of a parachute with guidance provided in the following:

4.3.5.1.1. Personnel performing duties near an open (or suspected open) door/hatch/ramp in-flight will be restrained by a safety harness, or wear a parachute. **(T-3)**

4.3.5.1.2. A restraint harness will be worn when performing duties near an open exit below 800 ft. AGL and above 14,000 ft. MSL. **(T-3)**

4.3.6. Survival Equipment. Individuals should fit and outfit in accordance with AFI 11-301V1 and AFMAN 11-301 Volume 2, *Management And Configuration Requirements For Aircrew Flight Equipment (AFE),* local procedures, and individual necessity.

4.3.6.1. Aircrew will wear survival and protective gear during hostile environment operations per theater SPINS. **(T-2)**

4.3.6.2. Unit/deployed commanders may amend survival/protective equipment requirements based on the threat. See AFTTP 3-3.HC-130 for a list of survival/protective equipment.

4.3.7. Protective Headgear and Eye Protection. All crew members will preflight their helmets for contingency missions, combat missions, or training missions requiring the use of oxygen. **(T-3)**

4.3.7.1. Crew members will wear helmets per theater SPINS or the discretion of deployed unit commander. **(T-3)**

4.3.7.2. All personnel near an open exit will lower helmet visors or wear eye protection on all missions requiring doors to be open. **(T-3)**

## 4.4. Preflight.

4.4.1. Aircraft Preparation. All non-mission essential equipment should be removed from the aircraft prior to a combat mission. Securely tie down all other mission essential equipment. The LM will maintain emergency exits and safety aisles with the guidance provided in AFI 11-2HC-130JV3, Addenda A.

4.4.2. AFTO Forms 781 Series. ACs must review the AFTO Forms 781 series before applying power to the aircraft or operating aircraft systems. **(T-3)** ACs must obtain a signed exceptional release (ER) before flight. **(T-3)**

4.4.2.1. A MX officer, MX superintendent, or authorized civilian normally signs the ER. If one of these individuals is not available, the AC may sign the ER. When a release is signed by the AC, it is effective only for those flights in which the releasing AC participates as an aircrew member. Confirm that the DD Form 1896, *Jet Fuel Identaplate,* and AIR card are on board the aircraft.

4.4.2.2. 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.

4.4.2.2.1. Refer to T.O. 00-20-1 for downgrade authority and procedures.

4.4.2.2.2. The chief of MX, the senior MX officer, or the chief of the Air Force Material Command (AFMC) repair team must first authorize the release. **(T-2)**

4.4.2.2.3. After the maintenance release is obtained, contact appropriate MAJCOM, via Stan/Eval channels, for flight authorization.

4.4.2.2.4. The AC's concurrence is required before the aircraft can be flown. **(T-2)**

4.4.2.3. Aircrews are not qualified to accomplish required ground inspections.

4.4.2.3.1. In those instances where MX personnel are not available, the aircrew will enter a red dash symbol in the AFTO Form 781H, updating current status and enter a red dash symbol and a discrepancy that reflects that the applicable maintenance inspection (e.g., pre-flight, thru-flight, basic post-flight) is overdue. **(T-2)** For Red X clearing procedures at stations without MX support refer to **Chapter 9**.

4.4.3. AFTO Form 46, *Prepositioned Life Support Equipment*. Before departing home station and following enroute crew changes, the AC, designated representative, or AFE must review, sign, and date the AFTO Form 46 and verify all required equipment is on board and required inspections have been completed. **(T-3)**

4.4.3.1. In addition, the AC must review AF Form 4076, *Aircraft Dash 21 Equipment Inventory*, and verify with the LM, MX, or AFE that all required Dash 21 equipment has been certified as installed and initial check signed by MX and configuration documents match mission requirements. **(T-3)**

4.4.3.1.1. Missing Equipment. When missing equipment is discovered accomplish the following:

4.4.3.1.1.1. Make an AFTO Form 781A entry for equipment that is missing. **(T-3)** Additionally, ensure equipment removed from the aircraft at an enroute station is documented in the AFTO Form 781A. **(T-3)**

4.4.3.1.1.2. Annotate in the AF Form 4076 or AFTO Form 46 in the next vacant column indicating the quantity remaining for the item. **(T-3)**

4.4.3.1.1.3. Advise the AC and determine whether the missing equipment should be recovered or replaced before continuing the mission.

4.4.3.1.2. Additional Equipment. If more equipment is discovered during the pre-flight than is annotated on the AF Form 4076 or AFTO Form 46, annotate the total quantity in the next vacant column for the item. **(T-3)**

4.4.4. Dash One Pre-Flight. Except to prepare for Operational Readiness Exercises (OREs), Operational Readiness Inspections (ORIs), and contingencies/evacuations, units should avoid using unscheduled crew members to accomplish multiple pre-flights. In the case where aircrew are flying an aircraft they did not preflight, they must receive a briefing from the preflight crew on the condition of that aircraft. **(T-3)**

4.4.4.1. The aircrew dash one preflight inspection is required prior to the first flight of the flying period and remains valid until either:

4.4.4.1.1. Aircraft ground time exceeds 12-hours (72-hours provided the aircraft is sealed, not flown, and documented entry control is maintained). **(T-3)**

4.4.4.1.2. Another maintenance dash six preflight is performed. **(T-3)**

4.4.5. Maintenance Thru-Flight Inspection. Accomplish a thru-flight inspection with the guidance provided in T.O. 00-20-1 after each flight when a turnaround sortie, continuation flight, or continuation of alert is scheduled and a basic post-flight inspection is not required.

4.4.6. Weight and Balance. The LM will accomplish weight and balance computation for the aircraft with the guidance provided in T.O. 1-1B-50, *Weight and Balance*. **(T-3)** Steps unique to the HC-130J are in the AFI 11-2HC-130JV3 Addenda A.

4.4.7. Fuel Weight Computation. To compute takeoff fuel weight entered on the DD Form 365-4, read directly from the fuel totalizer gauge or fuels payload page on the CNI-MU for total fuel weight. Compute limiting wing fuel computations using the charts in the appropriate flight manual, this AFMAN's Addenda A, or Automated Form F software.

## 4.5. Flight Deck Crew Resource Management (CRM).

4.5.1. Crew member changes will not occur immediately prior to performing critical phases of flight. **(T-3)** Normally, 15 minutes (with consideration for aircrew experience) prior to

initiating the checklist for an event allows a new crew member time to acclimate unless otherwise briefed.

4.5.2. Checklists. A checklist is considered complete after all applicable items and responses are accomplished. For momentary hesitations, crew members should use the term “in progress” while items are being coordinated.

4.5.2.1. Amplifying checklist procedures or limitations may be written into the checklists in pencil.

4.5.2.1.1. Currency of write-in is the crew member’s responsibility.

4.5.2.1.2. If using an EFB as a checklist, write-ins will be made in a text font or color different from the original text. **(T-3)**

4.5.2.2. Checklist pages may be carried in separate binders provided checklist integrity is not compromised.

4.5.3. Simulated Emergency Flight Procedures. Pilots will conduct simulated emergency flight procedures with the guidance provided in AFMAN 11-202 V3 and this manual.

4.5.3.1. Do not practice emergencies (e.g., simulating an engine shutdown or placing switches in an abnormal configuration) unless an instructor or flight examiner pilot is in one of the pilot seats. **(T-2)** Instructor pilot candidates who occupy a pilot seat and are under the supervision of a flight examiner pilot, not in a pilot seat, may conduct simulated emergency procedures during initial or requalification upgrade evaluations.

4.5.3.2. Preface all simulated emergencies with the word "simulated" and terminate simulated emergencies if an actual emergency arises.

4.5.4. Time Out. “Time Out” is a common assertive statement used to voice crew member concern when safety may be jeopardized.

4.5.4.1. As soon as possible after a “Time Out” has been called, the aircrew will take the following actions:

4.5.4.1.1. Safety permitting, stabilize the aircraft and ensure terrain clearance. **(T-3)**

4.5.4.1.2. The initiating crew member will voice their concerns to the crew. **(T-3)**

4.5.4.1.3. The AC will provide all other crew members with the opportunity to voice inputs relative to the stated concerns. **(T-3)**

4.5.4.1.4. After considering all inputs, the AC will direct the aircrew to continue the current course of action or direct a new course of action. **(T-3)**

4.5.5. Knock-It-Off (KIO) and Terminate Calls. Use KIO or Terminate procedures to direct aircraft to stop engagements, scenarios, and tactical maneuvering. Procedures for KIO and Terminate are in accordance with AFI 11-214, *Air Operations Rules and Procedures*.

4.5.6. Automation. Automated Flight is defined as the autopilot fully engaged and coupled to the Flight Director. Use of auto throttles is as desired.

4.5.6.1. CAUTION: If the auto throttles are disengaged for sustained descents during automatic flight, it is possible that altitude capture may occur with the power levers at or near Flight Idle and result in an approach to stall condition.

4.5.6.2. The PF will announce changes to the level of automation, flight director and autopilot mode section and transition, (e.g., “autopilot engaged”, “altitude hold”, “auto-throttles”, “nav-capture”…) and/or when circumstances require deviating from normal procedures. **(T-3)**

4.5.6.3. Manual flight is defined as the PF providing manual input to the flight controls or autopilot. Use of auto throttles is as desired.

4.5.6.4. Crew members will be proficient at operating and understanding the aircraft in all levels of automation. **(T-3)**

4.5.6.5. If the automatic flight control system (AFCS) provides unexpected input, revert to lower automation levels or manual flight before attempting to resolve system problems.

4.5.6.6. Aircrews will follow the guidance below, except for cruise flight (above 3,000 ft. AGL):

4.5.6.6.1. The PF will fly the aircraft and maintain a dedicated head-up lookout. **(T-3)** Transfer aircraft control to the PM, who will remain head-up, prior to going head-down. **(T-3)** Head-down time does not include momentary scanning of the CNI-MU, HDDs, and panels.

4.5.6.6.2. Any crew member that observes both pilots head-down at the same time shall alert the PF without delay. **(T-3)**

4.5.6.6.3. If the PM diverts attention away from normal clearing and monitoring duties for an extended period of time, the PM will state “head-down.” **(T-3)** The PF will verbally acknowledge this call. **(T-3)**

4.5.6.6.4. The PM will verbalize “head-up” after completion of duties. **(T-3)**

4.5.6.6.5. The PF will then update the PM on current aircraft status as required. **(T-3)**

4.5.6.6.6. Comply with verbalize, verify, and monitor (VVM). **(T-3)**

4.5.6.6.6.1. VVM is a closed-loop system of communication designed to significantly reduce typical automation selection errors between the PF and PM. VVM consists of the following three step process:

4.5.6.6.6.1.1. Prior to making any changes to the selected automated system, or performing any T.O. defined irreversible/critical action, the pilot performing the action will VERBALIZE the intended changes. **(T-3)**

4.5.6.6.6.1.2. Both pilots will VERIFY the intended changes prior to execution, and ensure the correct change or action was made. **(T-3)**

4.5.6.6.6.1.3. Both pilots will MONITOR the aircraft to ensure the expected performance is achieved. **(T-3)**

4.5.6.6.7. The PF will announce changes to the level of automation, flight director and autopilot mode selections, and mode transitions to the maximum extent possible. **(T-3)** The PM will acknowledge the call. **(T-3)** Use appropriate levels of automation as required by the flight conditions.

4.5.7. Fuel Panel. The fuel panel is considered a verification panel. Any aircrew member operating the fuel panel should advise the PF before doing so. A second crew member will verify the panel condition upon completion of operation. **(T-3)** Avoid changes to the fuel panel during critical phases of flights. **(T-3)**

4.5.8. Critical Action Coordination. Two crew members will confirm any flight critical or irreversible actions (e.g., movement of fire handles). **(T-3)**

4.5.8.1. The crew member performing the action will points to the affected switch/handle and verbally seek confirmation from a second crew member (e.g., "Confirm number one"). **(T-3)**

4.5.8.2. The crew member confirming the action will look at the affected switch/handle and acknowledge (e.g., "Number one confirmed"). **(T-3)**

4.5.9. CSO Station/Augmented Crew member Flight Station (ACFS). The AC may allow individuals to occupy the CSO or ACFS station, when unoccupied, as long as their presence does not hinder the performance of the crew. Qualified crew members, or unqualified crew members under the supervision of a qualified instructor, may perform tasks assigned by the AC.

4.5.10. Flight Deck Entry. ACs may authorize passengers and observers access to the flight deck during non-critical phases of flight. Passengers and observers will not be granted access to either pilot position. **(T-3)**

4.5.11. Traffic Alert and Collision Avoidance System (TCAS). in accordance with guidance in AFMAN 11-202V3.

4.5.11.1. Conduct traffic advisory (TA) only ops as mission dictates.

4.5.11.2. Operate TCAS in TA-only mode during aerial refueling tanker operations and AAR-receiver operations. **(T-3) Note:** Excessive climb or descent rates, operation from parallel runways, and visual traffic pattern operations can lead to an inadvertent TA/resolution advisory (RA). Reducing climb or descent rates near level off can limit inadvertent TCAS advisories.

4.5.12. Required Calls for Deviations. Any crew member observing the following deviation with no corrections attempted will immediately notify the PF:

4.5.12.1. Heading +/- 10 degrees. **(T-3)**

4.5.12.2. Airspeed +/-10 knots. **(T-3)**

4.5.12.3. Altitude +/- 100 ft. **(T-3)**

4.5.12.4. Any crew member seeing a potential terrain or obstruction problem will immediately notify the PF. **(T-3)**

4.5.13. Required Advisory Calls. **Table 4.2** contains the listing of mandatory advisory calls, responses, and aircrew actions.

4.5.14. Stabilized Approach Philosophy. Comply with the following criteria for non-tactical approaches at 500 ft. AGL (IMC/VMC):

4.5.14.1. Airspeed is -5/+10 knots of computed approach speed for aircraft configuration. **(T-3)**

4.5.14.2. Aircraft is in a landing configuration. **(T-3)**

4.5.14.3. Sink rate is no greater 1,000 ft. per minute. **(T-3)**

4.5.14.4. All briefings and checklists are complete. **(T-3)**

4.5.14.5. If these criteria are not met by 500 ft. AGL for all non-tactical approaches, the PM will announce "Unstable, go around". **(T-3)** The PF will execute a missed approach. **(T-3)**

**Table 4.2. Required Advisory Calls.**

| **Take Off Phase** | **PF** | **PM** |
|---|---|---|
| Takeoff – prior to Refusal Speed | | "Reject" [1] |
| At Refusal Speed | | "Go" [2] |
| At Rotation Speed | | "Rotate" |
| Note 1. Prior to refusal speed, any crew member noting a safety of flight condition/malfunction will state "Reject" and give a brief description of the malfunction.<br>Note 2. If refusal speed equals takeoff speed, "Go" is not required. | | |
| **Climb Out and Descent** | **PF** | **PM** |
| Climb Out - Transition Altitude | State Altimeter[1] | State Altimeter[1] |
| Climb Out – 1,000 ft. below assigned altitude/Flight Level (FL) | "Passing (altitude leaving) for (altitude assigned)" | "Checks" |
| Descent - Transition Level | State Altimeter[1] | State Altimeter[1] |
| Descent – 1,000 ft. above assigned altitude/FL, initial approach fix, or holding altitude | "Passing (altitude leaving) for (altitude assigned)" | "Checks" |
| Note 1. All crew positions who can change the altimeter setting will state the new setting. | | |
| **Instrument Approach** | **PF** | **PM** |
| 100 ft. above Final Approach Fix (FAF)/Glide Slope Indicator (GSI) altitude, step-down altitude(s), Decision Height (DH)/decision altitude and Minimum Descent Altitude (MDA) | | "100 Above" |
| 500 AGL | | "500 Feet"<br>**OR**<br>"Unstable Go Around"[2] |
| MDA | | "Minimums" |

| At MAP | State Intentions[1,2] | "Missed Approach Point" |
|---|---|---|
| Runway environment in sight | State Intentions[1,2] | "Runway In Sight" |
| DH/decision altitude<br>- At Minimums<br>- Runway environment insight<br>- Approach Lights in sight (Instrument Landing System (ILS)<br>- Neither in sight / loss of sight | ---<br><br>"Landing"<br>"Continuing"<br>"Going Around" | ---<br>"Minimums" |
| At 100 Height Above Touchdown (HAT) (CAT I ILS) | State Intentions[1,2] | "100 Feet" |
| Note 1. With weather at CAT I minimums on a CAT I ILS, the pilot may only see the initial portion of the approach lighting system (ALS). The pilot may continue to 100 ft. HAT but may not descend below 100 ft. above touchdown zone elevation using the ALS as a reference unless the red termination bars or the red side row bars are also visible and identifiable.<br>Note 2. The PF will announce intentions to land or go-around. For a non-precision approach this is no later than the MAP. | | |

**4.6. Starting Engines and Before Taxi.**

4.6.1. Fuel Balancing. If aircraft are not in primary fuel management prior to engine start, attempt to correct, time permitting.

4.6.1.1. When an external tank indicator is inoperative and the tank cannot be visually checked empty due to foam modification, aircrew will comply with the following prior to flight:

4.6.1.1.1. Check pressure with each pump in the external tank. **(T-3)**

4.6.1.1.1.1. If no pressure is obtained, the tank is verified empty.

4.6.1.1.1.2. If pressure is obtained, ground transfer the fuel from the external tank. **(T-3)** Defuel the external tank if unable to ground transfer. **(T-3)**

4.6.2. Fire Protection and Crash Rescue. See DAFMAN 13-217 for specific firefighting and rescue requirements.

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

4.6.2.2. A crew member or ground crew will provide fire guard duties during all main engine starts. **(T-3)**

**4.7. Runway and Taxiway.**

4.7.1. Minimum runway length for training is 3,000 ft. or in accordance with max effort landing requirements, whichever is greater. Waiver authority for minimum runway length during training is the OG/CC.

4.7.2. Operations are authorized on runways where barrier arresting kit (BAK)-12 systems are installed, with an eight point cable tie-down system, without regard to the flight manual caution. 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, aircrews should recognize the increased risk of damage to the aircraft.

4.7.3. The AC will comply with the following items:

4.7.3.1. Minimum runway width is 80 ft. (60 ft. for max effort qualified crews). **(T-3)**

4.7.3.2. Minimum taxiway width is 30 ft. **(T-3)**

4.7.3.2.1. The OG/CC, or deployed equivalent, may waive runway/taxiway width requirements. **(T-3)**

4.7.3.2.2. Use **Table 4.3** when applicable. **Note:** The use of non-hard surfaced runways or taxiways requires OG/CC approval, but may be delegated down to the SQ/CC (or deployed equivalent). **(T-3)**

**Table 4.3. Runway Condition Reading.**

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

## 4.8. Maximum Effort Operations.

4.8.1. Use Maximum Effort procedures when conditions (runway dimensions and/or obstacles) or directives require their use.

4.8.2. ACs will ensure all maximum effort operations fall in the "recommended" area of the wind limitations charts unless otherwise approved by the OG/CC.

4.8.3. Maximum Effort Takeoff. Use maximum effort takeoff procedures if available runway length is less than critical field length (CFL).

4.8.3.1. Minimum runway length is the charted adjusted minimum field length for maximum effort take-off (AMFLMETO). **Exception:** SQ/CCs may approve the use of minimum field length for maximum effort take-off (MFLMETO) (in conjunction with maximum effort rotation speed (VRmax) if mission necessity dictates.

4.8.3.2. Minimum rotation speed is adjusted maximum effort rotation speed (VRmax). **Exception:** SQ/CC may approve the use of VRmax (in conjunction with MFLMETO) if mission necessity dictates.

4.8.3.3. For training, simulated obstacle clearance height should not exceed 50 ft.

4.8.4. Maximum Effort Landing. Use maximum effort landing procedures whenever the runway available for landing is less than that required for a normal landing. **(T-3)** Plan the touchdown within the first 500 ft. of usable runway.

4.8.4.1. The minimum runway required for a maximum effort landing is equal to the charted maximum effort landing ground roll plus 500 ft. **(T-3)**

4.8.4.2. If the zone is unmarked, minimum runway length is ground roll plus 1,000 ft. OG/CC (or deployed equivalent) may approve ground roll plus 500 ft. to an unmarked zone.

4.8.4.3. WARNING: The AC will identify a go-around point to all crew members for all maximum effort landings and AMP-4 operations prior to execution. **(T-3)**

4.8.4.4. Compute landing performance using:

4.8.4.4.1. Two outboard high-speed ground idle; two inboard reverse (OB HGI; 2IB REV) in the Performance manual. SQ/CC (or deployed equivalent) or higher may approve the use of all four in reverse performance data.

4.8.4.4.2. Maximum anti-skid braking. **(T-3)**

## 4.9. Takeoff (T/O).

4.9.1. IFF/Selective Identification Feature (SIF) Operations. ACs will use the IFF/SIF in accordance with **Table 4.4** **(T-2) Note:** Once set and transmitted, IFF/SIF modes 1, 2, and 3/A codes are unclassified and may be left in the transponder.

4.9.1.1. Conduct a ground test of the Mode 4 & 5 using either the self-test or available ground radar interrogator. If the self-test fails and facilities do not permit a ground check, takeoff is authorized if the IFF/SIF was operational on the previous mission. Accomplish an airborne check immediately after takeoff. **(T-3)**

4.9.1.2. Attempt to fix an inoperable Mode 4 or 5 before takeoff. Do not delay takeoff or cancel a mission for an inoperable Mode 4 or 5, except when the aircraft is scheduled to transit an area where safe passage procedures are implemented. **Note:** Ensure IFF Mode 5, Level 2 is OFF until function is certified by appropriate agencies and further guidance is provided. If IFF Mode 5 codes are zeroized during troubleshooting, IFF Mode 5 Platform Identification Number (PIN) will be reset to 00000. If required, enter a valid PIN after re-loading codes. See T.O. 1C-130(H)J-1-4 for valid PIN criteria.

4.9.1.3. Comply with National, ATO, Airspace Control Order (ACO), or SPINS directed Mode 4 & 5 requirements.

**Table 4.4. IFF Settings.**

| IFF MODE | North Atlantic Treaty Organization (NATO ) | Atlantic Command (LANTCOM) and North Pacific (NOPAC) | All Other Areas |
|---|---|---|---|
| 1 | in accordance with ACP 160, NATO | in accordance with ACP 160, US Sup-1(C), NI 10-41, NI 10-15, NR 55- | |

| | | | |
|---|---|---|---|
| | directives, SPINS/ATO | 68, NR 55-2, SPINS/ATO | |
| 2 | in accordance with ACP 160, NATO directives, SPINS/ATO | in accordance with ACP 160, US Sup-1(C), and ANNEX A, SPINS/ATO | |
| 3 | As directed by ATC, SPINS/ATO | As directed by ATC, SPINS/ATO | As directed by ATC, otherwise in accordance with ACP 160, US Sup-1 (C) |
| 4 / 5 | Keyed and On when required | | |

4.9.2. Takeoff and Landing Policy. An AC, or above, will occupy either the left or the right seat during all takeoffs and landings. **(T-3)**

4.9.2.1. The AC is not required to occupy a primary position, but still retains overall authority for conduct of the mission.

4.9.2.2. During an aircraft emergency, only ACs, instructor pilots, or evaluator pilots occupying a primary position, will perform takeoffs or landing, unless conditions prevent compliance or in the judgment of the AC it would be less safe. **(T-3)**

4.9.2.3. ACs with less than 100 primary aerospace vehicle authorized (PAA) hours since certification will conduct all takeoffs and landings under the following conditions, unless the pilot in the other seat is an AC or higher:

4.9.2.3.1. Ceiling/visibility less than 300 ft. and/or RVR 4,000 ft. (3/4 SM visibility). **(T-3)**

4.9.2.3.2. Computed or a given RCR of less than or equal to 12. **(T-3)**

4.9.2.3.3. Crosswind component greater than or equal to 15 knots. **(T-3)**

4.9.2.4. Both Pilots must be current to conduct NVG Landings. **(T-3) Exceptions:**

4.9.2.4.1. A current instructor pilot (IP) is at a set of controls.

4.9.2.4.2. A non-current NVG pilot may act as the PM as long as the PF is current and is landing to a runway with full operational instrument lighting on (not including AMP night/instrument lighting).

4.9.2.5. Simulated Engine-Out Takeoff. Simulated engine-out takeoffs will only be conducted when the following conditions are met:

4.9.2.5.1. During daylight VMC. **(T-3)**

4.9.2.5.2. Pilots must have direct IP supervision. **(T-3)**

4.9.2.5.3. Maximum aircraft gross weight limited to 120,000 lbs. **(T-3)**

4.9.2.5.4. Crosswind component is within the recommended zone. **(T-3)**

4.9.2.5.5. The runway is dry. **(T-3)**

4.9.2.5.6. The runway is hard surfaced and at least 147 ft. wide, by 7,000 ft. long. **(T-3)**

4.9.3. Takeoff Requirements. The minimum runway required for a normal takeoff is the charted CFL. **(T-3)**

4.9.3.1. Normal takeoffs are not made when refusal speed is less than ground minimum control speed (Vmcg). In this condition the AC will either:

4.9.3.1.1. Download cargo or fuel.

4.9.3.1.2. Wait until weather conditions improve.

4.9.3.1.3. Utilize maximum effort procedures.

4.9.3.2. Acceleration Check Time. An acceleration time check is mandatory when refusal speed is less than rotation speed. **(T-3)** An acceleration time check should be computed when, in the opinion of the AC, a critical condition exists (e.g., heavy gross weight, high pressure altitude, obstacles, runway surface condition (RSC).

4.9.3.3. Use of Overruns. If approach end overruns are available, stressed, and authorized for normal operations, they may be used to increase the runway available for takeoff.

4.9.3.4. Runway Length for Takeoff and Intersection Takeoffs. Normally, takeoffs are initiated from the beginning of the approved usable portion of the runway. Intersection takeoffs may be made at the discretion of the AC provided the operating environment (i.e., gross weight, obstructions, climb criteria, weather…) allows for a safe takeoff and departure. The AC will update CNI TOLD to reflect actual runway remaining. **(T-3)**

4.9.4. Adjusted Maximum Effort (AMAX)/Max Effort T/O. Set 150 ft. in the radar altimeter for AMAX/Max Effort initial T/O and subsequent T/O from stop and go operations to prevent triggering a ground collision avoidance system (GCAS) alert as described in T.O. 1C-130(H)J-1. **(T-3)**

4.9.5. Alternative Takeoff Minimums. When departure weather is below lowest compatible approach minimums, refer to **Table 4.5** for departure alternate procedures.

4.9.5.1. Minimum Takeoff Weather. Comply with AFMAN 11-202V3 takeoff weather guidance. A departure alternate is required if weather is below lowest compatible approach minimums for the available approach (at departure aerodrome). Straight In and Sidestep requires visibility only. Circling requires ceiling and visibility. Do not use CAT II ILS minimums to determine if a departure alternate is required.

4.9.5.2. Takeoff Alternate Approval Authority. OG/CC or deployed equivalent is required to approve takeoff alternate operations when RVR readouts are below 1600 RVR (no less than 600 RVR).

4.9.5.3. Minimum Altitude During Takeoff Alternate Operations. Aircraft must be capable of maintaining the MEA or Minimum Clearance Obstruction Altitude (MOCA), whichever is higher, to the alternate using one Engine Inoperative (OEI) performance criteria.

**Table 4.5. DEPARTURE PROCEDURES.**

| Departure Weather | Approval Authority | Departure Alternate |
|---|---|---|
| At or above lowest compatible approach minimums | Not Required | Not Required (see note 1) |
| Below lowest compatible approach minimums and RVR is 1600 or greater (visibility 1/4 miles or greater) | Not Required | Required (see notes 1, 2 and 3) |
| Below lowest compatible approach minimums and RVR is less than 1600 but equal to or greater than 600 | OG/CC or equivalent | Required (see notes 1, 2, 3 and 4) |

**Notes:**

1. A departure alternate is required if weather is below lowest compatible approach minimums for the available approach (at departure aerodrome). Straight In and Sidestep requires visibility only. Circling requires ceiling and visibility. Do not use CAT II ILS minimums to determine if a departure alternate is required.

2. To qualify as a departure alternate, the airfield must be located within 1 hour flying time and the weather must be reported and forecast to remain from takeoff until 1 hour after possible Estimated Time of Arrival (ETA)_no lower than 600-2 for an operational precision approach or the higher of 800-2 or 500-1 above the lowest published landing minimum for an operational non-precision approach.

3. Aircraft must be capable of maintaining the Minimum En Route Altitude (MEA) or MOCA, whichever is higher, to the alternate using OEI performance criteria.

4. Departure runway must have operational centerline lighting and dual RVR readouts and displays for both the approach and departure end of runway (RVR must be at or greater than 600 at both the approach end and departure end and runway). For runways with triple RVR readouts, the pilot may use any two consecutive read-outs to determine if the runway is usable for departure (aircraft performance permitting). For example: Approach end RVR=400, midfield RVR=1200, departure end RVR=800. If aircraft performance and runway length will permit taking off at midfield, this runway is usable for takeoff.

4.9.6. Visual Climb Over Airport (VCOA). ACC specified training is a review of the most recent version of the USAF Advanced Instrument Course (AIC) Departure Procedure slideshow. Pilots who have reviewed the VCOA slides with an AIS instructor are authorized to execute VCOA departures in accordance with AFMAN 11-202V3. Aircrew should place a tactical plot or use a cursor target to assist in remaining within the VCOA radius value.

## 4.10. Radio Procedures.

4.10.1. Communications Policy. The Air Force does not give a promise of confidentiality to aircrews regarding their recorded aircraft crew communications. Crew members are expected to maintain a high degree of cockpit professionalism and crew coordination at all times.

4.10.1.1. The Federal Communications Commission (FCC) prohibits the use of unauthorized frequencies for interplane, HAVE QUICK, or SECURE VOICE training.

4.10.1.2. To the maximum extent possible all crew members will monitor ATC, C2, and Guard frequencies. **(T-3)** The AC or CSAR-C may delegate radio communication responsibilities as the mission dictates.

4.10.2. General. Primary crew members will monitor voice operated switching (VOX) and interphone during all phases of flight. **(T-3)** Crew members will advise the PF before checking off interphone. **(T-3)** Crew members will ensure personnel on headset or within listening distance are cleared prior to discussing classified information over interphone. **(T-3)** Additional precautions should be briefed as required.

4.10.2.1. In terminal areas, all crew members (if able) should monitor the primary ATC radio unless directed otherwise. A crew member will be designated to monitor C2 frequencies on the inbound and outbound legs. **(T-3)**

4.10.2.2. The pilot operating the radios will notify the crew which radio is primary, and update the crew when the primary radio changes. **(T-3)**

4.10.2.3. One pilot will read back all ATC clearances. **(T-3)**

4.10.2.4. Both pilots will monitor ultra high frequency (UHF) and very high frequency (VHF) guard emergency frequencies to the maximum extent possible. **(T-3) Exception:** During AAR-receiver operations, the CSO can monitor those frequencies.

4.10.2.5. Aircrews will ensure long-range communication, normally high frequency (HF), is established prior to departing VHF/UHF range. **(T-3)**

4.10.3. Classified Communication Policies. It is the responsibility of the crew to be aware of operational security (OPSEC) requirements prior to making communication checks. **(T-3)**

4.10.3.1. Aircrews will not discuss classified information on the interphone during unsecured radio transmissions. **(T-2)**

4.10.3.2. The AC will ensure the classified interphone or radio transmissions are recorded on the cockpit voice recorder if it is operating. **(T-3)** Aircrews will ensure the cockpit voice recorder remains on and running for 30 minutes, until the tape is clear of any recorded classified conversations. **(T-3)** If classified information is discussed while the EO/IR voice recorder is used in flight, the AC will ensure the removable memory module (RMM) card is turned into tactics to be classified upon landing. **(T-3)** If enroute, have the classified courier maintain the RMM card until it has been properly classified. **(T-3)**

4.10.3.3. Non-aircrew members may monitor interphone or radio transmissions only when specifically approved by the AC. The AC will ensure the communications policy is briefed to these personnel prior to flight. **(T-3)** The AC must ensure no one monitors classified information for which they are not cleared or transmits classified information over the radios. **(T-3)**

4.10.3.4. Aircrew will prevent accidental recording or downloading of classified information on the digital flight data recorder (DFDR). **(T-3)**

4.10.3.5. Use the 'record inhibit' functionality in the CNI-MU during classified missions to inhibit data, which is determined to be classified. **(T-3)**

4.10.4. Aircrew Responsibilities. The AC is responsible for ensuring all communications requirements, frequencies, special procedures necessary for optimum communication coverage, and in-flight troubleshooting of communications, navigation, IFF/SIF, and specialized mission equipment is provided. **(T-3)** In addition to the duties listed in the flight

manual, other applicable T.O.s, and this publication, the AC may assign other duties to the crew as necessary to accomplish this requirement. Communication duties are as follows:

4.10.4.1. Pilot Monitoring (PM):

4.10.4.1.1. The CP/PM assists the CSO as required in accomplishment of duties.

4.10.4.1.2. Completes all CSO duties if no CSO is on board.

4.10.4.1.3. Normally initiates and maintains communication with ATC and landing zone control personnel in the terminal area. Provides secure and non-secure communications in accordance with command electronic order of information (CEOI).

4.10.4.1.4. Zeroizes all cryptographic devices, IFF/SIF, and clear classified frequencies prior to leaving the aircraft.

4.10.4.1.5. Preflights and ensures IFF/SIF Modes are set in accordance with mission requirements.

4.10.4.2. Combat Systems Officer (CSO):

4.10.4.2.1. Determines and coordinates frequencies and call signs and advises the AC off all mission communications requirements.

4.10.4.2.2. Initiates and maintains communication with C2 agencies, range control, combat control teams (CCT), drop zone control personnel, and other ground parties during mission events. Initiates frequency hopping, secure and non-secure communications in accordance with CEOI and compile/transmit necessary in-flight and position reports to appropriate facilities.

4.10.4.2.3. Signs out and maintains control of communications security (COMSEC) and classified documents required during the mission. Annotates safe inventory and complete daily destruction as required and return all COMSEC and classified materials to proper storage facilities.

4.10.4.2.4. Keys all secure equipment and makes appropriate operational checks.

4.10.4.2.5. Troubleshoots malfunctioning voice/data communication and navigation equipment and ensure discrepancies are annotated on the AFTO Form 781A.

4.10.5. Frequency Listing. **Attachment 5** contains listings of commonly used frequencies, including search and rescue, citizen band, and the Maritime radio presets. Consult ATO, SPINS and other guiding documents to supplement situational awareness.

**4.11. TDL Procedures.**

4.11.1. This space left blank for future modifications (e.g., situational awareness communications upgrade (SACU). See AFTTP 3-3.HC130 for existing TDL TTPs.

**4.12. Airborne Comm Jamming Procedures.**

4.12.1. Plan and fly missions using strict radio discipline to deny enemy direction finding, jamming, and intrusion capability and ensure clear channels are available for emergencies. Limit transmissions to only those essential to mission accomplishment and use secure means when possible. Long range communication channels are as directed by the mission controlling authority.

4.12.2. Joint Spectrum Interference Resolution (JSIR) Reporting. Electromagnetic interference (EMI) can be caused by enemy, neutral, friendly, or natural sources. Report any hostile interference experienced while supporting joint operations in accordance with ATO/SPINS.

4.12.2.1. When EMI is suspected to be non-intentional, file reports through the unit frequency manager. Refer to the FIH and Chairman of the Joint Chiefs of Staff Manual (CJCSM) 3320.02-B, *Joint Spectrum Interference Resolution (JSIR) Procedures,* for additional program and procedure information.

4.12.2.2. Communication Reports. Forward all ATC communication and associated air reports (AIREP) to International Civil Aviation Organization (ICAO) aeronautical stations in accordance with FLIP GP and FIH. Pass C2 and all other operational communication through the USAF High Frequency Global Command and Control System (HF/SSB GCCS) or dedicated C2 assigned station.

**4.13. Low Altitude Procedures.**

4.13.1. VFR tactical operations conducted below 3,000 ft. AGL are considered low level operations. Refer to AFTTP 3-3.HC-130, for augmented guidance.

4.13.2. Climb to MSA when either pilot must leave the seat during low-level flight. **(T-3)** **Exception:** If performing a planned seat swap for training with an IP in the seat, climb to a safe altitude.

4.13.3. Aircrews should set the cross track limit during enroute operations to alert them when close to maneuvering outside of the current MSA corridor (e.g., set to 2.5 NM to notify the aircrew they are approaching the limits of their corridor). Calculate a new MSA if maneuvering outside of preplanned MSA corridor. **(T-3)**

4.13.4. Weather Minimums. Conduct modified contour low-level operations in VMC. **Note:** This does not preclude the pilot from VFR filing requirements in AFMAN 11-202V3 or applicable ICAO/host nation requirements if operating outside the Contiguous United States (OCONUS).

4.13.4.1. WARNING: Operating under VFR clearance in IMC conditions is normally an emergency procedure during training or exercise operations, requiring appropriate IFF and radio calls to the area air traffic control agency.

4.13.4.2. During contingency or combat operations, flying portions of planned flights in IMC may be necessary to accomplish mission objectives. However, due to aircraft equipment limitations, operational employment in a low-level environment should be considered a last resort. The pilots and CSO will consider the terrain, accuracy of the altimeter setting, and increased mid-air potential prior to IMC profiles being attempted. **(T-3)**

4.13.5. Simulated Emergencies During Low Level Training. Simulated emergencies may be conducted during enroute low-level training on local routes with the following restrictions:

4.13.5.1. Terrain must be flat or rolling. **(T-3)**

4.13.5.2. Will only be conducted on specific legs identified during the crew briefing. **(T-3)**

4.13.5.3. Do not compound emergencies. **(T-3)**

4.13.5.4. As determined by the IP, initiate a climb to an intermediate altitude, detection free altitude (DFA), or MSA. Continue a climb to or maintain required altitude until the completion of the simulated emergency.

4.13.6. Practice Emergency Climb Procedure (PEC). PECs are authorized in day/night VMC. Minimum airspeed should not be less than 10 knots above the stall speed caret.

4.13.6.1. PECs should only be conducted on specific legs identified during the crew brief.

4.13.6.2. Do not compound simulated emergency procedures during PEC. **(T-3)**

4.13.7. Low Level Altitudes.

4.13.7.1. Lowest Acceptable Altitude (LAA). During training operations, higher weather or altitude minimums may be dictated by FLIP, ICAO procedures, training considerations, or crew experience. LAAs allowed for enroute modified contour low-level operations are:

4.13.7.1.1. Day VMC LAA. LAA is 300 ft. AGL modified contour above the terrain (except when using threat penetration altitude), by visual reference to both the terrain and radar altimeter. Momentary terrain clearance deviations are expected and allowed due to terrain variance; however, avoid sustained deviations below LAA. **(T-3)**

4.13.7.1.2. NVG LAA. LAA is 500 ft. AGL modified contour above the terrain (except when using threat penetration altitude), by visual reference to both the terrain and radar altimeter. Momentary terrain clearance deviations are expected and allowed due to terrain variance; however, crews must avoid sustained deviations below LAA. **(T-3)**

4.13.7.1.3. Night VMC (Non-NVG) and NVG Segmented Altitude (No-CSO Ops) LAA. LAA is MSA. When the altitude for the next leg or segment is higher than the altitude currently being flown, complete the climb prior to the turn point or segment. **(T-3)** When the altitude for the next leg segment is lower than the current altitude, do not initiate descent until established on the new leg or segment. **(T-3) Exception:** During terminal area operations (airdrops and approaches), do not descend from enroute altitude until the objective is identified and adequate terrain clearance is assured. **(T-3)**

4.13.7.1.4. IMC LAA. LAA is MSA. When the altitude for the next leg or segment is higher than the altitude currently being flown, complete the climb prior to the turn point or segment. **(T-3)** When the altitude for the next leg segment is lower than the current altitude, do not initiate descent until established on the new leg or segment. **(T-3) Note:** During training, conduct planned IMC routes under IFR unless FLIP, ICAO, or host nation rules define other procedures.

4.13.7.1.5. Threat Penetration (TP) LAA. LAA is 200 ft. AGL for day VMC operations and 300 ft. AGL for NVG operations for training operations. During contingency and/or combat operations TP LAA is no lower than 100 ft. AGL. **Exception:** SQ/CCs, or deployed equivalent, may approve TP training altitudes down to minimum altitude capable (MAC) on a case by case basis.

4.13.7.1.5.1. During combat operations, limit the time spent at TP altitude to the duration needed to avoid/negate the specific threat.

4.13.7.1.5.2. During training operations, fly TP altitudes with the following restrictions: **Exception:** SQ/CCs, or deployed equivalent, may amend TP training restrictions on a case by case basis.

4.13.7.1.5.2.1. A mission IP must be in either seat.

4.13.7.1.5.2.2. Not authorized on unfamiliar routes.

4.13.7.1.5.2.3. Must be pre-planned, briefed, and restricted to flat/rolling terrain and/or coastal penetrations.

4.13.7.1.5.2.4. Prior to initiating a "break" or "hard turn", crews will climb to 300 ft. AGL. **(T-3)**

4.13.7.1.5.2.5. WARNING: Restrict bank angles below 200 ft. AGL to 20 degrees or less. Due to the close proximity to the ground, aircrews must be cautious of any descending vector that may develop during TP operations.

4.13.7.1.5.2.6. Aircrews will not conduct simulated emergencies during TP training. **(T-3)**

4.13.7.1.6. Day VMC Over Water LAA. LAA is 150 ft. above water level (AWL). Minimize bank angle to 20 degrees or less. **(T-3)** Both pilots must have functioning Radar Altimeters. **(T-3)** Extreme caution should be used at this altitude and consideration should be given to wildlife and sea spray.

4.13.7.1.6.1. Prior to initiating a "break" or "hard turn", crews will climb to 300 ft. AGL. **(T-3)**

4.13.7.1.6.2. WARNING: Restrict bank angles below 200 ft. AGL to 20 degrees or less. **(T-3)** Due to the close proximity to the surface, aircrews must be cautious of any descending vector that may develop.

4.13.7.1.6.3. No simulated emergencies allowed. **(T-3)**

4.13.7.1.7. NVG LAA Over Water. LAA is 300ft AWL. Bank angles greater than 45 degrees should be avoided. Both pilots must have functioning NVGs and Radar Altimeters. **(T-3)** EO/IR must be functioning. **(T-3)** Extreme caution should be used at this altitude and consideration should be given to wildlife and sea spray. No simulated emergencies allowed. **(T-3)**

4.13.7.2. NVG Low Level Enroute and Objective Area Navigation. Obstacle avoidance at night is accomplished using NVGs, LPCR, EO/IR, and radar altimeter along with flying NVG altitudes as necessary to maintain terrain clearance. WARNING: NVG low-level flight and low illumination air refueling increase the chance crew members can experience spatial disorientation.

4.13.7.3. Low Level Emergency Procedures. During combat operations only, a climb to MSA/ERAA may expose the aircraft to greater hazard due to enemy threat detection. The PF may climb to a DFA or intermediate altitude during a low-level emergency. Base the decision to use this lower altitude after a thorough pre-mission assessment of the enemy's overall threat detection capability and nature of the emergency.

4.13.7.4. Aircrew Disorientation. If an aircrew becomes disoriented or lost, start a climb to ERAA. **(T-3)** Continue the climb until ERAA is reached or a positive fix is obtained. After obtaining a positive fix, aircrews may descend and resume low-level operations. The CSO/PM crosschecks timing and adjusts as necessary.

4.13.7.5. Spatial Disorientation or NVG Malfunction. The PM will be ready to immediately take control of the aircraft if the PF experiences spatial disorientation or NVG malfunction. **(T-3)**

4.13.7.5.1. If either pilot experiences spatial disorientation or NVG malfunction, start a climb to MSA and maintain altitude until the pilot experiencing the problem is ready to resume PM or PF duties.

4.13.7.5.2. Aircrews may continue low-level operations at the ACs discretion.

4.13.7.6. Inadvertent Weather Penetration. Climb to MSA within corridor if unable to avoid flight into weather conditions that prohibit VMC operations. **(T-3)** A further climb to ERAA may be required. After VMC is reestablished, aircrews may continue low-level operations at the ACs discretion.

4.13.7.7. Aircraft System Failure. Start a climb to MSA when a known or suspected malfunction prevents continued safe low-level operations. **(T-3)** Maintain at least MSA until completion of troubleshooting. **(T-3)** If the aircraft meets minimum operating equipment requirements the aircrew may continue low-level operations at the ACs discretion. Aircraft not meeting requirements will fly at MSA or higher. **(T-3)**

4.13.7.8. Emergency Climb. The decision to execute an emergency climb should be made as soon as possible. The procedure should be considered in cases of, but not limited to, certain equipment malfunctions, spatial disorientation, inadvertent weather penetration, loss of situational awareness, and imminent contact with the terrain.

4.13.7.8.1. Emergency Climb Procedure. Any crew member may initiate an emergency climb.

4.13.7.8.1.1. Announce, “Emergency climb” to the crew over interphone.

4.13.7.8.1.2. Execute the T.O. 1C-130(H)J-1 GCAS/TAWS PULL UP ALERT RECOVERY Procedures.

4.13.7.8.1.3. Close ramp and door (if open).

4.13.7.8.1.4. Turn away (with consideration for stall margin) from terrain if feasible. If not possible, climb straight ahead for the maximum climb angle.

4.13.7.8.1.5. The PM will monitor and call airspeed as appropriate. Pilots must monitor stall caret. **(T-3)**

4.13.7.8.1.6. The CSO/PM will state an MSA or ERAA as appropriate, monitor terrain (via radar, chart, etc.) and state, “Clear of terrain” when above all critical terrain.

4.13.7.8.1.7. When clear of all terrain, adjust pitch, power, and airspeed for a normal climb out and level off.

4.13.7.8.1.8. WARNING***:*** If impact with terrain is imminent, use 100% flaps, 10

knots above the stall caret and crash the aircraft straight ahead.

**4.14. Enroute.**

4.14.1. Minimum IFR Enroute Altitude. Minimum IFR enroute altitude is in accordance with Title 14 of the Code of Federal Regulations (CFR), *Aeronautics and Space*, Part 91, *General Operating and Flight Rules*.

4.14.1.1. Descent below IFR minimum altitudes is only allowable under the following conditions:

4.14.1.1.1. Intercepting glideslope for an approved IMC SCA.

4.14.1.1.2. Reaching the drop zone entry point for IMC airdrop.

4.14.1.1.3. Established on an ATC provided minimum radar vectoring altitude available from a suitably equipped and capable radar facility.

4.14.1.1.4. Established on a published IFR route or instrument approach procedure compatible with aircraft navigation systems.

4.14.1.1.5. IMC descent to VFR.

4.14.2. Radar Altimeter Settings. During low-level operations, set radar altimeters no lower than 20% below minimum enroute altitude (e.g., minimum setting of 400 ft. for 500 ft. NVG modified contour and 160 ft. for day TP altitude at 200 ft.). **(T-3)**

4.14.2.1. The PF will make an immediate correction any time the system provides an "altitude-altitude" annunciation. **(T-3)**

4.14.2.2. Regardless of the radar altimeter setting used, the PF will not wait for an annunciation to begin a correction to altitude. **(T-3)**

4.14.3. Barometric Altimeter. An ALT UPDATE derived aircraft altimeter setting should only be used outside ATC controlled environments. Barometric altimeter updates will be performed with the guidance provided in AFTTP 3-3.HC-130 altimeter calibration (ALT CAL).

4.14.3.1. An ALT UPDATE should be performed prior to all airdrops or landings.

4.14.3.2. For SCA ingress altitudes greater than 1,000 ft. above threshold elevation, use the lowest forecast altimeter setting. **(T-3)**

4.14.3.3. Cold Weather Altimeter Corrections. Apply cold weather altimeter corrections for non-tactical operations in accordance with AFMAN 11-202V3 and FIH. For tactical operations, apply cold weather altimeter corrections to any non-Global Positioning System (GPS) derived barometric altitude (MSA, ERAA, NVG altitude, drop altitude, SCA backup altitudes, SCA minimums, etc.), when the outside air temperature is below 32F/0C.

4.14.4. Fuel System. The primary concern with inoperative fuel boost pumps or quantity indicators is fuel balance and wing loading. Degraded operation is permissible, however, flight crews need to consider potentially trapped fuel and decreased range should further degradation occur. The following paragraphs and MEL provide guidelines for degraded fuel system operations under most circumstances.

4.14.4.1. **In-Flight Fuel Management** . For a flight plan and corresponding fuel log to be most meaningful for in-flight fuel monitoring, the actual cruise altitude should be no

lower than 2,000 ft. below planned altitude and the airspeed no lower than planned airspeed –10 KTAS or higher than planned airspeed + 10 KTAS. If initial cruise conditions do not fall within these parameters, the AC should strive to reach (or beat) them as soon as possible.

4.14.4.1.1. Monitor fuel consumption by comparing the FOB to predicted fuel remaining and the required continuation fuel on the flight plan. At a minimum, accomplish and record consumption comparisons on the master flight plan (MFP):

4.14.4.1.1.1. As soon as practical after initial level off. **(T-3)**

4.14.4.1.1.2. At convenient waypoint intervals not to exceed 1 hour. **(T-3)**

4.14.4.1.1.3. At convenient waypoint intervals not to exceed 30 minutes if aircraft performance is critical or marginal (e.g., actual fuel is less than continuation fuel, icing conditions, weather avoidance). **(T-3)**

4.14.4.1.1.4. Any time re-routing occurs or a lower altitude than what was flight-planned is to be flown. **(T-3)**

4.14.4.1.1.5. After on-load or offload is complete for air-to-air refueling missions. **(T-3)**

4.14.4.1.1.6. When proceeding to an air refueling abort base after aborting an air refueling on-load, compute the recovery fuel based on required reserves at the abort base. **(T-3)** Reset FIXED on PERF INIT WEIGHT to match the new recovery fuel. **(T-3)** Use the CNI-MS to monitor fuel consumption for non-air refueled missions. **(T-3)**

4.14.4.1.2. Inflight fuel management may be discontinued at the discretion of the AC when all the following conditions have been met:

4.14.4.1.2.1. The ETP has been crossed (CAT I routes.)

4.14.4.1.2.2. Fuel systems and quantity indicators are functioning normally.

4.14.4.1.2.3. There is obvious extra fuel and the +EXCESS fuel trend is favorable.

4.14.4.1.3. On CAT I routes, prior to the ETP, if the EXCESS fuel becomes negative the AC will consider and accomplish one of the following recommended actions:

4.14.4.1.3.1. Change the flight profile to ensure planned performance is reacquired and fuel reserves at destination is met or exceeded. **(T-3)**

4.14.4.1.3.2. Continue and land short of the intended destination (e.g., FSAF) or proceed to intended destination based on an updated weather forecast that no longer requires an alternate. **(T-3)**

4.14.4.1.3.3. Return to the departure base or the LSAF. **(T-3)**

4.14.4.1.4. Flight Plan Changes and Diversion Fuel. When mission dictates a change to the planned routing, recalculate the fuel to ensure safe completion of the flight. **(T-3)** The CNI-MU is the primary method of deciding if a mission change can be accommodated.

4.14.4.1.4.1. If the enroute change does not affect the intended destination, then

in-flight fuel monitoring consists of comparing the CNI-MS predicted remaining fuel with flight plan continuation fuel at the next point common to the reroute and the original flight plan.

4.14.4.1.4.2. After any route alteration, crews should actively monitor fuel state by recording the fuel remaining values at abeam positions of the original flight plan and using the "abeam" function of the INDEX/FIX INFO PAGE to crosscheck fuel status.

4.14.4.1.5. Declare "emergency fuel" in accordance with the T.O. 1C-130(H)J-1.

4.14.4.1.6. Declare "minimum fuel" (not an emergency situation) to ATC when it is determined that the aircraft is going to land with less than 3,000 lbs. plus the required reserve.

4.14.4.2. Crossfeed Operations. See T.O. 1C-130(J)J-1 for crossfeed operations procedures. Do not conduct engine out training using engine (or symmetrically opposite) with inoperative fuel indicator during tank to engine operations. **(T-3)**

4.14.5. As a technique to meet Air Force Handbook (AFH)11-203, Volume 1, *Weather for Aircrews* requirements, do not fly directly above (within 2,000 ft.) thunderstorms or cumulonimbus clouds. If unable to clear thunderstorms or cumulonimbus clouds by at least 2,000 ft. vertically, avoid them by at least:

4.14.5.1. 20 NMs at or above FL 230.

4.14.5.2. 10 NMs below FL 230.

4.14.5.3. 5 NMs for tactical low-level operations. **Caution:** Aircraft damage is possible 20 NMs or more from any thunderstorm. Refer to AFH 11-203V1 for more information.

**4.15. Training Maneuvers.**

4.15.1. Approach to Stalls. An IP must be at a set of controls. **(T-3)** Authorized only during day VMC at a minimum of 5,000 ft. AGL or 5,000 ft. above a cloud deck. **(T-3)**

4.15.2. Instrument Steep Turns. Authorized only during day VMC with up to 60-degrees bank. **(T-3)** Restrict turns to 5,000 ft. AGL (or 5,000 ft. above a cloud deck) for bank angles in excess of 45-degrees. **(T-3)**

4.15.3. Slow Flight. An IP must be at a set of controls and slow flight training is only authorized at or above 5,000 ft. AGL. **(T-3)**

4.15.3.1. Fly at approach, threshold, and 10 knots above the stall speed caret with gear down and flaps 0%, 50%, or 100%. **(T-3)**

4.15.3.2. Do not exceed 15-degrees angle of bank. **(T-3)** Air refueling minimum operating speed (MOS) may be demonstrated. If air refueling MOS is demonstrated, do not use any angle of bank. **(T-3)**

4.15.4. Actual Engine Shutdown and Airstart. An IP must be at a set of controls. **(T-3)** Authorized only during day VMC at a minimum of 2,500 ft. AGL., and limited to only one engine. OG/CCs are the waiver authority.

4.15.5. Formal Course Maneuvers Only. The following maneuvers will only be conducted during formal course upgrade, qualification, and simulator training only:

4.15.5.1. Aborted Normal Takeoff. OG/CC approval is required to conduct this event.

4.15.5.1.1. This event will only be conducted during day VMC and with an IP at a set of controls. **(T-3)**

4.15.5.1.2. Pilots will only perform this event when the runway is dry, hard-surfaced, and equal to or greater than CFL. **(T-3)**

4.15.5.1.3. Pilots will only perform this event if the crosswind component is within the recommended zone of the takeoff crosswind chart. **(T-3)**

4.15.5.1.4. Initiate the abort by stating "Reject" before refusal speed.

4.15.5.1.5. Do not practice aborts from touch-and-go or stop-and-go landings. **(T-3)** Do not shut down an engine due to simulated malfunctions. **(T-3)**

4.15.5.2. Aborted Maximum Effort Takeoff. OG/CC approval is required to conduct this event.

4.15.5.2.1. This event will only be conducted during day VMC with an IP at a set of controls and is only authorized for AC upgrades and above during formal upgrade training. **(T-3)**

4.15.5.2.2. Pilots will only perform this event when the runway is dry, hard-surfaced, and equal to or greater than CFL. **(T-3)**

4.15.5.2.3. Pilots will only perform this event if the crosswind component is within the recommended zone of the takeoff crosswind chart. **(T-3)**

4.15.5.2.4. Simulate a runway length less than CFL.

4.15.5.2.5. Initiate the abort by stating "Reject" at or below a refusal speed based on simulated runway length.

4.15.5.2.6. Compare the distance traveled to runway length and point out the ramifications of operating with less than CFL.

4.15.5.2.7. Subsequent aborted takeoffs can lead to excessive brake heating. If greater than a flight manual defined "partially braked landing" is used to stop, comply with all zone requirements and minimum brake cooling times in accordance with the performance manual LANDING BRAKE ENERGY chart between aborted takeoffs.

4.15.5.2.8. Do not practice aborts from stop-and-go landings. **(T-3)** Do not shut down an engine due to simulated malfunctions. **(T-3)**

## 4.16. CAT I Navigation Procedures.

4.16.1. General. This section provides general procedures and guidance for the operation of navigation systems on CAT I routes. For navigation system requirements, consider all oceanic airspace as minimum navigation performance specifications (MNPS) airspace. Specific procedures for required navigation procedures (RNP) RNAV airspace are addressed in subsequent sections.

4.16.1.1. Aircrews must include in the pre-flight procedures a ZULU time check and resynchronization of the aircraft master clock, if necessary. **(T-3)** Acceptable time standards that can be used include GPS, Naval Observatory Master Clock (Defense Switched Network (DSN): 312-762-1401/1069 or 312-560-6742), and WWV (2500, 5000, 10,000, 15,000, 20,000 kHz) via wristwatch or other device.

4.16.1.2. Both the AUTONAV and manual gyrocompass (GC) alignment of the inertial navigation systems (INSs) result in the required navigation performance needed for RNP RNAV operation. The GPS positions may be used as initial positions as long as they agree within one-tenth of one minute. If GPS is not available, use precision parking coordinates or, as a last resort, obtain coordinates from an airfield diagram published in an approved instrument approach book. **(T-3)** This position must be checked and verified by both pilots and recorded on the MFP. **(T-3)**

4.16.2. Communication/Navigation/Identification-Management Unit (CNI-MU). The following procedures will be completed by the pilots/CSO on all CAT I flights

4.16.2.1. Load the route of flight into the CNI and verify both the magnetic course and the leg distance for each waypoint with the MFP. **(T-3)** If the courses differ by more than 2 degrees or the distances differ by more than 2 NM, the crew will resolve the discrepancy prior to flight. **(T-3)**

4.16.2.2. Label waypoints so they can be readily identified for subsequent position reporting. **(T-3)**

4.16.2.3. Using the LEGS pages, insert the forecast winds (if available) at each waypoint. **(T-3)**

4.16.2.4. Verify the total distance to the destination on the CNI PROGRESS page. **(T-3)** Any significant disparity (more than 25 NM to allow for standard instrument departures (SIDs)/STARs and approaches) in the total distance between the CNI and MFP will require the air crew to recheck the ramp position and waypoint coordinates. **(T-3)**

4.16.2.5. Both pilots (or pilot and CSO) will verify the waypoint coordinates and course and distance information from the opposite side CNI to the MFP. **(T-3)** Completion of this step is annotated with the check-mark being circled on the MFP.

4.16.2.6. If the planned route of flight is a stored route or one loaded during a data transfer, both pilots (or pilot and CSO) must still verify waypoint coordinates. **(T-3)**

4.16.2.7. In addition to **Chapter 3** requirements, when configuring for CAT I operations, both pilots (or pilot and CSO) will verify that the integrated navigation (INAV) Position Alert 1 is set to 4.0 miles and INAV Position Alert 2 is set to 8.0 miles on the CNI PROGRESS page, or as appropriate for type of RNAV airspace to be flown. **(T-3)**

4.16.3. Flight Plan/Chart. Aircrews will complete and comply with the following procedures:

4.16.3.1. Aircrews must use one MFP and one plotting chart as master copies for each flight utilizing CAT I procedures. **(T-3)**

4.16.3.2. Ensure aircraft is reduced vertical separation minimum (RVSM) compliant if flying in RVSM airspace. **(T-3)**

4.16.3.3. Navigation system accuracy checks on the ground. **(T-3)** After leaving the ramp, perform the INS/INAV groundspeed check by stopping the aircraft and checking each pilot's groundspeed on the CNI-MUs or HDDs/heads up displays (HUDs). **(T-3)** Groundspeeds in excess of 1 knot while the aircraft is stationary may indicate a faulty INS.

4.16.3.4. Navigation system accuracy checks while airborne. **(T-3)** Determine INAV position accuracy by comparing it to enroute NAVAIDs.

4.16.3.4.1. Compass deviation check. Perform a compass deviation check using both INSs and the standby compass prior to entering CAT I airspace. **(T-3)** Perform subsequent checks after heading changes of 30 degrees (or greater) or every 3 hours. **(T-3)**

4.16.3.4.2. Oceanic navigation accuracy check. Prior to coast-out, evaluate/compare the accuracy of all navigation solutions. **(T-3)** In the event of discrepancies, greater than 4 NM, the crew should investigate the cause and determine if CAT I flight is feasible.

4.16.3.5. MPC Usage. Aircrews must use a plotting chart on every route requiring CAT I Navigation. **(T-3)** Use an appropriate JNC-A, JNC, GNC, or an Oceanic Planning Chart (OPC).

4.16.3.5.1. Electronic charts are allowed, provided MPE can remain powered during entire flight. Aircrews much carry a backup paper chart. **(T-3)**

4.16.3.5.2. During mission planning, draw or print the course line representing the planned route of flight on the MPC. **(T-3)**

4.16.3.6. MFP Usage. The MFP is normally maintained by the PM or CSO but should be kept readily available to all crew members.

4.16.3.6.1. Use the MFP to record the following in flight:

4.16.3.6.1.1. All ATC route clearances and changes to clearances. **(T-3)**

4.16.3.6.1.2. The wind, temperature, altitude, fuels remaining, and the bearing/range between the INAV solutions over waypoints bordering and within CAT I navigation airspace. **(T-3)**

4.16.3.6.1.3. Any loss or degraded navigation or avionics equipment. **(T-3)**

4.16.3.6.1.4. Compass deviation checks. **(T-3)**

4.16.3.6.1.5. Oceanic navigation accuracy check. **(T-3)**

4.16.3.6.2. Symbology. Use the following to ensure that both pilots can easily determine which waypoints have been programmed into the CNI-MU, which programmed waypoints have been verified, and which waypoints have been transitioned in-flight:

4.16.3.6.2.1. Check-mark. Place next to the waypoint to signify the waypoint has been entered into the CNI-MU and the course and distance have been verified.

4.16.3.6.2.2. Circle the check-mark. Signifies the coordinates, course, and distance in the CNI-MU verified by another crew member.

4.16.3.6.2.3. One diagonal line through the circled check-mark. Signifies the waypoint passed, reported, and all applicable annotations associated with waypoint passage are completed.

4.16.3.6.2.4. A cross over a circle with a check-mark. Signifies the position plotted on the MPC approximately 60 NM (10 to 15 minutes depending on groundspeed) after waypoint passage.

4.16.3.7. MFP Procedures. When the frequency of waypoints along CAT I route segments is greater than one every 30 minutes, full-line entries and plotting can be limited to a minimum of one every hour. Full-line entries with the corresponding position plot are mandatory for every waypoint involving a change of heading over 20 degrees. **(T-3)**

4.16.3.7.1. Position Reports. Complete a position report to the controlling agency with the guidance provided in FIH procedures.

4.16.3.7.1.1. The layout of the CNI PROGRESS page supports the format of the position report. However, ensure that ETAs passed to the controlling agency match the ETAs on the MFP. This enables the pilots to determine if an ETA has changed from what was previously reported.

4.16.3.7.1.2. If an ETA changes by more than 3 minutes, notify the controlling agency. **(T-3)**

4.16.3.7.2. After Takeoff. Record the takeoff time in the actual time of arrival (ATA) block of the departure airfield on the MFP. **(T-3)** As soon as practical after takeoff, determine a revised ETA for each line of the MFP using flight-planned leg times and the actual departure time. **(T-3)**

4.16.3.7.3. Approaching Coast-Out. Prior to coast-out, and outside of RNP RNAV airspace, it is permissible and recommended to use the enhanced GPS INS (EGI) or GPS (INAV source in AUTO mode) as the INAV solution for both Communication/ Navigation/ Identification System Processors (CNI-SPs) if NAVAIDs are available for monitoring.

4.16.3.7.3.1. Prior to losing NAVAID reception, the aircrew must place the INAV solution that is not the controlling solution to INS. **(T-3)** This ensures there is constant comparison of the controlling solution to an independent INS solution.

4.16.3.7.3.2. Beginning at the coast-out waypoint and continuing through coast-in, CNI-MU bearing/range between INAV solutions should be recorded at each waypoint to provide a running record of INS drift relative to the controlling solution.

4.16.3.7.4. Prior to Waypoint Transition. Check the MFP magnetic course and distance to the next waypoint against the CNI-MU. **(T-3)** The courses should be within 2 degrees and the distances should agree within approximately 2 NM. Check and verify that the subsequent waypoint is properly programmed. **(T-3)** Update ETAs to the next two waypoints. **(T-3)**

4.16.3.7.5. Overhead the Waypoint. Confirm the ATA and determine the minutes ahead/behind by comparing it to the ETA. **(T-3)**

4.16.3.7.5.1. Record the CNI-MU bearing/range between INAV solutions to provide a running record of INS drift relative to the controlling solution. **(T-3)**

4.16.3.7.5.2. Record the actual fuel remaining above the flight-planned continuation fuel and write the difference between continuation fuel and actual fuel remaining in the EXCESS block of the MPF. **(T-3)**

4.16.3.7.6. Immediately After Waypoint Passage. As soon as the aircraft has intercepted its new course, confirm that the aircraft is outbound on its flight planned magnetic course to the next waypoint. **(T-3)**

4.16.3.7.6.1. Record the actual in-flight conditions (altitude, wind, and static air temperature (SAT) above the forecast conditions on the next line of the MFP. **(T-3)**

4.16.3.7.6.2. Update these conditions as well as fuel flow as needed on the PERF CRUISE and LEGS pages in the CNI-MU. **(T-3)**

4.16.3.7.7. Approximately 60 NM after waypoint passage (10 to 15 minutes depending on groundspeed). MARK the aircraft position and plot the INS-only position on the MPC. **(T-3)** Record the mark time and position coordinates next to the plot.

4.16.3.7.7.1. If the plotted position is not within 2 NM of the course center-line, check waypoint coordinates for accuracy, ensure the autopilot is tracking correctly in NAV mode, re-check the accuracy of the charted course-line, and re-check that the position was plotted correctly. **(T-3)**

4.16.3.7.7.2. Draw a diagonal line through the waypoint on the MFP to indicate it has been passed, reported, and all applicable annotations associated with waypoint passage have been completed. **(T-3)**

4.16.4. Routine Monitoring. Aircrews should make regular check to ensure correct autopilot engagement with the navigation system due to the possibility of the autopilot disconnecting from the altitude/steering modes.

4.16.4.1. Aircrews should monitor aircraft performance and outside parameters, suspect potential problem areas, and review the performance manual if the following conditions are encountered:

4.16.4.1.1. The fuel remaining is less that the planned continuation fuel.

4.16.4.1.2. Any low calculated fuel CNI-MU advisory.

4.16.4.1.3. ATA at any MFP fix is off by more than ± 5 minutes.

4.16.4.1.4. SAT differs by more than ± 5ºC from flight planned.

4.16.4.1.5. Actual winds differ by more than 30 degrees or 15 knots from flight-planned.

4.16.4.1.6. Any ahead/behind time more than 10% of total planned enroute time to that point.

4.16.4.1.7. Hazardous meteorological conditions.

4.16.5. Approaching Landfall. Aircrews should use the radar to help identify the coast-in position. When the aircraft is approaching the first landfall NAVAID, tune and identify the navigation facility and crosscheck the aircraft position. **(T-3)**

4.16.5.1. If coast-in is made at a radial/distance measuring equipment (DME) fix, the appropriate radial should be selected on the non-active CDI as a further check that the navigation system is tracking according to the current clearance.

4.16.5.2. Once NAVAID reception is assured and flight is not being conducted in RNP RNAV airspace, all INAV solutions can be returned to AUTO.

4.16.5.3. When entering RNAV airspace configure the aircraft with the guidance provided in T.O. 1C-130(H)J-1.

4.16.6. Communications. The AC will designate the duties of flying the aircraft and copying/monitoring clearances so that they are clearly understood by all crew members. **(T-3)**

4.16.6.1. The PM normally receives and records the oceanic clearance. Both pilots will monitor and crosscheck to ensure that it has been copied correctly and clearly understood. **(T-3)**

4.16.6.2. A pre-flight check of the satellite communication (SATCOM) and HF radios should be made to a suitable agency (operating authority, command post or ATC).

4.16.6.2.1. At least one HF radio must be confirmed operable prior to coast out. **(T-3)**

4.16.6.2.2. If flying in a formation, at least one HF radio per formation must be operable. **(T-3)**

4.16.6.3. In the interest of safety during oceanic and remote area operations (100 NM offshore), aircrews will maintain a listening watch on 121.5 and 243.0 MHz and the VHF common frequency. **(T-3)**

4.16.6.4. Ensure that one pilot places their transmission switch to an HF radio so that the crew can transmit on HF in case of BIU backup. **(T-3)** The other pilot should select VHF 2 for the same reason. VHF 1 is available on the get home control and the aircrew can attempt to relay transmissions to other aircraft on 121.5 MHz until within VHF range of ATC.

4.16.6.5. Oceanic Clearance. If not received before take-off, the oceanic clearance should be obtained prior to the boundary of oceanic airspace in accordance with FLIP.

4.16.6.5.1. The clearance will be recorded on the MFP, and reviewed by two crew members. **(T-3)** If the oceanic clearance received is different from the planned clearance, use the following procedures:

4.16.6.5.1.1. Record the new route on the MFP to include applicable updates to ETP data. **(T-3)**

4.16.6.5.1.2. Enter the new waypoints into the CNI in accordance with the pre-flight procedures in this chapter. **(T-3)**

4.16.6.5.1.3. Ensure fuel is still be sufficient to arrive at the destination waypoint with required reserves. **(T-3)**

4.16.6.5.1.4. Mark out the old plotted track and draw the revised plot on the MPC. **(T-3)**

4.16.6.5.1.5. In no case should this process simultaneously engage the attention of both pilots during flight. **(T-3)**

4.16.6.6. Identification Friend or Foe (IFF**)**. Reset Mode 3A code to 2000, 30 minutes after entering CAT I airspace or as required by the airspace. **(T-3)**

**4.17. Airspace.**

4.17.1. General. The U.S. claims a 12 NM territorial sea and recognizes territorial sea claims of other nations up to a maximum breadth of 12 NM.

4.17.1.1. Aircrews operating missions requiring unique or specially developed routing are normally briefed at home station, onload location, or by the last C2 facility transited before performing the critical portion of the mission.

4.17.1.2. Aircrews should not enter into territorial airspace for which a clearance has not been duly requested and granted through diplomatic channels.

4.17.1.2.1. **Exception:** Emergency landing and right of assistance entry.

4.17.1.2.2. Only obtain aircraft clearance into sovereign airspace through diplomatic channels (not ATC agencies). **(T-3)** Comply with the FCG. **(T-3)**

4.17.1.3. International airspace includes all airspace seaward of coastal states' territorial seas. Military aircraft operate in such areas free of interference or control by the coastal state.

4.17.1.4. Territorial airspace includes airspace above territorial seas, archipelagic waters, inland waters, and land territory, and is sovereign airspace. Overflight may be conducted in such areas only with consent of the sovereign country, except under customary international law which permits state aircraft in distress to make emergency landings in foreign territory without affirmative authorization or right of assistance entry (see CJCSI 2410.01D, *Guidance for the Exercise of Right of Assistance Entry*).

4.17.1.5. Aircrews should not amend entry points on a flight plan route which takes them from international airspace into territorial airspace for which approved aircraft clearances were obtained.

4.17.1.6. A Flight Information Region (FIR) is an area of airspace within which flight information and related services are provided.

4.17.1.6.1. A FIR does not reflect international borders or sovereign airspace.

4.17.1.6.2. Aircraft may operate within an established FIR without approval of the adjacent country, provided the AC avoids flight in territorial airspace.

4.17.1.7. US military aircraft and Department of Defense (DoD) personnel entering another nation to conduct US government business must have the approval of the foreign government concerned to enter their airspace. **(T-0)** Foreign clearances for US international air operations are obtained through US officials known as defense attaché officers (DAOs).

4.17.1.8. In the event an ATC agency challenges the validity of a flight routing or attempts to negate existing clearances, ACs should evaluate the circumstances. The normal response is to attempt to advise the ATC agency that the aircraft is continuing to planned destination, as cleared in international airspace. The key phrase is "in international airspace." Safety of flight is paramount in determining mission continuation.

4.17.1.9. Under no circumstances should aircrews construe a clearance, which routes their mission over sovereign airspace not approved through diplomatic channels before mission departure, as being valid authorization.

4.17.1.10. The following airspace categories are each defined in FLIP, and are considered special qualification airspace: MNPS, RNAV, RNP, and basic area navigation (BRNAV).

4.17.2. Special Certification Airspace Requirements and Procedures. The GPS installed in HC-130J Block 6.0 navigation suite meets Federal Aviation Administration (FAA) certification requirements for IFR navigation using aircraft autonomous integrity monitoring (AAIM) as defined in FAA AC 90-108. The MAJCOM has approved the GPS with AAIM to be used as the primary means of navigation for enroute instrument navigation using the procedures outlined in T.O. 1C-130(H)J-1.

4.17.2.1. For flight plan purposes, the HC-130J is performance-based navigation (PBN) approved with RNAV specification RNAV 10, RNAV 5 global navigation satellite system (GNSS), RNAV 5 INS, RNAV 2 GNSS, RNAV 2 DME/DME/inertial reference unit (IRU), RNAV 1 GNSS, and RNAV 1 DME/DME/IRU. Annotate in appropriate blocks of the DD Form 1801 in accordance with DoD Flight Information Publication General Planning (FLIP GP).

4.17.2.2. The HC-130J navigation system is certified to meet the requirements of RNP-10 airspace for up to 10.3 hours from the time the INSx/RAD DEGRADED CNI-MU alert message is received.

4.17.2.3. The HC-130J is approved for RNAV 5/BRNAV with no time limits as long as one INS is receiving radio updates.

4.17.2.4. The HC-130J is approved for North Atlantic high level airspace (NAT HLA)/MNPS airspace with a 10.3 hour time limit after the INSx/RAD DEGRADED CNI-MU Alert Message. The HC-130J must comply with all NAT HLA/MNPS equipment requirements when flying within the lateral dimensions of this airspace. **(T-2)** Both INSs must be operational to meet the requirement of having two fully serviceable long-range navigation systems (LRNS). **(T-2)**

4.17.3. Reduced Vertical Separation Minimum (RVSM) Airspace. Refer to FLIP AP/2 and the following for RVSM requirements:

4.17.3.1. Aircrews must ensure both primary altimeters, at least one autopilot, the altitude advisory system, and the transponder, are fully operational. **(T-2)** Request a new clearance to avoid this airspace should any of this equipment fail. **(T-3)**

4.17.3.2. Have the autopilot engaged during level cruise, except when circumstances such as the need to re-trim the aircraft or turbulence require disengagement. **(T-3)**

4.17.3.3. Crosscheck and record the readings of both altimeters before or immediately upon coast out. **(T-3)**

4.17.3.4. Continuously crosscheck the primary altimeters to ensure they agree ± 200 ft. **(T-3)**

4.17.3.5. Limit climb and descent rates to 1,000 ft. per minute when operating near other aircraft to reduce potential TCAS advisories. **(T-3)**

4.17.3.6. Immediately notify ATC if any of the required equipment fails after entry into RVSM airspace and coordinate a plan of action. **(T-3)**

4.17.3.7. Document in the aircraft forms malfunctions or failures of RVSM required equipment. **(T-3)**

4.17.4. North Pacific Region (NOPAC) MNPS Airspace. For flights in NOPAC MNPS airspace comply with the following additional procedures when transiting the Anchorage/Tokyo Oceanic Control Area/First-Impressions Report; FIR on the NOPAC North route. The following minimum operable navigation systems are mandatory:

4.17.4.1. Prior to entering the NOPAC North route, aircrews must ensure the radar and both EGI navigation systems are fully operational. **(T-2)**

4.17.4.2. After entering the NOPAC North route:

4.17.4.2.1. Aircraft on the NOPAC North route may continue without functional radar, if radar is not required for weather avoidance, as long as both EGI systems are fully functional to include GPS and INS inputs. If the EGI accuracy cannot be determined, either re-file a flight plan on another track (fuel permitting) or return to the nearest facility possessing maintenance capability. **(T-3)**

4.17.4.2.2. Aircraft on the NOPAC North route may continue with only one functional EGI system, which includes both GPS and INS input, or two functional INS provided the radar system is fully functional. Verify in-flight that radar returns are available on all ranges, particularly the 80, 160, and 320 NM ranges. If the radar system is either marginal or inoperative, fuel permitting, re-file a flight plan to another track or return to the nearest facility possessing maintenance capability. **(T-3)**

4.17.4.2.3. Aircraft that do not meet the above will return to the nearest maintenance repair facility. **(T-3)**

4.17.5. North Atlantic Tracks (NAT). When flying over the north Atlantic, crews should obtain a copy of the NAT valid for their coast out time.

**4.18. Instrument Conditions.**

4.18.1. Instrument Approach Restrictions. Before starting an instrument approach, or beginning an enroute descent, confirm the existing weather is reported to be:

4.18.1.1. At or above required visibility for straight-in or sidestep approaches. **(T-3)**

4.18.1.2. Precision approach radar (PAR) approaches: Visibility can be no lower than RVR 2,400 (730 meters) or ½ mile visibility (800 meters) with no RVR readout available. **(T-3)**

4.18.1.3. CAT I ILS: Decision height for precision approaches is as published, but no lower than a 200 ft. HAT. **(T-3)**

4.18.1.4. Circling Approach: At or above required ceiling and visibility. **(T-3)**

4.18.1.5. Circling approaches with no published ceiling requirement:

4.18.1.5.1. The required ceiling is computed by taking the published height above aerodrome (HAA) plus 100 ft., rounded up to the next 100 ft. value (For example, if the HAA is 747 ft., add 100 ft. to get 847 ft. and then round up to the next 100 ft. value, which would be 900 ft. The ceiling for the approach must be 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:

4.18.1.5.1.1. Category C - 500 ft. - 1 ½ SM. **(T-3)**

4.18.1.5.1.2. Category D - 600 ft. - 2 SM. **(T-3)**

4.18.1.6. Increase the published visibility minimums of an instrument approach by ½ SM or as noted in NOTAMs, on automatic terminal information service (ATIS), or on the approach plate, when the runway ALS is inoperative (This applies only to the ALS itself, not to visual approach slope indicators (VASIs), precision approach path indicators (PAPIs) and other lights that are not a component of the ALS).

4.18.2. Flight Instrumentation Requirements.

4.18.2.1. Full flight instrumentation for a CAT I ILS and PAR includes a HUD or primary flight displays (PFD) at each station and no shared central air data computer or inertial navigation unit attitude reference.

4.18.2.2. Full flight instrumentation for a CAT II ILS includes an operational HUD in the PF position, a HUD or PFD at the PM position, and meeting the flight manual CAT II ILS criteria.

4.18.2.3. Aircraft are limited to a DH/MDA based on a HAT of 300 ft. and RVR 4,000 or 3/4 SM visibility (1,220 meters) with no RVR if full flight instrumentation is not operational. **(T-3)**

4.18.2.4. Instrument landing System (ILS) Precision Runway Monitor (PRM). Both pilots must be certified to conduct an ILS PRM approach. **(T-3)** Comply with the following operational procedures:

4.18.2.4.1. Two operational VHF communication radios are mandatory. **(T-3)**

4.18.2.4.2. The approach must be briefed as an ILS/PRM approach. **(T-3)**

4.18.2.4.3. If unable to accept an ILS PRM approach clearance, contact the FAA Air Traffic Control System Command Center (ATCSCC) at 800-333-4286 prior to departure time to obtain a pre-coordinated arrival time. **(T-3)** Pilots who arrive at a PRM airport unable to accept PRM approach clearance and did not contact ATC prior to departure, should expect an ATC directed divert to a non-PRM airport.

4.18.2.4.4. Hand fly all breakouts from the approach. **(T-3)** Disengage autopilots when a breakout is commanded. **(T-3)**

4.18.2.4.5. Should a TCAS RA be received, the PF shall immediately respond to the RA. **(T-0)**

4.18.2.4.6. If following an RA requires deviating from an ATC clearance, the PM shall advise ATC as soon as practical. **(T-3)** While following an RA, comply with the turn portion of the ATC breakout instruction unless the PF determines safety to be a factor.

4.18.2.5. CAT II ILS Procedures. DH is based on radar altitude. Minimum HAT is 100 ft., minimum RVR is 1,200. Maximum crosswind limitation is 10 knots. Crosswind of 15 knots may be used for training approaches (requires weather of 200 – ½ or greater).

4.18.2.5.1. ACs must confirm the following airfield and aircraft equipment are operational (AFI 11-230, *Instrument Procedures*).

4.18.2.5.1.1. Approach lights. **(T-3)**

4.18.2.5.1.2. Runway centerline lighting. **(T-3)**

4.18.2.5.1.3. High intensity runway lights or touchdown zone lights. **(T-3)**

4.18.2.5.1.4. Approach end transmissometer. **(T-3)**

4.18.2.5.1.5. ILS far field monitor. **(T-3)**

4.18.2.5.1.6. Sequenced flashers. **(T-3)**

4.18.2.5.2. Do not execute an IMC CAT II ILS to minimums unless both pilots are qualified and current in CAT II ILS. **(T-3)**

4.18.2.5.3. When performing CAT II ILS procedures on a CAT I ILS for training/evaluations, the DH is the HAT for the CAT I ILS.

4.18.2.5.4. Refer to AFMAN 11-217, *Flight Operations,* regarding equipment failure and go-around criteria.

4.18.2.6. Non-Directional Beacon (NDB) Procedures. The HUD alone is not sufficient for NDB approaches. Use a head-down display, which depicts a bearing pointer tuned to the NDB, in conjunction with the HUD throughout the approach. **(T-3)** NDB approaches may be flown during day, night, or IMC conditions after compliance with any airfield restrictions in Global Decision Support System 2 (GDSS2)/ASRR. Pilots should back up each approach with available NAVAIDSs/GPS to include loading the NDB coordinates in the flight management system (FMS).

## 4.19. NVG Specific Guidance.

4.19.1. See **paragraph 4.9.2.4** for currency requirements.

4.19.2. When NVG use is required, the pilots, CSO, LMs, and scanners should wear them or have them immediately available based on mission requirements.

4.19.2.1. WARNING: NVGs and associated components (battery cords, safety cords, and other hardware) can become entangled with the fire handles, overhead panel switches, or other controls. Any interference can cause inadvertent engine shutdown, or repositioning of other critical switches or controls.

4.19.3. NVG Lighting. Lights-out operations during peacetime are conducted in accordance with AFMAN 11-202V3 and local procedures as required or with concurrence of the controlling agency in restricted airspace and warning areas. During contingency operations see SPINS.

4.19.3.1. Landing lights. If the PF requires lights to acquire the LZ, call "Taxi lights," and the PM then turns on the taxi lights. If the PF requires additional lights, call "Landing lights," and the PM then turns on both the taxi and landing lights. **Note:** Setting covert lighting will change all lights, including navigation and position lights, to covert. This should be accomplished in accordance with FAA or host nation aviation regulations.

4.19.4. NVG Preflight. Each crew member will preflight their own NVGs before flight and carry a spare set of batteries. **(T-3)** The AC will designate a crew member to preflight and carry a spare set of NVGs onboard the aircraft. **(T-3)** If a CSO is onboard, their NVGs may be used as the spare set.

4.19.5. NVG Approach and Departure Weather Minimums. Weather minimums for NVG visual approaches, NVG visual pattern work, and pilots who are non-current and/or unqualified is 1,500/3. **(T-3)** Current and qualified NVG pilots may fly IFR approaches with weather at approach minimums.

4.19.6. NVG Malfunction during Approach and Landing. Comply with the following if either pilot experiences loss of NVGs:

4.19.6.1. Before Landing: If the PF or PM loses use of their NVGs inside of 1 NM, perform a go-around. **(T-3)** Outside of 1 NM, consider an overt landing or transitioning control while troubleshooting occurs.

4.19.6.2. After Takeoff: Transfer aircraft control and continue the climb to enroute altitude or MSA as appropriate. **(T-3)**

4.19.6.3. The PF determines whether to continue the landing rollout or takeoff roll as applicable. **(T-3)** The PM should be prepared to turn on overt lighting at the direction of the PF in case of NVG failure during takeoff or landing roll.

**4.20. Descent.**

4.20.1. Weather. For flights outside the local area, obtain the destination and alternate (if applicable) forecasts, to include pressure altitude and temperature, before reaching the ETP and one hour prior to ETA. **(T-3)**

4.20.1.1. Whenever significant meteorological information (SIGMETs) are received, contact supporting AF weather personnel (or organization per Air Force Visual Aid (AFVA) 15-137) *AF Weather OWS AORs - OCONUS* to determine mission applicability.

4.20.1.2. Do not descend unless destination weather is forecast to be at or above minimums, prevent excess fuel consumption. **(T-3)**

4.20.2. CRM. Review appropriate terrain charts to increase aircrew situational awareness of obstructions. **(T-3)**

4.20.2.1. The PM and CSO (if onboard) will monitor the approach and report to ATC any deviations from prescribed procedures. **(T-3)**

4.20.2.2. Crosscheck radar altimeters during descent to verify adequate terrain clearance throughout the descent and maneuvering portion of the approach. **(T-3)**

4.20.3. Holding for Adverse Weather. An aircraft may hold at a destination that is below landing minimums, but forecast to improve to at or above minimums provided:

4.20.3.1. The aircraft has more fuel remaining than that required to fly to the alternate and hold for the appropriate holding time.

4.20.3.2. The weather at the alternate is forecast to remain at or above alternate filing minimums for the period, including the holding time.

**4.21. Approach.**

4.21.1. Instrument approaches may be completed in the COMBAT ENTRY checklist by complying with the APPROACH checklist, and applicable “T” items.

4.21.2. Fly a precision approach, if available, at night or during marginal weather. **(T-3)** If a precision approach is not available, fly any available approved instrument approach. **(T-3)** A visual approach may be flown during night VFR conditions if an approved instrument approach is not available or operational/training requirements dictate.

4.21.3. When established on a published approach in IMC, or at night when terrain clearance cannot be assured, and an "Altitude-Altitude" special alert is heard, initiate an immediate go-around. **(T-3)** Once terrain clearance is confirmed, crews may resume normal operations. In day VMC, the aircrew should evaluate the alert and determine the appropriate course of action (continue the approach or go-around).

4.21.4. Radar Altimeter Settings. Setting the RAD ALT to a higher setting than prescribed may result in premature/unexpected "Altitude-Altitude" advisories and prevent the GCAS "Minimums" alert.

4.21.4.1. Setting the RAD ALT as prescribed below is meant to adequately alert the crew to an unsafe terrain clearance condition ("Altitude-Altitude") in the absence of a "Minimums" alert. Comply with the following:

4.21.4.1.1. CAT II ILS: See T.O. 1C-130(H)J-1CL-1 for RADALT procedures/settings. **(T-3)**

4.21.4.1.2. Precision approach: set RAD ALT to HAT minus 50. **(T-3)**

4.21.4.1.3. Straight-in or non-precision approach: set RAD ALT no lower than 250 ft. **(T-3)**

4.21.4.1.4. Circling Approach: set RAD ALT no lower than 300 ft. **(T-3)**

4.21.5. After Beginning an Enroute Descent. Aircrews will comply with the following:

4.21.5.1. Do not continue a CAT II ILS if the weather is reported to be below CAT II minimums. **(T-3)**

4.21.5.2. Do not continue the approach below minimums unless the runway environment is in sight and the aircraft is in a position to make a safe landing. **(T-3)**

4.21.5.3. If the approach is continued, the aircraft must have sufficient fuel to complete the approach and missed approach, and proceed to a suitable alternate with normal fuel reserve. **(T-3)**

4.21.6. Aircraft Category. The HC-130J is a category "C" aircraft. If approach speeds exceed 140 knots, use the minimums for category "D".

## 4.22. Landings.

4.22.1. Requirements. The minimum runway required for normal landings is the charted landing distance over 50 ft. obstacle with outboard engines in high speed ground idle and inboard engines in max reverse. **(T-3)** Departure end overruns (if stressed and authorized) may also be included in landing data calculations if needed.

4.22.2. Use of Wheel Brakes. If greater than a flight manual defined "partially braked landing" is used, the AC will comply with all zone requirements and minimum brake cooling times in accordance with the performance manual LANDING BRAKE ENERGY chart. **(T-3)** This ensures adequate braking capability is available for any subsequent takeoff and abort.

4.22.3. RCR and RSC Limitations. The runway surface should be considered wet when water on the runway causes a reflective glare. Consult FIH for RSC/RCR conversions. RCR values are not normally reported for taxiways and ramps and may be more dangerous than landing surface.

4.22.3.1. The performance charts used to determine braking action are based on concrete runways. Use the RCR values given in **Table 4.3** when landing on other than concrete surfaces. **(T-3)** The RCR values in **Table 4.3** are estimates based on operational experience and should be used only as a guide.

4.22.3.2. Limit HC-130J operations into and out of slush or water covered runways to a covering of one inch. **(T-3)** This number is based on performance charts where an RSC of 10 is equal to one inch of slush or water. Performance data where more than one inch of slush or water is present may not be accurate.

4.22.3.3. On runways partially covered with snow or ice, takeoff computations are based on the reported RSC or RCR for the cleared portion of the runway. A minimum of 40 ft. either side of centerline should be cleared (30 ft. for maximum effort procedures). If 40 ft. either side of centerline is not cleared (30 ft. for max effort procedures), computations are based on the non-cleared portion.

4.22.4. Flaps Up Approach/Landing. An IP must be at a set of controls. **(T-3)** No-flap operations are authorized for training provided the following conditions are met:

4.22.4.1. Maximum aircraft gross weight limited to 120,000 lbs. **(T-3)**

4.22.4.2. The crosswind component is within the recommended zone on the crosswind chart. **(T-3)**

4.22.4.3. Weather is at or above circling minimums and at night with weather at or above 1,000 ft. ceiling and 2 SM visibility, or circling minimums, whichever is higher. **(T-3)**

4.22.4.4. Use 50% flaps for a go-around and touch-and-go takeoff. **(T-3)** Check no-flap landing distance with runway available and be aware of landing gear speed limitations.

4.22.4.5. Do not compound no-flap circling approaches with any other simulated malfunction. **(T-3)**

4.22.5. Touch-and-Go Landings. Do not conduct touch and go landings outside of training operations. **(T-3)**

4.22.5.1. PF will brief the type of touch and go (e.g., ground-idle or flight idle). **(T-3)**

4.22.5.2. Touch-and-Go Restrictions. Comply with the following touch-and-go guidance:

4.22.5.2.1. Adhere to all flight manual restrictions and procedures to include performance, fuel and cargo limits. **(T-3)**

4.22.5.2.2. Minimum runway length is 5,000 ft. for 50% flap flight idle touch-and-go landings and 6,000 ft. for all other touch-and-go landings. **(T-3)**

4.22.5.2.3. Minimum ceiling/visibility is 300 ft. and RVR 4,000 (3/4 SM visibility). **(T-3)**

4.22.5.2.4. Only authorized when crosswind component corrected for RCR is within the recommended zone of the landing crosswind chart. **(T-3)**

4.22.5.2.5. Do not accomplish touch-and-go landings on slush covered runways. **(T-3)**

4.22.5.2.6. Do not perform ground-idle touch-and-go landings in conjunction with no-flap landings. **(T-3)**

4.22.6. Stop-and-Go Landings. Do not performed stop-and-go landings except on designated training or evaluation missions. **(T-3)**

4.22.6.1. Stop-and-Go Restrictions. Comply with the following stop-and-go guidance:

4.22.6.1.1. The runway remaining is greater than or equal to CFL or AMFLMETO, as appropriate. **(T-3)**

4.22.6.1.2. Crosswind component corrected for RCR is in the recommended zone of the landing crosswind chart. **(T-3)**

4.22.6.1.3. Minimum ceiling/visibility is 300 ft. and RVR 4,000 (3/4 SM visibility). **(T-3)**

4.22.6.1.4. Use flight manual defined “partially braked landing” to stop. **(T-3)**

4.22.6.1.5. Meets normal wake turbulence criterion. **(T-3)**

4.22.6.1.6. Not authorized in conjunction with no-flap landings. **(T-3)**

4.22.7. Simulated Engine Failure and 3-Engine Approaches/Landings/Missed Approaches. Direct IP supervision is required except for IP candidates under the supervision of a flight examiner during initial or requalification upgrade evaluations to IP. **(T-3)**

4.22.7.1. One power lever may be retarded to flight idle at not less than minimum controllable airspeed (VMCA) (one-engine inoperative, out of ground effect) and not less than 300 ft. AGL.

4.22.7.2. Minimize turns into the simulated inoperative engine(s). **(T-3)** WARNING: Improper rudder or power application can lead to an immediate out-of-control condition where recovery may not be possible.

4.22.7.3. Weather. Day simulated engine failure requires at or above circling minimums. **(T-3)** At night, weather required is the higher of circling minimums or above 1,000 ft. ceiling and 2 SM visibility. **(T-3)** Do not conduct simulated engine failures if the crosswind component is not within the recommended zone of the landing crosswind chart. **(T-3)**

4.22.7.4. Additional Restrictions. Pilots must comply with the following additional restrictions:

4.22.7.4.1. Use all 4 engines for a touch-and-go takeoff. **(T-3)**

4.22.7.4.2. Simulated engine-out no-flap landings restricted to AC candidate and above only. **(T-3)**

4.22.7.4.3. Planned go-arounds from simulated engine-out no-flap approaches not authorized. **(T-3)**

4.22.7.4.4. Required go-arounds from simulated engine out no-flap approaches require setting the flaps to 50% and using all four engines. **(T-3)**

4.22.7.4.5. Do not compound engine out circling approaches with any other simulated malfunctions. **(T-3)**

4.22.7.4.6. Execute missed approach/go-arounds in accordance with this manual and ATC instructions. **(T-3)**

4.22.8. Infil/Exfil and SCA Operations. See **Table A2.1** for minimum operating equipment requirements and any restrictions for the approach type being flown to an LZ.

4.22.8.1. Each pilot will silently check both NVG batteries are operational during the INFIL/EXFIL checklist. **(T-3)**

4.22.8.2. Altimeter Setting. Comply with **paragraph 4.14.3** Radar altimeters for SCAs should be set in accordance with **paragraph 4.21.4** during the appropriate step of the BEFORE LANDING Checklist.

4.22.8.3. Descent. The CSO will call 1 mile, 100, 50, 25 and 10 ft. above touchdown or as briefed. **(T-3)**

4.22.8.3.1. Do not descend below MDA until both pilots visually identify the LZ environment. **(T-3)** Whoever identifies the LZ first calls out "Zone in sight," its clock position, and any discrepancies (e.g., any lights out...). Both pilots then confirm the zone and crosscheck the alignment for proper heading.

4.22.8.3.2. WARNING: Do not initiate a descent below 300 ft. AGL prior to 2 NM to touchdown. **(T-3)** This causes the glideslope to be excessively shallow.

4.22.8.3.3. Go-Around and Departure Procedures. Identify a go-around point during pre-mission planning for all NVG airland operations. **(T-3)** When executing a go-around or departure, the CSO will call out passing through 100, 200, and 300 ft. AGL. **(T-3)**

4.22.8.3.3.1. Aircrews should plan to fly no lower than enroute LAA unless operational requirements dictate other altitudes. During a go-around, initiate the GO AROUND Procedure.

4.22.8.3.3.2. WARNING: Pilots are more susceptible to spatial disorientation during NVG go-arounds and departures.

4.22.8.3.3.3. Immediate Landing Feasible. If an immediate visual approach and landing are feasible, clear vigilantly for obstacles. **(T-3)** Maneuver the aircraft to

be 500 ft. AGL wings level and configured at approximately a 2 NM final. **(T-3)** The PF should keep the landing zone insight during this maneuver to the maximum extent possible.

4.22.8.3.3.4. Immediate Landing Not Feasible. If an immediate approach and landing are not feasible, maneuver the aircraft to the initial point or next waypoint at or above enroute LAA unless operational requirements dictate other altitudes. **(T-3)** When an immediate landing is not feasible, execute the AFTER TAKEOFF checklist after the completion of the Go-Around Procedure. **(T-3)**

4.22.8.4. Ground Operations. The copilot and CSO (if onboard) will assist the pilot in locating the offload/onload site once taxi speed is reached and aid in clearing for other aircraft and obstructions. **(T-3)**

4.22.9. Self-Contained Approach (SCA). Conduct SCAs using the INFIL/EXFIL checklist procedures for infil/exfil operations. **(T-3)** SCAs may be performed from APPROACH and BEFORE LANDING checklists and while using integrated precision radar approach (IPRA) procedures. Comply with local ATC restrictions and host nation agreements, as appropriate. **(T-3)**

4.22.9.1. Minimum Operating Equipment Requirements. See **Attachment 2**.

4.22.9.2. Weather Minimums. Aircrews will conduct Non-IMC approved SCAs in VMC only. **(T-3)** Aircrews must ensure IMC SCA weather minimums are in accordance with the published procedure, but no lower than 300-1. **(T-3)**

4.22.9.3. Aircrews will comply with all of the following:

4.22.9.3.1. Fly IMC SCAs with guidance provided in AFMAN 11-202V3.

4.22.9.3.2. To provide an early indication of degraded navigation accuracy, set the POS ALERT(s) at 0.03 NM (55 yards; figure of merit (FOM) 2) and 0.05 NM (110 yards; FOM 4). **(T-3)**

4.22.9.3.3. For any SCA, verify navigation accuracy within 10 minutes of the FAF. **(T-3)**

4.22.9.3.4. If any of the following conditions exist, do not descend from FAF altitude without verifying the active ship solution:

4.22.9.3.4.1. Either FOM greater than 4. **(T-3)**

4.22.9.3.4.2. INAV POS MISCOMPARE advisory, caution, and warning system (ACAWS). **(T-3)**

4.22.9.3.4.3. INAV POS DIFFERENCE ACAWS. **(T-3)**

4.22.9.3.5. Both pilots or a pilot and CSO will verify runway point of intercept (RPI) or LZ coordinates in the mission computer. **(T-3)** Verify the CNI-MU LZ information with a valid LZ survey or DAFIF. **(T-3)**

4.22.9.4. Execution. The CSO will make 30 seconds to slowdown, slowdown, 2 mile and 1 mile calls, or as briefed. **(T-3)**

4.22.9.4.1. Inbound to LZ, maintain enroute profile until descent to MDA. **(T-3)**

4.22.9.4.2. Initiate slowdown at the point identified during mission planning. **(T-3)**

4.22.9.4.3. WARNING***:*** Do not slow to threshold speed until established on final for both straight-in and turning SCAs.

4.22.9.4.4. SCA Descent. At descent point, the CSO states " Begin descent", followed by a desired flightpath angle (FPA) and glide-path advisories as necessary. **(T-3)**

4.22.9.4.4.1. The CSO will make advisory calls at ½ NM intervals until reaching the "100 feet" call or as briefed. **(T-3)**

4.22.9.4.4.2. The CSO will relay altitude deviations in actual feet above or below glideslope (ex. "15 feet above glideslope.") to the crew. **(T-3)**

4.22.9.4.4.3. The CSO will relay deviations in excess of 150 ft. explicitly to the crew. **(T-3)**

4.22.9.4.4.4. The CSO may omit altitude calls, except deviations of more than 150 ft. during IPRAs.

4.22.9.4.4.5. The CSO will also advise the PF if the aircraft is correcting to or diverging from glideslope, using the term "rapidly," if necessary. **(T-3)**

4.22.9.4.4.6. Aircrews will closely monitor radar altimeters to ensure accuracy of altimeter settings to prevent inadvertently flying below planned AGL minimums. **(T-3)**

4.22.9.4.4.7. WARNING: Use of a 5 degree glideslope can cause descent rates in excess of 1,500 ft. per minute. Pilots need to take extreme care to break high descent rates prior to touchdown.

4.22.10. Tactical Approaches. Aircrews will conduct tactical approaches (overhead, downwind, random steep, and random shallow) in accordance with the airland operation procedures found in AFTTP 3-3.HC-130. **(T-3)**

4.22.10.1. Certified pilots may conduct NVG tactical approaches to AMP 1, 2, 3 or 4 marked landing zones.

4.22.10.2. When performing tactical approaches, adhere to flight manual maneuvering and configuration restrictions. **(T-3)**

## 4.23. Low/Missed Approaches.

4.23.1. Initiate a planned missed approach no lower than:

4.23.1.1. Precision approach - DH (or 200 ft. HAT, whichever is higher for practice emergency involving a simulated engine shutdown). **(T-3)**

4.23.1.2. Non-precision approach - Minimum altitude depicted on approach plate. **(T-3)**

4.23.1.3. Visual Approach: - No minimum. If conducting simulated emergencies then use 200 ft. AGL as the minimum altitude. **(T-3)**

4.23.1.4. Restricted Low Approach - 500 ft. AGL. **(T-3)**

## 4.24. Other Airfield Requirements.

4.24.1. Aircraft Rescue Fire Fighting Requirements (ARFF). ARFF requirements at non-USAF active flying bases are as follows:

4.24.1.1. Refer to DAFMAN 13-217, DZ and LZ operations, to calculate ARFF requirements. **(T-3) Note:** Non-USAF ARFF vehicles may be used if the agent and pumping capabilities are equivalent.

4.24.1.2. A current LZ survey is needed before utilizing designated LZs. **(T-3)** A landing zone survey is not required for unimproved runways published in FLIP within the National Airspace System (NAS). Outside the NAS, SQ/CC may approve unimproved runways published in FLIP without an LZ survey.

## 4.25. Munitions.

4.25.1. Expendables/Electronic Countermeasures (ECM) Training. Conduct all expendables training in accordance with AFI 11-214, DAFI 10-706, *Electromagnetic Warfare (EW)*, and host nation directives. **(T-3)**

4.25.1.1. Dispense only when approved by the controlling agency per guidance provided in agency procedures and restrictions.

4.25.1.2. When over open water, do not drop expendables below 500 ft. AGL or within 3 NM of any surface vessel, platform, or landmass. **(T-3)**

4.25.2. Ordnance Procedures. Conduct the following procedures after the live firing of chaff/flares on the HC-130J aircraft:

4.25.2.1. After landing, the pilot will taxi to the de-arm area or another suitable safe location to check for hung ordnance. **(T-3)**

4.25.2.2. The LM or another qualified crew member will deplane and check all dispensers for hung ordnance. **(T-3) Note:** ALE-47 flare squibs that fail to fire are not considered hung ordnance.

4.25.2.3. If hung ordnance is found, identified by a protruding or partially ejected chaff/flare cartridge, the aircraft will remain in a de-arm area until explosive ordnance disposal (EOD) personnel meet the aircraft. **(T-3)** The aircraft must remain in the designated safe area until EOD personnel can clear all hung ordnance. **(T-3)**

## 4.26. Salt Spray and Clear Water Rinse (Bird Bath).

4.26.1. The accumulation of salt spray on windshields and side windows is a hazard that should be considered for low-level overwater flight. Weigh this against mission urgency prior to descent below 500 ft., when heavy seas or high surface winds exist. In some cases, it is preferable to fly at a higher altitude to avoid this condition.

4.26.2. Use a clear water rinse facility (birdbath) after every flight in which the aircraft is flown over salt water below 3,000 ft. AGL, including tactical approaches and landings. **(T-3)** Two or more approaches over salt water require a clear water rinse after the last flight of the day in accordance with T.O. 1-1-691, *Cleaning and Corrosion Prevention and Control, Aerospace and Non-Aerospace Equipment*. **(T-3)**

4.26.3. If a birdbath facility is unavailable make the following annotation in the AFTO Form 781A, “Aircraft subjected to salt spray, birdbath unavailable”. **(T-3)**

4.26.4. Birdbath Usage. Deactivate all sensors, such as the LPCR and stow the EO/IR, prior to entering the birdbath. **(T-3)**

4.26.4.1. The APU remains off with doors closed to prevent flameout and flooding of the APU compartment. **(T-3)**

4.26.4.2. Set flaps to 100% and switch off and extend landing lights. **(T-3)**

4.26.4.3. All four engines should be at normal ground idle. Two engines in normal ground idle, and two in LSGI may be used if aircraft weight does not restrict forward movement through the bath.

4.26.4.4. As full water spray begins, taxi forward slowly. Hold nose wheel steering centered and start windshield wipers.

4.26.4.5. Exercise flight controls while in the birdbath.

4.26.4.6. Complete the AFTER LANDING checklist after rinse is completed. **(T-3)** Run engines at normal ground idle for a minimum of two minutes to aid in drying out engine nacelles. **(T-3) Note:** Each birdbath is unique in design and function. Review local procedures for birdbath operating guidelines including direction of entry, wing tip clearance criteria, and noise abatement concerns. **Note:** It is possible to experience an overheat indication during or immediately following the birdbath due to water intrusion into overheat warning systems. Each aircrew should analyze the indication and make a judgment as to the emergency action to be taken.

# Chapter 5

# AIR/LAND EMPLOYMENT

## 5.1. General.

5.1.1. The AC is the final approval for loading cargo or manifesting passengers. **(T-3)**

5.1.2. Air Cargo Restraint Criteria. The LM will restrain cargo in accordance with T.O. 1C-130(H)J-9, or AFTTP 3-3.HC-130, during Infil/Exfil operations. **(T-3)**

5.1.3. Channel Cargo. Contact the Air Terminal Operations Center (ATOC), Airlift Control Element (ALCE), or air freight/passenger service to obtain the cargo and passenger breakdown and assist in planning of proposed load.

5.1.3.1. If necessary, security requirements for the cargo/passengers being carried will be briefed to the LM during the initial load briefing at ATOC.

5.1.3.2. At stations where aircraft tie-down equipment is exchanged, make every effort to ensure that a one-for-one exchange occurs. If this is not possible, inform the AC of lost or missing equipment and annotate missing items on the aircraft AF Form 4076; refer to AFTO IMT Form 781. **(T-3)**

5.1.4. Passenger Missions. Comments by the LM and the manner in which they are made often determines passenger attitudes about the flight and its crew. Always address and handle passengers with respect and professionalism.

5.1.4.1. LMs will ensure frequent checks of cargo compartment cabin temperature, passenger safety/comfort, and cleanliness of the cargo compartment. **(T-3)**

5.1.4.2. Passengers may move about the cargo compartment once notified by the LM. Good judgment must be exercised on the number of passengers allowed out of their seats at one time. Encourage passengers to keep seat belts fastened when seated.

5.1.4.3. LMs will not allow passengers to lounge on or tamper with equipment, cargo, or baggage and ensure passengers are not allowed access to checked baggage. **(T-3)**

5.1.4.4. LMs will ensure that classified equipment remains secured during the entire mission when passengers are onboard and ensure passengers are denied access to this equipment. **(T-3)**

5.1.5. Troop Movements. Most personnel carried aboard the aircraft are aboard to perform a specific mission. Every effort should be made to advise them of mission progress and deviations. LMs will identify the troop commander prior to boarding. **(T-3)** Further, the LM will comply with the following:

5.1.5.1. Determine if the troop commander has any special requirements prior to departure, and advise the AC of these requirements, if appropriate. **(T-3)**

5.1.5.2. Determine if specific communications requirements exist and coordinate these requirements with the AC. **(T-3)**

5.1.5.3. Determine if there is a need for the troops to perform any type of in-flight rigging. **(T-3)** Ensure the aircraft is loaded to accommodate in-flight rigging if necessary and inform the AC prior to in-flight rigging. **(T-3)**

5.1.5.4. Ensure that troops do not have access to aircraft classified equipment during the mission. **(T-3)** If troops require access to classified equipment, the requirement should be made known to the AC prior to the mission.

5.1.6. Supporting/Supported Forces Procedures. The LM will ensure forces are properly manifested as passengers. **(T-3)** Give one copy of the manifest to the AC for filing and retain sufficient copies for border clearance. The LM will ensure completion of anti-hijacking requirements for forces using guidance provided in AFI 13-207, *Preventing and Resisting Aircraft Piracy (Hijacking) (FOUO)*, and this publication.

5.1.7. Weight and Balance. See **paragraph 4.4.6**.

5.1.8. Fuel Weight Computation. In accordance with **paragraph 4.4.7**.

5.1.9. Combat Loading. Combat loading is comprised of three types of operations: Combat offload, passenger combat loading, and infil/exfil procedures. See AFTTP 3-3.HC-130 for additional guidance.

5.1.9.1. LMs will ensure all personnel in the cargo compartment are seated and secured except those personnel having valid duties to perform. **(T-2)**

5.1.9.2. Combat Offload. Combat offload provides a means of off-loading single, multiple, and married pallets; ramp and airdrop platforms; airdrop loads rigged on combat expendable platforms (CEPs), and containerized or miscellaneous airdrop loads/cargo secured to a skid-board without the use of material handling equipment (MHE). SQ/CCs may authorize combat off-load procedures under any circumstances with cargo user concurrence. The method of combat offload will be determined by the aircrew based on the conditions at the offload site.

5.1.9.2.1. Combat offload Method A or Method C of fragile and sensitive cargo items (i.e., computers) should not be attempted without user concurrence.

5.1.9.2.2. Training combat offload 8 ft. Type V platforms must not have extraction force transfer coupling (EFTC) or extraction bracket assembly components mounted on the platform. **(T-3)** For training, ensure the center of gravity of the platform is at or forward (when loaded in the aircraft) of the platform's longitudinal mid-point.

5.1.9.2.3. Operational Combat Offloads of 8 ft. Type V platforms require a minimum of de-rigging to the transportation configuration. Remove drogue, extraction, deployment, and suspension components if time permits. Do not remove any restraints securing the load to the platform. **(T-3)** User will de-rig the load from the platform after Combat Offload is complete. **(T-3)**

5.1.9.2.4. Combat Offload Method A. A taxiway or ramp at least 500 ft. long is required, however, 1,000 ft. is desired to provide a margin of safety. **(T-3)** When pallets, platforms, or containers are offloaded one at a time, use a longer taxiway based on the number to be offloaded. **(T-3)** Explosives and munitions shall not be combat offloaded unless approved by MAJCOM/A3 or deployed equivalent. **Exception:** Small arms ammunition (hazard class and division 1.4) and explosives/munitions rigged for airdrop may be combat offloaded.

5.1.9.2.4.1. WARNING: Many explosive items have specific drop criteria that, if exceeded, render the item useless or dangerous to the user.

5.1.9.2.4.2. CAUTION: When using Method A on excessively rough, sharply undulating, or battle-damaged surfaces, damage to the aircraft ramp may occur. Reducing forward taxi speed on these surfaces will reduce aircraft oscillation. The AC must determine if the offload area permits the offload operation to be conducted without damage to the aircraft or equipment. **(T-3)**

5.1.9.2.4.3. If the nature of the mission dictates that sensitive cargo must be offloaded, aircrews may lower the ramp to approximately 18 inches above the ground (or use Method C procedures).

5.1.9.2.4.3.1. CAUTION: Do not attempt to lower the ramp below horizontal unless the unrestricted ramp travel light is illuminated. **(T-3)**

5.1.9.2.4.3.2. **Exception:** Unrestricted ramp travel light will not illuminate when cargo compartment lights are in the covert position. **Note:** Normal Method A procedures cannot be used with the ramp below the horizontal position. In this case the LM must release the locks using either the pallet lock control unit (PLCU) or ramp emergency control panel (RECP) jettison switches. **(T-3)**

5.1.9.2.4.4. Pallets may be offloaded, without ballast, using Method A procedures in the flight manual, provided their total weight does not exceed 12,000 lbs. Refer to flight manual and loading manual for additional projection and jettison limitations. Airdrop rigged platforms up to 24 ft. in length may be offloaded, without ballast, using Method A procedures provided their weight does not exceed 12,000 lbs. **Note:** Pallets and airdrop rigged platforms over 12,000 lbs. total weight may be offloaded using this method, provided ballast or cargo equal to the difference between 12,000 lbs. and the weight of the pallets or platforms (to be offloaded) remains in C through F compartments during offload.

5.1.9.2.4.4.1. ***Example:*** A 17,000 lb. married pallet or airdrop platform requires 5,000 lbs. of ballast or cargo to remain in C through F compartments during the offload.

5.1.9.2.4.5. CDS may be combat offloaded using Method A procedures. The static line retriever via manual activation or manual gate cut may be used or**.** Non-centerline vertical restraint (CVR) sticks may be offloaded if the total weight is less than 12,000 lbs. Without the CVR, if the total weight of the bundles exceeds 12,000 lbs., bundles should be restrained in groups of four or less and offloaded one group at a time. For the unplanned combat offload of non-CVR bundles, restrain the bundles as described above. Perform an initial offload via the static line retriever, and on sequential offload, remove aft restraint before clearing the pilot to taxi. Consider the slope of the offload site, which may cause bundles to roll aft upon removal of restraint.

5.1.9.2.5. Combat Offload Method B. Use this method to offload married pallets that do not fit the category for Method A or for which no ballast is available for married pallets weighing between 12,000 to 15,000 lbs. **(T-3)** Use four serviceable steel 55 gallon drums under each pallet to be offloaded. **(T-3)** The correct number of steel drums

needed to complete this type of offload must be available at the offload site or must accompany the load when conditions at the offload site are unknown. **(T-3)**

5.1.9.2.5.1. WARNING: The maximum weight for pallets to be offloaded across the ramp at any one time when using Method B is 15,000 lbs. **(T-3)** Do not use Method B for airdrop-rigged platforms longer than eight feet to prevent binding the platform under the vertical restraint rails. **(T-3)**

5.1.9.2.6. Combat Offload Method C. Use this method to download un-married palletized cargo or de-rigged 8 ft. type V airdrop platform loads one at a time when MHE is not available, when other combat offload methods are not possible due to their requirements (i.e., ramp/taxiway space/condition), or when cargo and terminal area requirements dictate.

5.1.9.2.6.1. Once the aircraft is positioned at the offload site and the ramp is on the ground, install the ground loading ramps if not previously installed. **(T-3)** CAUTION: Do not install ground loading ramps while taxiing. **(T-3)**

5.1.9.2.6.2. Install ground loading ramps at an equal distance from aircraft centerline. **(T-3)** If available, use two similar thickness/height/lengths of dunnage for the first pallet to be offloaded (per offload site). If dunnage is not available, use an "anti-tip strap". **(T-3)** When dunnage is available, place a piece of dunnage on the outboard side of each ground loading ramp. **(T-3)** The dunnage should extend forward of the aft end of the ground loading ramp by approximately 24 inches. Once the dunnage and/or anti-tip strap is in place, remove the vertical restraint and the locks of the pallet to be offloaded, then slowly push aft to the ramp crest. Once over the ramp crest, stay clear of the pallet and anti-tip strap; then allow to gravity extract. If the anti-tip strap is taut, it may be necessary to cut the anti-tip strap, otherwise remove the strap and proceed. After downloading the first pallet, raise the ramp approximately 12 inches above the ground and taxi forward, leaving enough room for the next pallet to be offloaded; then repeat the process. **(T-3)** Dunnage and/or anti-tip straps are not required for remaining pallets at the same offload site. Ground loading ramps do not require to be raised from the ground until offload at the site is complete. **Note:** When dunnage is not available for the first pallet to be offloaded, LMs will use an "anti-tip strap". **(T-3)** To make an "anti-tip strap", use a length of 1 inch tubular nylon if available (type VIII nylon webbing may be used as an alternative). Make a 6 inch loop on each end so that the overall length from loop to loop is 330 inches. Attach a carabineer to each loop. Attach one carabineer to the dual rail tiedown ring at flight station (FS) 617 and attach the other carabineer to a tiedown ring on the pallet. Drift-straps will not be used with this method. **(T-3)**

5.1.9.2.6.3. Cargo to be offloaded using Method "C" procedures must meet the following limitations in addition to flight manual and loading manual jettison and/or projection limits:

5.1.9.2.6.3.1. One 463L pallet or Type V platform (up to 8 ft. in length) will be offloaded at a time. **(T-3)**

5.1.9.2.6.3.2. Pallets are limited to 90 inches of vertical height. **(T-3)**

5.1.9.2.6.3.3. Pallets are limited to 8,500 lbs. **(T-3)**

5.1.9.2.6.3.4. Containerized airdrop loads or miscellaneous cargo rigged/secured to a skid board may be offloaded using this procedure if greased skid strips are placed on top of the ground loading ramps.

5.1.9.3. Passenger Combat Loading. Additional procedures are located in AFTTP 3-3.HC-130.

5.1.9.3.1. Floor loading is authorized to support dedicated forces and foreign counterparts during operations, exercises, and training. Standard seating configurations listed in AFI 11-2HC-130JV3, Addenda A are recommended, if practical. **Exception:** OG/CC, or deployed equivalent, may authorize Rapid Infil/Exfil procedures and floor loading with non-SOF personnel. **Note:** This procedure will not be used in lieu of providing normal seating when available. **(T-3)**

5.1.9.3.1.1. WARNING: During passenger combat loading, the LM will ensure all occupants are provided restraint in accordance with AFTTP 3-3.HC-130. **(T-3)** At no time shall the number of combat-loaded personnel exceed five across per row. **(T-3)** The LM shall not exceed the aircraft's maximum allowable gross weight or center of gravity limitations. **(T-2)** Adult passenger weight shall not be calculated at less than 175 pounds lbs. per person. **(T-3)**

5.1.9.3.2. The LM will ensure all personnel in the cargo compartment will be seated and secured except those crew members having valid duties to perform. **(T-3)**

5.1.10. On/Off-Load and Infiltration/Exfiltration. Infil/Exfils are a tactical method of on-loading or off-loading dedicated unconventional and CSAR/personnel recovery (PR) Forces. The spring-loaded, latch-activated, folding ramps (canary slides), or ground loading ramps are used to off-load and on-load vehicles, personnel, and H-6 series helicopters in minimal time. The selection of the on load/off-load point and aircraft orientation impacts total ground times. Extensive pre-mission planning/static load training may be necessary for large or complex loads.

5.1.10.1. General. Adjust electro luminescent (EL)/NVG lighting as necessary for operations.

5.1.10.1.1. The LM uses NVGs during night Infil/Exfil operations. **(T-3)**

5.1.10.1.2. A LM will remain on headset at all times (normally the left side LM). **(T-3)**

5.1.10.1.3. When there is a delay in the off-load/on load or an extended ground time is anticipated, raise the ramp approximately 12 inches above the ground so the aircraft can taxi in the event of an emergency. **(T-3)**

5.1.10.1.4. Vehicles will be backed onto the aircraft. **(T-3)** Park vehicles in lowest gear (neutral for diesel powered). Put automatic vehicles in park.

5.1.10.1.5. LMs will pass time warnings/advisories to the troop commander/departure airfield controlling officer (DACO). **(T-3)**

5.1.10.2. Landing Actions. All personnel prepare for landing at the 6 minute advisory.

5.1.10.2.1. Adjust cargo compartment lighting to the minimum setting necessary by or at the 6 minute advisory. **(T-3)**

5.1.10.2.1.1. For aircraft not equipped with EL/NVG lighting, turn the red lights off at the 6 minute advisory. **(T-3)**

5.1.10.2.1.2. Do not turn off/readjust lights until the troop commander/DACO confirms checks are complete. **(T-3)**

5.1.10.2.2. When the CSO calls 100 ft., the LM will notify the onboard user, "Prepare to land". **(T-3)**

5.1.10.2.3. User personnel initiate their “80-knot” procedures upon hearing the “80-knot” call or when the aircraft ramp and door start to open.

5.1.10.2.4. All restraint devices except one forward and one aft (opposite corners) may be removed during taxi to the off-load point (one strap over seat for motorcycles, quads and mini-bikes will remain installed). Self-propelled vehicles must have drivers in place with brakes set prior to removing restraints. **(T-3) Exception:** All restraints remain on helicopters except for the tail boom until the aircraft has come to a complete stop.

5.1.10.2.5. LMs will not position the cargo ramp below horizontal until the aircraft comes to a complete stop at the off-load point. **(T-3)** For areas where ground threats or mission requirements dictate minimum time on the ground, the LM and the AC will brief a countdown for movement of the ramp below horizontal. **(T-3)** Caution must be exercised to ensure the ramp does not contact the ground before the aircraft stops.

5.1.10.2.6. Do not deploy canary slides or ground loading ramps until the ramp is positioned below horizontal and the aircraft has stopped. **(T-3)**

5.1.10.3. Clearance to Off-load. Positioned a LM on the vehicle driver’s side of the cargo ramp and raise both arms to signal clearance to off-load. **(T-3)** The LM drops both arms to signal vehicle drivers to halt off-load operations.

5.1.10.3.1. Off-load vehicles and personnel as conducted during statics. **(T-3)**

5.1.10.3.2. Clear a stalled vehicle immediately to the aircraft right (engines 3 and 4), or as conducted during statics, to allow off-load to continue. **(T-3) Note:** If a time delay occurs before onloading/departure, turn off all EL/NVG lighting and raise the ramp approximately 12 inches to allow the aircraft to be taxied in the event of an emergency. **(T-3)**

5.1.10.4. Clearance to On-load. A LM will be positioned on the vehicle driver’s side of the cargo ramp. **(T-3)**

5.1.10.4.1. Advise the troop commander/DACO when ready for loading. The troop commander/DACO will not clear personnel or vehicles to load until cleared by the LM. **(T-3)**

5.1.10.4.2. A LM will be in the cargo compartment to marshal vehicles into position with IR chemlights. **(T-3)**

5.1.10.4.3. Load vehicles and personnel as conducted during statics. **(T-3)**

5.1.10.4.4. Coordinate with the troop commander/DACO to confirm all personnel and equipment are onboard and the onload is complete.

5.1.10.4.5. When the LM has determined sufficient restraint has been applied to the load, (minimum of one forward and one aft) and it is safe to do so, the LM will advise the crew "Clear to taxi". **(T-3)** Once the ramp and door are closed and locked, the cargo compartment EL/NVG lights may be turned to the maximum setting (if necessary). After all cargo and personnel restraint is checked, the LM will advise the crew "Secure". **(T-3)**

5.1.10.5. Egress and Static Load Training. Conduct static load training prior to all Infil/Exfil operations. **(T-3)**

5.1.10.5.1. **Exception:** Static load training is not required for unilateral infil/exfil training conducted with organic personnel using unit owned vehicles. If personnel and vehicles are not assigned to or owned by the same squadron as the aircraft or crew conducting the unilateral infil/exfil training, any SQ/CCs responsible for personnel or equipment involved must coordinate to waive the requirement for static load training prior to unilateral infil/exfil training during their tenure. **(T-3)**

5.1.10.5.2. Use the AFTTP 3-3.HC-130 to amplify flight manual procedures and guidance found in this publication.

## 5.2. Airlifting Hazardous Cargo.

5.2.1. Refer to AFMAN 24-604, AFJI 11-204, and any other applicable guidance are complied with when airlifting hazardous cargo.

## 5.3. Engine Running Offload and Onload (ERO) Procedures.

5.3.1. The loadmaster will direct all on and offload operations using hand signals pre-briefed with personnel on the aircraft. **(T-3)** This does not preclude the necessity of performing a load team briefing before commencing loading/unloading operations. Other qualified loadmasters/ERO loading team supervisor and/or team chief (CRG, aerial port) may perform these duties; however, the aircraft loadmaster retains overall responsibility for the operation.

5.3.2. LMs may use NVGs to maintain SA of the load team behind the aircraft before or after actual loading. **Note:** If needed for pilot seat swaps, LMs may monitor brakes, interphone, and radio. **Note:** At their discretion, ACs may ERO any category of passenger. The number of passengers and amount of baggage to be onloaded or offloaded should be taken into consideration. The well-being of the passengers should be considered at all times. Paratroop doors are not normally used.

5.3.3. General Procedures.

5.3.3.1. The parking brake will be set and at least one pilot in the seat will monitor brakes, interphone, and radio. **(T-3)**

5.3.3.2. Consider stationing another crew member (if available) in the cargo compartment as safety observer. Safety observers will remain clear of all cargo. **(T-3)**

5.3.4. Offload Preparation/Procedures. Prior to landing, the loadmaster will brief all personnel in the cargo compartment regarding their locations, duties, and responsibilities during the ERO. **(T-3)** Brief drivers offloading vehicles on the following items:

5.3.4.1. Exact offload procedures and applicable signals to be followed.

5.3.4.2. When cleared by the loadmaster, to assume their position. Actuate brake pedal sufficiently to ensure brakes are operational. Vehicles requiring a build-up of air pressure to provide brake pressure must delay pressure build-up until engine start.

5.3.4.3. The loadmaster will direct vehicle engines to be started when the aircraft comes to a complete stop and the cargo ramp and door are open. **(T-3)**

5.3.4.4. Vehicle parking brakes will not be released until all restraint is removed and cleared by the loadmaster. **(T-3)**

5.3.5. Brief troops on the following items:

5.3.5.1. Secure baggage aboard vehicles, if applicable.

5.3.5.2. After the aircraft is slowed to taxi speed, the loadmaster may remove all tie-downs except one forward and one aft restraint, open the aft cargo door, and position the ramp no lower than horizontal. After the aircraft is stopped and upon clearance from the pilot, the loadmaster lowers the ramp, and clears off headset (if necessary) to direct on or offload operations. **Warning:** If a combat offload of pallets is to be accomplished before offloading vehicles, do not remove any vehicle restraint until after the combat offload is complete. **(T-3) Note:** LMs will ensure vehicles and troops proceed directly aft of the aircraft at least 50 ft before turning and/or 300 ft before stopping. **(T-3)**

5.3.5.3. When on/offloading personnel through the crew entrance door, station a crewmember (normally the loadmaster) on interphone with cord held taut at approximately 20 ft from the crew door at an angle of approximately 45 degrees from the aircraft axis.

5.3.5.4. No enplaning personnel will approach the aircraft until the loadmaster is in place. **(T-3)**

5.3.6. Upload Preparation/Procedures. Review the passenger and cargo manifests, crew lists, and complete weight and balance clearance form for the subsequent sortie. **Note:** If downloading to an empty aircraft, the weight and balance clearance form is not required.

# Chapter 6

# AIR DROP

## 6.1. General.

6.1.1. This chapter prescribes HC-130J employment procedures for all airdrop operations. For additional guidance and information, refer to AFTTP 3-3.HC-130.

6.1.2. Prior to takeoff, crew members will review the emergency procedures for the proposed airdrop. **(T-3)**

6.1.3. In the event of a malfunction, incident, or off-DZ drop, do not execute FLIGHT COMPLETE or remove any CNI-MU data. **(T-3)** Do not de-rig, handle or move items unless required for safety of flight. **(T-3)** Any investigation will benefit from seeing the items in the state they were in at the time of the event. Report drop zone malfunctions and off-DZ drops in accordance with AFI 13-210, *Joint Airdrop Inspection Records, Malfunction/Incidents, Investigations and Activity Reporting*, and DAFMAN 13-217. **(T-0)**

6.1.4. Airdrop Altitudes and Airspeeds. Refer to AFMAN 11-231.

6.1.5. Minimum Drop Zones Size. Refer to DAFMAN 13-217.

6.1.6. Types of Drop Zones. Refer to DAFMAN 13-217.

6.1.7. Drop Zone Markings. Plan and coordinate DZ markings according to DAFMAN 13-217.

6.1.8. Airdrop Planning. **Note:** Any reference to CARP applies to both CARPs and high altitude release points (HARPs).

6.1.8.1. Use MAJCOM-approved MPE for planning airdrop missions. **(T-3)** Aircrews will compute CARP(s) and print out applicable planning product for the crew brief and area study. **(T-3)**

6.1.8.2. Use a DZ mosaic for pre-mission planning and briefing for DZ situational awareness and familiarity with CARP solution. **(T-3)** Mosaics are not required in-flight.

6.1.9. For personnel non-AO proficiency jumps (e.g., Army, BDG), the primary Jumpmaster is responsible for ensuring all jumpers are current and qualified in accordance with AFMAN 11-411 (I), *Special Forces Military Free-Fall Operations*, and AFMAN 11-420, *Static Line Parachuting Techniques and Tactics*. The AC can receive confirmation from the Jumpmaster and discuss proficiency issues relating to airdrop safety and SARM coordination is not required.

## 6.2. Airdrop Employment Variations.

6.2.1. There are several methods of aerial delivery for the HC-130J. See AFTTP 3-3.HC-130 for additional guidance on methods of aerial delivery.

## 6.3. Airdrop Restrictions.

6.3.1. Airdrop Wind Limitations. Refer to DAFMAN 13-217.

6.3.2. DZ Surveys. Both pilots and CSO (if on board) will review the DZ survey during mission planning. **(T-3)** Aircrews will carry a valid DZ survey onboard all flights performing airdrops. **(T-3) Note:** EFB or on board laptop with current DZ database meets this requirement.

6.3.2.1. **Exception:** Contingency operations are exempt from this requirement if current DZ survey is not available.

**6.4. Minimum Enroute Flight Time.**

6.4.1. Minimum enroute flight time from takeoff to release point will be sufficient to safely accomplish all required checklists. **(T-3)** Enroute time of less than 20 minutes for personnel airdrop must be approved by the Jumpmaster (JM).

**6.5. Ballistic Requirements.**

6.5.1. Aircrews will not conduct airdrop with parachutes not listed in AFMAN 11-231 unless the user provides approved ballistic data or K factor. **(T-2)**

6.5.2. MAJCOM A3, Aeronautical Systems Division or US Army Soldier's System Center Natick (ASD/ENFC), and/or Special Operations Aerial Delivery Element (SOADE) are the approval authority for the ballistics or K factor. **Exception:** Not applicable to formal test missions deriving ballistic data for a specific load or operational test.

6.5.3. Any ballistics or K factor approved for use with Air Mobility Command (AMC) C-130J or AFSOC MC-130J is approved for use with HC-130J.

**6.6. Airdrop Kits.**

6.6.1. The LM will carry enough equipment in the airdrop kit to satisfy load or mission requirements. **(T-3)**

6.6.2. The LM will ensure the airdrop kit includes the following minimum items:

6.6.2.1. Cloth-backed pressure sensitive tape. **(T-3)**

6.6.2.2. ½ inch tubular nylon cord. **(T-3)**

6.6.2.3. 550 cord. **(T-3)**

6.6.2.4. 5 cord. **(T-3)**

6.6.2.5. 80 lb. cotton webbing. **(T-3)**

6.6.2.6. Two G-14 clevises. **(T-3)**

6.6.2.7. An adjustable wrench. **(T-3)**

6.6.2.8. Four carabineers. **(T-3)**

**6.7. Joint Airdrop Inspection.**

6.7.1. Joint Airdrop Inspection Records. Comply with AFI 13-210 or waivers.

6.7.1.1. The LM will accomplish a DD Form 1748 prior to all equipment airdrops unless exempted. **(T-3)**

6.7.1.2. Equipment not rigged in accordance with 13C-series T.O.s, Army Field Manuals, or Joint Special Operations Command (JSOC) 350-series manuals require a waiver from U.S. Army Quartermaster, Ft Lee, VA. Channel waiver requests through MAJCOM A3.

**Exception:** Waivers are not required for freefall resupply, parabundle, and equipment specific to this volume.

**6.8. Load Planning Restrictions.**

6.8.1. Comply with T.O. 1C-130A-9 and AFI 11-2HC-130J V3 Addenda A when carrying airdrop and airland loads at the same time. **(T-2)**

6.8.2. Do not load cargo aft of FS 657 for personnel airdrops. **(T-3)** This is to prevent airland loads from interfering with airdrop rigging equipment.

**6.9. Verification of and Marking Airdrop Loads.**

6.9.1. A pilot or CSO (if onboard) will verify with the LM the actual number and type of parachutes, load weights, sequence of extraction, and position of loads in the aircraft agree with planned CARP data. **(T-3)**

6.9.2. If an individual load has a different type or number of parachutes from other loads, compute a CARP for each load to ensure all loads land on the DZ. **(T-3)** Base drop altitude on the item requiring the highest drop altitude. **(T-3)**

**6.10. Safety Equipment.**

6.10.1. During airdrops, all personnel in the cargo compartment not involved with an airdrop, or under the direct supervision of a LM will be seated with safety belt fastened. **(T-3)** Personnel involved in an airdrop, or under direct oversight of an LM will wear a restraint harness, or parachute if trained, and helmet when near an open exit in flight. **(T-3)**

6.10.2. WARNING: Except for an actual contingency, towed trooper, or an emergency that threatens the survivability of the aircraft and crew, the restraint harness will not be disconnected or lengthened to a point that would allow an individual to fall outside the aircraft. **(T-2)**

6.10.3. Aircrew will fit a restraint harness and adjust the lifeline before flight for any planned open door configurations. **(T-3)** If an unplanned event requires an open door configuration, use extreme caution to ensure restraint harness and lifeline are fitted and adjusted to preclude exit from aircraft. **(T-3)** Comply with the following:

6.10.3.1. Connect and adjust the lifeline to a floor tie-down ring that precludes the wearer from exiting an aircraft (no further aft than FS 737). **(T-3)**

6.10.3.2. Restraint harness lifelines may be attached to an unused anchor cable provided no static lines are attached and an anchor the cable stop is positioned and taped at FS 737. The center anchor cable support may be used in lieu of the stop if lowered. Do not use this configuration(s) if both paratroop doors are open at the same time. **(T-3)** Instead, connect and adjust the lifeline to a floor tie-down ring that would preclude the wearer from exiting either exit.

6.10.3.3. Connect the lifeline when at or anticipating movement aft of FS 737. **(T-3)**

6.10.3.4. Onboard safety personnel normally provide their own parachute. Alternately, at their discretion, they may use a restraint harness. Personnel required to be mobile in the cargo compartment will wear a restraint harness or parachute before doors are opened. **(T-3)** For static line jumps, attach static lines to anchor cables before doors are opened. **(T-3)**

6.10.3.4.1. **Exception:** Jumpers exiting on subsequent passes (racetracks) may stand and hook up with doors open if they are forward of the aft edge of the wheel wells, FS 617. **Note:** Do not use the flight deck restraint harness for airdrops. **(T-3)**

## 6.11. General Airdrop Flight Procedures.

6.11.1. Do not configure the aircraft such that the ramp and door and paratroop door are open at the same time. **(T-2) Exception:** Authorized LM-directed airdrops of bundles off the ramp while spotting from a single open paratroop door.

6.11.2. Do not open a paratroop door in flight if the respective air deflector door is inoperative. **(T-2)**

## 6.12. Airdrop Checklists.

6.12.1. All items of the preceding checklist should be accomplished prior to initiating the next checklist. Avoid the use of the word “GREEN” or “LIGHT” after initiation of the RUN-IN Checklist until arriving at the release point. **(T-3)**

## 6.13. Aircrew No-Drop Decisions.

6.13.1. Prior to the “1 minute” call, any crew member who determines a condition exists that could jeopardize a safe drop will notify the AC. **(T-3)** The AC can call a “No-drop” at their discretion.

6.13.2. No-Drop Call. Any crew member observing an unsafe or developing unsafe drop condition after the “1 minute” call will transmit “No-drop” on the interphone. **(T-3)** The LM and PM will immediately acknowledge a "No-drop" **(T-3)** The LM will accomplish no-drop procedures before performing the COMPLETION OF DROP checklist. **(T-3)** The AC will notify the crew of execution following a no-drop (race track, alternate DZ, etc.) and the crew will proceed appropriately. **(T-3)**

6.13.3. The LM will reapply any removed restraint if a "No-drop" is made and a racetrack is not planned. **(T-3)**

6.13.4. During training, do not allow cargo to exit if CARP VERT or CARP XTRK is displayed. **(T-3)**

## 6.14. Drop Zone Escape.

6.14.1. The PM or CSO (if onboard) will call "Red light" at the expiration of green-light time or hearing the LM call "Load clear" or "Malfunction". **(T-3)**

6.14.2. Conduct the briefed escape maneuver at red-light illumination. **(T-3)** In combat, cut irretrievable static lines so that doors can closed. **(T-3)**

6.14.3. Racetrack (Multiple Passes). Do not make multiple passes unless directed or previously agreed upon by all units involved. **(T-3)** Aircrews will accomplish all airdrop checklists for each racetrack. **(T-3)** Do not compress checklists greater than the time necessary to complete all items prior to drop initiation. **(T-3)** The one-minute warning is never compressed and is always on time. **(T-3)**

6.14.4. Doors may remain open at the discretion of the AC.

## 6.15. IMC Airdrop Procedures.

6.15.1. IMC Drop Altitude. Comply with AFMAN 11-231.

6.15.2. IFR Drop Corridor. FAR Exemption 4371 defines the IFR drop corridor as the corridor where aircraft may transition between IFR enroute altitude and IMC drop altitude to perform airdrop operations.

6.15.2.1. The total length of the IFR drop corridor, from ingress point to egress point, can be no greater than 240 NM. **(T-3)**

6.15.2.2. Plan segmented corridor altitudes not lower than 500 ft. above the highest obstruction to flight (manmade obstruction, terrain feature, or spot elevation), or 400 ft. plus one contour interval above the highest depicted terrain contour, whichever is highest, within 3 NMs either side of centerline. **(T-3)**

6.15.3. DZ Entry Point. The point where an aircraft may safely begin descent from IFR enroute altitude or a segmented altitude to IMC drop altitude.

6.15.4. DZ Exit Point. A fixed point on the DZ escape flight path centerline where each aircraft is at minimum IFR enroute altitude.

6.15.4.1. Aircrews should calculate the exit point based on a 1,000 ft. per minute climb at 140 knots indicated airspeed (KIAS). Analyze 3-engine climb performance and ensure obstacle clearance at pre-airdrop gross weight. **(T-3)** If unable to clear all obstacles on 3-engines, adjust the DZ exit point based on 3-engine climb capability. **(T-3)** This point will be a minimum of 4 NMs track distance from the trailing edge of the DZ. **(T-3)**

6.15.4.2. WARNING***:*** Analyze pre-drop gross weight to determine if obstructions can be cleared on 3 engines from DZ Entry through DZ Exit. If obstructions cannot be cleared, reduce aircraft gross weight, revise run-in and/or escape course, or increase drop altitude. **(T-3)**

## 6.16. High Altitude Airdrop Procedures (HAAD).

6.16.1. WARNING***:*** When conducting depressurized operations requiring supplemental oxygen, any aircrew member utilizing an oxygen hose greater than 6 ft. must place their oxygen regulator switch to EMERGENCY. **(T-3)** Pressures in NORMAL are insufficient and insidious hypoxia may result.

6.16.1.1. CAUTION: The T.O. C-130(H)J-1 (reference) charts do not account for oxygen regulators being set to EMERGENCY and will be inaccurate for time available to the crew.

6.16.1.2. Aircrew will regularly check liquid oxygen (LOX) levels and terminate operations if necessary. **(T-3)**

6.16.2. Conduct HAAD procedures for airdrops above 3,000 ft. AGL. **(T-3) Exception:** Rigged alternate method zodiac (RAMZ) airdrops at or below 3,500 ft. AGL are considered low altitude drops.

6.16.3. See AFTTP 3-3.HC-130 for ACC approved HAAD procedures.

6.16.4. Unless waivered, aircrew will not deviate from AFMAN 11-202V3 and AFMAN 11-409, *High-Altitude Airdrop Mission Support Capability Program*, for high-altitude oxygen, pre-breathing, and physiology technician requirements/restrictions. **(T-3)**

6.16.5. HAAD is a mission computer drop. Aircrew will use the CNI-MU to calculate HARPs. **(T-3)** For preplanned HAAD, manually calculate parameters to safety check with CNI-MU. **(T-3)**

6.16.6. Transfer parachutists to a personal oxygen system at approximately 1 minute before green light.

6.16.7. CSOs will provide the JM with magnetic course +/- 5 degrees and a distance (NM or yards) from the high altitude release point (HARP) to the DZ. **(T-3)**

6.16.8. CSOs will compare their HARP location and calculations with the JM chart and calculations. **(T-3)** Aircrew and the JM will thoroughly brief HAAD parameters. **(T-3)**

6.16.9. High Altitude Emergency Procedures. If a physiological incident occurs:

6.16.9.1. Abort the sortie. **(T-3)**

6.16.9.2. Begin descent (pressurization and descent will be determined by the type and degree of sickness or pain). **(T-3)**

6.16.9.3. Ensure the affected person remains on 100% oxygen until a medical doctor determines the type of treatment required. **(T-3)**

6.16.9.4. Proceed to the nearest base with qualified medical assistance available. **(T-3)**

6.16.9.5. Advise the control tower of the emergency and request an ambulance meet the aircraft (if necessary). **(T-3)**

**6.17. Exits.**

6.17.1. The cargo door and ramp is the primary jump exit. **(T-3)** All parachutists, with the exception of the JM, will stand forward of the ramp hinge until the one-minute warning. **(T-3)**

6.17.2. Paratroop Door Exit. All parachutists, except the JM, will stand forward of the paratroop door until the One Minute Warning. **(T-3) Note:** Jump platforms must be installed when paratroop doors as jump exits. **(T-3)**

**6.18. Communications and Signals.**

6.18.1. The LM will coordinate the following hand signals with the JM:

6.18.1.1. Time warnings (20, 10, 6, 2, and 1 minute) are given to the parachutists by the LM pointing at a watch and then indicating with fingers the correct warning. **(T-3)**

6.18.1.2. The velocity of winds on the DZ will be given by the LM by cupping one hand and blowing into it, then indicating with upturned fingers the speed of the wind. **(T-3)**

6.18.1.3. The LM will indicate a no-drop by passing a hand slash across the throat or prebriefed signal. **(T-3)**

6.18.2. LMs will have a medium for written communication with parachutists. **(T-3)**

**6.19. Personnel Airdrop Procedures.**

6.19.1. LMs will ensure JMs receive all time advisories, wind updates, and no-drop decisions when passed. **(T-3)**

6.19.2. Do not position personnel directly under the center anchor cable supports (A-Frame, FS 737) in case of anchor cable or support mounting failure. **(T-3)**

6.19.3. WARNING: Do not open jump exit until all personnel are secured to the aircraft, configured for jump (MILITARY free fall (MFF) ops), or have connected static line(s). **(T-3)**

6.19.3.1. Guardian Angel static-line (S/L) and ram air static-line (RASL) Jumpmasters (JM) may perform JM duties without hooking up to an anchor cable and/or may hook up to the appropriate anchor cable if planning to jump after an exit has been opened in-flight, but shall remain forward of the ramp hinge (FS737) when the cargo door and/or ramp are open. **(T-1)** JM and Loadmaster (LM) may coordinate so other jumpers can perform duty related actions, provided they too remain forward of the FS limits stated above. Aircraft Commanders are ultimately responsible for ensuring coordination and post ramp/door opening requirements are briefed and will consider non-maneuver and limited maneuver points as required. **(T-3)**

6.19.4. Loadmaster-Jumpmaster Control. LMs will allow the JM access to jump exit after slow down and no later than the one-minute warning. **(T-3)** The JM has control of the jump exit when granted access.

6.19.4.1. JM directed drops will use the Search and Rescue checklists. **(T-3)** LMs will provide the JM access to jump exit after pre-deployment checks are complete and no later than 2 minutes prior to jump. **(T-3)** The JM has control of the jump exit when granted access.

6.19.4.2. The LM will position themselves in a manner to provide maximum maneuverability for the JM and safeties and to prevent interference with exiting jumpers. **(T-3)** LMs will notify the JM or safety of all "red-light" conditions. **(T-3)**

6.19.4.3. WARNING: Do not attempt to physically stop or hinder jumpers from exiting the aircraft if jumpers continue to exit after "red-light". **(T-3)** The LM will take no further action to stop any of the remaining parachutists. **(T-3)** The LM will count (if possible) any parachutists that exit the aircraft after the red light has illuminated. **(T-3)**

6.19.4.4. LMs regain control of the jump exit after all parachutists exit or are stopped and cleared from exits by the JM or safety. **(T-3)**

6.19.4.5. For racetracks, the JM will reassume and pass control in accordance with this manual, every pass. **(T-3)**

6.19.5. Fouled Parachutist Procedures. Pilots actions will follow T.O. 1C-130(H)J-1 procedures for Airdrop Emergency Operations. Follow T.O. 1C-130(H)J-1 procedures for Airdrop Emergency Operations. **(T-3)**

**6.20. Emergency Parachutist Bailout.** Follow T.O. 1C-130(H)J-1 procedures for Emergency Parachutist Bailout Procedures. (T-3)

**6.21. Jumpmaster Directed (JMD) Airdrop Procedures (Static line and MFF).**

6.21.1. JMD airdrops require SQ/CC approval.

6.21.1.1. The “Letter of X’s” is considered SQ/CC approval.

6.21.1.2. Qualified AF or sister service JMs (or trainees under the supervision of qualified personnel) may perform JMD airdrops. Qualified JM's can guide the aircraft to a release point and determine the exit point in accordance with the following:

6.21.1.2.1. Aircrews will conduct JMD airdrops using appropriate checklists in the T.O. 1C-130(H)J-1. **(T-3)**

6.21.1.2.2. The JM accepts all responsibility for the accuracy of the drop, and any potential injuries or damage to equipment. **(T-3)** See DAFMAN 13-217 for additional guidance.

6.21.1.2.3. Coordinate in-flight visual signals, verbal signals, and interphone procedures between the JM, LM, and pilots prior to takeoff. **(T-3)**

6.21.1.2.4. Personnel may not exit the aircraft without the green light illuminated. **(T-3)**

6.21.2. Standard Voice Terminology. When the JM provides assistance on final approach, LMs will pass information with following standard voice terminology:

6.21.2.1. "Steady" (present course is satisfactory). **(T-3)**

6.21.2.2. "Right" (change direction to the right 5 degrees). **(T-3)**

6.21.2.3. "Left" (change direction to the left 5 degrees). **(T-3)**

6.21.2.4. "Right or left __ degrees" (change direction as indicated). **(T-3)** Specific change desired.

6.21.2.5. “Target in sight” (JM has visually acquired the target). **(T-3)**

6.21.2.6. "No-drop" (Called for unsafe or unknown conditions or unsatisfactory positioning over the target). **(T-3)**

6.21.2.7. "Load clear" (Jumpers or cargo are free from aircraft and PF can safely turn to begin the next pass and/or observe drop). **(T-3)**

6.21.2.8. Hand Signals. The JM may use the following hand signals to relay course corrections through the safety man:

6.21.2.8.1. Thumb left/right, indicating 5-degree correction;

6.21.2.8.2. Palm open, fingers pointed toward the flight deck, indicating steady.

6.21.3. Deployment Procedures. JMD equipment airdrop, pararescue fixed, moving, and crosswind target patterns use the RESCUE checklists in the T.O. 1C-130(H)J-1. **(T-3)** These procedures may be used for JMD qualified rescue personnel only. **(T-3)**

6.21.3.1. No less than 2 minutes out from the release point, the LM will allow the JM access to the door to begin the "spotting procedures". **(T-3)** JMs may perform duties from either paratroop door or the ramp and door.

6.21.3.2. The JM will connect the parachute static line to the anchor cable designated for use. **(T-3)** The JM will connect to the personnel restraint system or to a tie-down ring that would preclude the wearer from exiting the aircraft if parachute is not worn. **(T-3)**

6.21.3.3. On final for live drops, the pilot will make a "Crew, 1 minute warning" call. **(T-3)** WARNING: For confined lake or near shore water drops of pararescue jumper (PJ) personnel or RAMZ training, the “Crew, 1 minute warning” call may occur if over land. Exercise extreme caution when calculated release point is over land to ensure that personnel/equipment will land in the water.

6.21.3.4. Once safety checks are complete, and the pilot determines that all conditions are favorable for deployment upon reaching the planned/desired exit point, the pilot states "Clear to jump" and the PM turns on the green light. Jumpers exit the aircraft upon reaching the JMs identified release point. **Note:** The aircrew may turn on the green light once the drop zone has been positively identified, but no earlier than 1 minute prior to the release point for military freefall operations, or 30 seconds for static line operations. **(T-3)** If at any time exit of jumpers becomes unsafe (aircraft emergency or similar circumstances), the aircrew will turn on the red light and the LM will direct the JM to stop remaining parachutists. **(T-3)**

6.21.3.5. Streamers. Streamers are 20 ft. lengths of crepe paper weighted on one end. The spotter chute used is the standard J-1 (12 ft. diameter) wind drift determination parachute. The spotter chute weight can be provided by the PJ or designated smoke. When the signal marker smoke is used, the JM will signal the safetyman/LM when to launch the smoke. **(T-3)** Immediately upon receiving the signal, the safetyman/LM will simultaneously activate and launch the smoke. **(T-3)**

6.21.3.5.1. The safetyman/LM will assist the JM in launching the streamer/spotter chute and remain at the door during PJ deployments. **(T-3)** The JM, Pilot, and CSO will confirm the exit point prior to release. **(T-3)**

6.21.3.5.2. Leave the red light on for dry passes and streamer/spotter chute patterns. **(T-3)**

6.21.3.6. Mixed Procedures. Aircrews will not mix JMD releases with any other type of airdrop method (e.g., ground-marked release system (GMRS), verbally initiated release system (VIRS) or standard CARP drops. **(T-3)** When JMD drop procedures are used, the crew should follow the JM’s instructions, while adhering to normal safety concerns. **Note:** For low altitude JMD drops, a CARP is not required when using streamers/spotter chutes. WARNING: During paratroop door static line personnel drops, personnel will not position themselves directly under the center anchor cable supports (A- frame, FS 737). **(T-3)**

6.21.4. Post-Deployment. Maintain visual or radio contact with the supported user and maintain surveillance of the area for possible natural or man-made hazards. **(T-3)** After Pararescue deployment, the AC/MC will notify the appropriate agencies to ensure required team support is provided. **(T-3)** Every effort is expended to ensure that the Pararescue team is covered by rescue aircraft until the party is assured of surface assistance. Surface assistance for land operation is not required as long as sufficient supplies are available. Prior to departure of the aircraft from the incident site, resupply schedules, communication schedules, supply requirements, and planned actions of the Pararescue team will be established by the AC and team leader. **(T-3)**

6.21.5. Primary and alternate frequencies, schedules, and an alternate method of communication will be established by the MC and included in the MC's pre-mission brief. **(T-3)**

6.21.6. If practical, the Pararescuemen should immediately establish radio contact with the drop aircraft upon penetration of the incident site. The team leader then verifies the predetermined schedule for the next radio contact before the drop aircraft departs the area.

6.21.6.1. In the event the PJ team fails to establish communication at the initial pre-briefed time, maximum effort is made on the next check or the alternate schedule until radio contact is established.

6.21.6.2. If communication cannot be established through the procedures outlined above, any other method of communication may be used to relay information to the rescue team.

6.21.7. Radio is the primary medium of communication. **(T-3)** MK 13 day/night flares are the alternate method. **(T-3)** When signals for special purposes are needed, they may be locally devised.

6.21.8. Rescue Jumper Deployments to Ships. In sea conditions other than calm, it is essential the ship have a motorized launch in the water prior to team deployment, unless the PJ team deploys with a suitable watercraft. **(T-3)** WARNING*:* The aircrew will prepare an MA-1 sea rescue kit for deployment from the cargo ramp as soon as practical following an open water PJ deployment (not required for training). **(T-3)**

6.21.8.1. Positioning and maneuvering of the ship, motorized launch, and deployment of the MA-1 kit is the ship captain's decision. When possible, the AC should advise the ship captain on positioning and maneuvering prior to deployment. The crew should determine whether the ship can remain still in the water, whether the ship should be steered into the wind or crosswind, and where the launch needs to be positioned.

6.21.8.2. The rescue aircraft should deploy the PJ team to the motorized launch. The launch should maintain its position during the deployment pattern.

6.21.8.3. WARNING: The crew will make every effort to advise the ship to shut down its propellers anytime a Pararescuemen is in the water alongside it. **(T-3)**

6.21.8.4. In the case that a decision is made to deploy the team without the use of a motorized launch, it is critical that the method of boarding is verified prior to deployment. **(T-3)**

**6.22. Ramp Bundles.** For additional guidance see AFTTP 3-3.HC-130.

6.22.1. Deployment Altitudes. The minimum deployment altitude is 3,000 ft. AWL/AGL when the PJs exit using non-static line deployed parachutes. **(T-3)**

6.22.1.1. For operational missions, minimum altitude with a non-static line deployed parachute is 2,500 ft. AWL/AGL. **(T-3)**

6.22.1.2. The minimum deployment altitude for training or non-combat single-pass combination air drops of ramp bundles and PJs exiting with static lines is 800 ft. AWL/AGL. **(T-3)** CAUTION: The ramp bundle and PJs are deployed from the same altitude.

6.22.2. Exit Times. AFMAN 11-231 does not currently contain exit time data for conducting a RAMZ airdrop. Aircrews should use an exit time of 1 to 3 seconds for RAMZ airdrops.

6.22.3. Deployment Procedures. In addition to the deployment procedures required by the specific method of delivery being used, the following procedures apply:

6.22.3.1. Parachutists using static line deployed parachutes will attach their static lines to the same anchor cable to which the ramp bundle static lines are attached or jump on a subsequent pass after the ramp bundle static line deployment bags are retrieved. **(T-3)**

6.22.3.2. Military freefall parachutists may exit from the aircraft ramp on the same pass after the ramp bundle static line deployment bags are retrieved or cut, or exit on a subsequent pass using fixed/moving target JMD procedures, as appropriate. If dropping from the paratroop door on the subsequent pass, complete the POST-DEPLOYMENT checklist, and initiate the PRE-DEPLOYMENT checklist. **(T-3)**

6.22.3.3. For JMD drops, at the pilot's "One minute advisory" call, the JM may be on either side of the cargo ramp and may be spotting from the aft end. Additional jumpers will be forward of the ramp bundle. **(T-3)** The LM will be positioned to remove aft restraint and to observe equipment and jumpers at all times. **(T-3)** At the " One minute advisory" call, the JM will be alerted, the load release gate is checked, and the aft restraint is removed. **(T-3)**

6.22.3.4. The LM will relay "Safety checks complete" to the PF if the JM has already gone off interphone. **(T-3)** The PM will turn on the green light, indicating to the JM that conditions are satisfactory for the airdrop. **(T-3)**

6.22.3.5. The JM will determine the exit point and deploy prior to receiving a "No-drop" notification or seeing the red light on. **(T-3)** The LM will relay to the PF all visual corrections given by the JM. **(T-3)** The JM will signal for the LM to cut the release gate. **(T-3)**

6.22.3.5.1. WARNING: If a "No-drop" is called and the ramp bundle is held in place by only the release gate, all personnel will move forward of the load, except the LM and the JM who monitor the ramp bundle for possible shifting and secure as necessary. **(T-3)**

6.22.3.5.2. WARNING: If the ramp bundle exits the aircraft but fails to properly deploy, the LM will cut the static lines immediately. **(T-3)**

6.22.3.5.3. CAUTION: The LM must cut the release gate below the knot to allow the nylon strap to pull free through floor tie down rings. **(T-3)**

6.22.4. Limitations. During training, limit sea state for RAMZ to 5, moderate wave (10 ft.), taking a pronounced long form, with many white caps. **(T-3)** Limitations for operational or contingency missions will be determined by the JM in coordination with the AC. **(T-3)**

**6.23. Combination Airdrops.**

6.23.1. Combination drops are those during which parachutists exit from the aircraft ramp after the deployment of an airdrop load.

6.23.2. When tailgating parachutists, the drop altitude is determined by the item requiring the highest drop altitude per AFMAN 11-231. **(T-2)**

6.23.3. If an additional pass is needed to drop all the personnel after a combination CDS drop, close the ramp and door and re-rig the static line retriever cable as depicted in T.O. 1C-130(H)J-9. **(T-3)**

**6.24. Specialized Rescue Airdrop Procedures.**

6.24.1. Aircrews will use the RESCUE checklist or the AIRDROP OPERATIONS checklist for specialized rescue airdrops. **(T-3)**

6.24.2. Free Fall Airdrops. For additional guidance see AFTTP 3-3.HC-130 & AFMAN 11-231. For free-fall airdrops, wind drift (drift effect) need not be considered.

6.24.3. Parabundle Airdrops. See AFTTP 3-3.HC-130 & AFMAN 11-231.

6.24.4. MA-1/2 Kit Airdrop. See AFTTP 3-3.HC-130 & AFMAN 11-231.

6.24.5. Specialized Minimum Drop Altitudes. For freefall airdrops, the minimum altitude during the day is 150 ft. AGL and 500 ft. AGL at night. **(T-3)** For Parabundle & MA-1 kit airdrops, the minimum altitude during the day is 300 ft. AGL and 500 ft. AGL at night. **(T-3)**

6.24.5.1. **Exception:** When using alternate MA-1 deployment procedures, per AFMAN 11-231, 200 ft AWL is the ACC approved minimum deployment altitude. When practicing over land, crews will restrict MA-1 patterns to flat or rolling terrain during daylight hours. **(T-3)**

6.24.5.2. WARNING: Aircrews should climb to at least 300 ft. AGL prior to conducting turns.

6.24.6. Combat Rubber Raiding Craft (CRRC). See AFTTP 3-3.HC-130.

6.24.7. PSYOPS Drops (Leaflets). See AFTTP 3-3.HC-130.

6.24.8. Door Bundle Airdrops. General A-7A or A-21 containers weighing up to 500 lbs. (excluding the weight of the parachutes) are referred to as "door bundles" and are dropped from the aircraft through the paratroop door or ramp and door using the AIRDROP OPERATIONS or Search and Rescue checklist. Additional pushers may be required to assist the LM/JM in pushing loads from the aircraft, dependent on bundle weights and individual capabilities. Door bundles may be dropped independently or with personnel and are limited to one bundle per exit used. **(T-3)** When dropped with personnel, the bundle is the first object to exit the aircraft. **(T-3)** Remove restraints and position the bundle in the paratroop door or on the ramp prior to completion of the SLOWDOWN checklist. **(T-3)**

6.24.8.1. **Exception:** If the JM needs the paratroop door for spotting, place the door bundle as close as possible to the paratroop door. **(T-3)**

6.24.8.2. If jumpers are to follow the door bundle, the user is responsible for ejecting the bundle out the troop door or off the ramp. Maintain positive control of all door bundles exiting out the cargo ramp. **(T-3)** To maintain positive control of door bundles exiting over the ramp, it may be necessary to secure the forward end of the bundle to a suitable floor tie down ring with 550 cord or suitable substitute. This tie is to prevent premature release of the bundle and is cut by the LM at the release point.

6.24.8.3. The LM will rig door bundles dropped from the paratroop doors with non-breakaway static lines. **(T-3)** The LM must ensure the dimensions, including the parachute,

do not exceed 48 inches by 30 inches by 66 inches (63 inches for aircraft equipped with AS-6BKS paratroop doors) unless authorized in a specific T.O. **(T-3)** When the container is placed in the door for airdrop, place the largest dimension in the vertical or upright position. **(T-3)**

6.24.8.4. LMs must ensure door bundles followed by paratroopers dropped from the ramp and door or paratroop door(s) are rigged with a T-10 parachute (converted for cargo) or parachute equipped with breakaway static lines (per T.O. 13C7-1-11). **(T-3) Note:** The LM must ensure anchor cable stops are positioned as depicted in T.O. 1C-130(H)J-9 for CDS airdrops. **(T-3)**

6.24.8.5. During unilateral single-ship airdrop training, the LM must ensure door bundles do not exit the aircraft after a paratrooper has jumped. **(T-3) Note:** During joint training, a combat or contingency operation, the user determines door bundle requirements and order of exit from any or all personnel airdrop aircraft in the formation.

6.24.8.6. When door bundles are dropped with personnel, compute the CARP for the first paratrooper exiting after the bundle and compute an additional CARP for the door bundle to ensure that it impacts on the DZ. **(T-3)** Release the bundle at the personnel CARP, followed by the parachutists when the door is clear. **(T-3)** When a door bundle is the only object dropped, base the CARP on the bundle. **(T-3)**

6.24.9. Container Ramp Load (CRL)/Ramp Bundle. The terms "CRL" and "Ramp Bundle", regardless of what flight manual or publication the terms are found, are synonymous and interchangeable for the purpose of the guidance contained herein.

6.24.9.1. CRL refers to a means of rigging A-series containers or loads on CEPs. CRL rigging may be used for airdrop loads positioned on the cargo ramp or floor.

6.24.9.2. CRL rigging procedures are provided in T.O. 1C-130(H)J-9.

6.24.9.3. At the release point the LM manually cuts the release gate, allowing the bundle to exit from the aircraft.

6.24.9.4. The LM must ensure ramp bundles are rigged in accordance with T.O. 13C7-series rigging manuals. **(T-3)**

6.24.9.5. The LM must ensure the total weight of A-series bundles rigged via CRL procedures does not exceed 2,335 lbs. unless specified in specific rigging directive. **(T-3)**

6.24.9.6. The LM must ensure loads to be followed by parachutists are rigged with breakaway static lines, unless specified in specific rigging directive. **(T-3)**

6.24.9.7. The LM must ensure all remaining restraint are removed prior to the completion of the DROP PREPARATION checklist. **Exception:** Forward restraint for CRLs rigged on the ramp may be removed after the cargo ramp and door are in the aerial delivery system (ADS) position and prior to the completion of the RUN-IN checklist.

6.24.9.8. The bundle may be followed by personnel. These procedures may be accomplished from either side of the ramp or from the centerline. Specific aircraft preparation and rigging procedures are contained in T.O. 1C-130(H)J-9, Section VII.

6.24.9.9. The P or CSO (if onboard) will discuss approximate CRL exit times with the LM, as exit times vary depending on load weight and LM experience & strength. **(T-3)**

## 6.25. CDS Airdrops.

6.25.1. Manual CDS gate cuts are authorized for all CDS/improved (I)-CDS/Joint Precision Aerial Delivery System (JPADS) single-stick airdrops (CVR or non-CVR) and double-stick airdrops (CVR).

6.25.1.1. A manual gate cut is defined as using a knife to cut/release the CDS/intermediate gates.

6.25.1.2. LMs will ensure they hear and see "Green light" before manually cutting the CDS/intermediate release gate. **(T-3)**

6.25.1.3. LMs are allowed aft of the enhanced buffer stop assembly(s)/buffer stop/alternate forward barrier to manually cut the release gate(s). LMs must be clear of the exit path and clear of the static-line(s) prior to manually cutting each release gate. **(T-3)** Exercise caution to remain clear of any unrestrained bundles in the event of an emergency.

## 6.26. Heavy Equipment (HE) Airdrops.

6.26.1. Aircrews will be thoroughly familiar with non-tow-plate procedures and maintain a basic knowledge of tow-plate procedures. **(T-3)** Only equipment rigged in accordance with 13-C series T.O.s or USSOCOM 350 series may be airdropped. **(T-2)**

6.26.2. The maximum airdrop load to be extracted over the ramp is 42,000 lbs. The aerial delivery unit supporting the load movement ensures current publications are available for LM reference during joint inspections.

6.26.2.1. WARNING: Do not open the ramp and door to accomplish standard airdrop training bundle (SATB)/simulated airdrop with loads rigged with an extraction/drogue parachute in the pendulum release system. **(T-3)** If the actual airdrop platform cannot be dropped, the extraction/drogue parachute will be removed the pendulum release system and secured forward of the airdrop load. **(T-3) Note:** When conducting HE airdrops LMs should connect their restraint harness to an anchor cable.

## 6.27. SATB Procedures.

6.27.1. LMs will inspect all SATBs in the following manner:

6.27.1.1. Elongate the static line and check for wear. **(T-3)**

6.27.1.2. Ensure the pilot chute is attached with one turn ticket 8/4 cotton thread on all four corners. **(T-3)**

6.27.1.3. Ensure bag closing tie is made with a single length of 8/4 cotton thread and ensure the G-14 clevis is attached to static line. **(T-3)**

6.27.2. The LM will comply with the following rigging sequence:

6.27.2.1. Remove the transportation tie and activate the bundle marker light (if required). **(T-3)**

6.27.2.2. Attach the static line to the aircraft using a properly rigged G-14 clevis. **(T-3)** The clevis may be attached to a locking carabineer and attached to a floor/ramp tie-down ring.

6.27.2.3. Ensure the cotter pin on the G-14 clevis is sufficiently bent (approximately 45 degrees). **(T-3) Note:** LMs may attach a locking carabineer directly to the loop at the end of the static line. When an anchor cable is used for static line attachment, only a G-14 clevis may be used. **(T-3)**

6.27.3. Towed SATB Procedures. Refer to applicable rigging manual, flight manual, and aircrew checklists for SATB rigging, inspection, guidance, and malfunction procedures.

**6.28. JPADS Airdrops.**

6.28.1. As of the publication date of this manual, HC-130J aircrew do not maintain currency for JPADS family of airdrop. See FCIF, AFTTP 3-3.HC-130 or Tactics Bulletins for JPADS airdrop guidance.

# Chapter 7

# REFUELING

## 7.1. General.

7.1.1. This chapter prescribes HC-130J employment procedures for all refueling operations. For additional guidance and information, refer to Joint Air Power Competence Center ATP 3.3.4.2. and AFTTP 3-3.HC-130, *Combat Aircraft Fundamentals HC-130*.

## 7.2. Aerial Refueling Tanker Operations.

7.2.1. Comm Check. 10 minutes prior to the air refueling control time (ARCT), the LM will pass the altimeter to be used for refueling. **(T-3)** If two LMs are present, one LM will make contact and the second LM will pass the altimeter setting from a difference comm station. **(T-3)**

7.2.2. Breakaway. Either the tanker or receiver may initiate/direct a breakaway when an unsafe condition is identified.

7.2.3. High Speed (HS) Aerial Refueling Tanker Operations. HS aerial refueling tanker operations occur any time high speed drogues must be used. Conduct HS aerial refueling tanker operations in accordance with ATP 3.3.4.2. (current version), T.O. 1C-130(H)J-1, and AFTTP 3-3.HC-130 **(T-3)**

7.2.4. Helicopter Air-to-Air Refueling (HAAR) Operations. Conduct HAAR operations in accordance with ATP 3.3.4.2. (current version), T.O. 1C-130(H)J-1, and AFTTP 3-3.HC-130. **(T-3)**

7.2.4.1. HC-130J aircrew will not use rendezvous (RV) altitudes (AAR altitude + 500 ft.) under normal operations during rendezvous operations. **(T-3)** Tankers will conduct rendezvous and join-up operations at refueling altitude (AAR altitude) unless operational requirements dictate otherwise. **(T-3)**

7.2.4.2. Minimum HAAR Altitudes.

7.2.4.2.1. Training. Aircraft will not conduct HAAR below 1,000 ft. AGL on normal training missions. **(T-3)** Waiver authority for HAAR down to 500 ft. AGL is WG/CC or deployed equivalent. OG/CCs may request standing waivers for local HAAR tracks and recurring major exercises be included in their supplement to this publication. **Note:** Aircraft will not conduct low altitude HAAR training (below 1,000 ft. AGL) at tanker gross weights above 130,000 lbs. or without a minimum three engine climb capability of 500 ft. per minute. **(T-3)**

7.2.4.2.2. Contingency/Combat. Plan HAAR altitude now lower than 500 ft. AGL above the highest terrain or obstacle within 1 NM (day) or 3 NM (night) of planned HAAR track centerline. **(T-3)**

7.2.4.2.2.1. Minimum HAAR altitude during execution is determined by receiver performance in conjunction with aircrew proficiency and the threat and environmental situation. Aircrews will not conduct HAAR lower than 300 ft. above the receivers enroute combat profile. **(T-3)**

7.2.4.2.2.1.1. WARNING: HAAR below 1,000 ft. AGL assumes permissive terrain and is not normally possible at night with unaided vision.

7.2.4.2.2.2. Avoid large turns or course reversals below 1,000 ft. AGL. **(T-3)**

7.2.4.2.2.2.1. WARNING: When operating at or near minimum operating speed, any bank angle could result in a stall without warning.

**7.3. Air to Air Refueling-Receiver.** The following policies apply to all air refueling conditions regardless of emission control or type of rendezvous:

7.3.1. Instructor Pilots must inform the tanker prior to allowing any unqualified pilot any series of contacts and receive an acknowledgment. **(T-2)**

7.3.2. Do not use manual boom latching procedures, except with KC-10A with operational independent disconnect system or during fuel emergencies and contingency operations. **(T-3)**

7.3.3. CAUTION: The AC will not conduct air refueling operations when radio communications capability between the tanker and receiver is lost, except during emergency fuel situation or with pre-briefed emission control (EMCON). **(T-3)**

7.3.4. Utilize ECM expendable patterns approved for use during AAR-Receiver in accordance with their flight tested parameters. **(T-3)**

7.3.5. Air-to-Air Refueling-Receiver Training. Do not use the aux hydraulic system and/or override signal amplifier during training missions. **(T-3)**

7.3.6. Altitude Reservations (ALTRV). Use published refueling areas to the max extent possible. For specific ALTRV procedures, refer to FLIP and FAA Special Military Operations 7610.4H.

**7.4. Forward Area Refueling Point Operations (FARP-Tanker/Receiver).**

7.4.1. This section supplements procedures outlined in T.O. 00-25-172, *Ground Servicing of Aircraft and Static Grounding/Bonding*, AFI 11-235, *Specialized Refueling Operations*, and AFTTP 3-3.HC-130, A comprehensive mission briefing and strict compliance with these procedures ensures an expeditious safe refueling operation.

7.4.2. Wet Wing Refueling. Engines not running (power cart, GTC, or APU used). The same checklist and procedures apply as for FARP-Receiver.

7.4.3. FARP Equipment. Only use equipment specified in accordance with T.O. 00-25-172, T.O. 37A9-7-2-1, *Operations, Maintenance, and Illustrated Parts Breakdown—Forward Area Manifold Cart,* and in the system safety engineering analysis (SSEA). **(T-3)** This equipment is unique in that it provides for an internal bond that is not provided for with conventional refueling equipment. If unapproved equipment is used, the refueling operation must be accomplished without engines running (cold refueling). **(T-3)**

7.4.4. Weather Requirements. For training, do not service fuel during high winds, if visibility is reduced due to blowing particles/precipitation, or when an electrical storm is within a 5 NM radius of the hot refueling site. **(T-3)** For all other operations, use good judgment to determine when to suspend fueling operations.

7.4.5. Safety. See AFI 11-235 for specific guidance.

7.4.5.1. The AC is responsible for the overall safety of the crew and the aircraft hot refueling operations.

7.4.5.2. The AC relies on the LM to announce any unusual situations and to recommend the best course of action.

7.4.6. Electronic Emissions. See AFI 11-235 for specific guidance

7.4.7. Aircraft Marshaling. See AFI 11-235 for specific guidance.

7.4.8. Passengers. Personnel and equipment may be off/on-loaded in conjunction with refueling operations. Personnel movement on or off the aircraft should be monitored to maintain accountability in case of an emergency.

7.4.9. Hot Refueling. Hot refueling qualified crews may conduct operations at sites with a current survey. WARNING: All hot refueling sites will have a current site survey and meet the minimum unobstructed egress distance required by the survey to ensure the aircraft can taxi from the site in the event of an emergency. **(T-2)**

7.4.9.1. Responsibilities. Each crew position is responsible for the following:

7.4.9.1.1. The AC will:

7.4.9.1.1.1. Secure approval by the proper authority prior to conducting hot refueling operations. **(T-3)**

7.4.9.1.1.2. Brief all crew members on their specific responsibilities. **(T-3)**

7.4.9.1.1.3. Analyze runway and terminal area prior to landing to determine braking action. **(T-3) Note:** Unnecessary or heavy braking could delay hot refueling operations.

7.4.9.1.1.4. Determine fuel requirements to include estimated on-load and off-load.

7.4.9.1.2. The CSO/CP will:

7.4.9.1.2.1. Control fuel distribution and the single point refueling (SPR) drain pump. **(T-3)**

7.4.9.1.3. LMs will:

7.4.9.1.3.1. Supervising fuel servicing operations. **(T-3)**

7.4.9.1.3.2. Ensure compliance with all safety procedures. **(T-3)**

7.4.9.1.3.3. Immediately inform and advise the crew on recommended course of action, in the event of a hazardous situation or emergency. **(T-3)**

7.4.9.1.3.4. Ensure all required equipment is on board prior to and after hot refueling operations. **(T-3)**

7.4.9.1.3.5. Operate the ramp and door or paratroop door as required. **(T-3)**

7.4.9.1.3.6. Complete the hot brake/hung flare check prior to commencing hot refueling operations. **(T-3)**

7.4.9.1.3.7. Properly brief applicable personnel on fueling procedures. **(T-3)**

7.4.9.1.3.8. Connect the fuel source to SPR panel. **(T-3)**

7.4.9.1.3.9. Perform leak check at SPR panel. **(T-3)**

7.4.9.1.3.10. Secure aircraft for departure after all equipment and personnel are aboard. **(T-3)**

7.4.9.2. Internal Communications. The LM must have verbal communications with the crew any time a refueling nozzle is connected to the aircraft and fuel management panel switches are anything other than off or closed. **(T-3)**

7.4.9.3. Bonding procedures. Bond aircraft to servicing equipment during servicing if a grounding location is not available at a remote site. **(T-3)** This is accomplished by inserting the bonding plug into the receiver aircraft's external receptacle prior to any other action.

7.4.9.4. Emergency Procedures. All crew members will review emergency procedures prior to commencing hot refueling operations. **(T-3)**

7.4.9.4.1. All personnel, including ground controllers, will know the ground evacuation plans. **(T-3)**

7.4.9.4.2. WARNING: Stop all hot refueling operations immediately when a leak, unsafe condition, or system malfunction occurs. **(T-3)** Correct the deficiency before resuming hot refueling operations. **(T-3)**

7.4.10. Tanker Operations-FARP. FARP is an operation which involves transferring fuel from a tanker aircraft into a receiver aircraft with engine(s) running on either the tanker and/or receiver aircraft. FARP is conducted through the SPR panel or the rapid ground refueling (RGR) port to the receiver. All equipment and personnel required to set-up the FARP site are assigned to the tanker aircraft and a FARP survey is required. Wet Wing Defueling is not FARP, but the FARP Tanker checklist will be used to accomplish this procedure. **(T-1)**

7.4.10.1. FARP Site Survey. FARP qualified crews may conduct operations at sites with a current survey.

7.4.10.1.1. WARNING: All FARP sites will have a current site survey and meet the minimum unobstructed egress distance required by the survey to ensure the aircraft can taxi from the site in the event of an emergency. **(T-2)**

7.4.10.1.2. Units must ensure fire protection is available with guidance provided in AFI 11-235 and meets T.O. 00-25-172 requirements.

7.4.10.2. Passengers. Personnel and equipment may be on/off-loaded in conjunction with refueling operations. Monitor personnel movement to maintain accountability in case of an emergency.

7.4.10.3. Responsibilities. A pilot and copilot will remain on the flight deck in the event of an emergency taxi. **(T-3)**

7.4.10.3.1. The AC will:

7.4.10.3.1.1. Secure approval from proper authority prior to conducting FARP operations. **(T-3)**

7.4.10.3.1.2. Brief crew members on specific responsibilities. **(T-3)**

7.4.10.3.1.3. Analyze runway availability prior to landing to determine braking action. **(T-3) Note:** Unnecessary or heavy braking could delay FARP operations.

7.4.10.3.1.4. Analyze planned FARP area for hazards and sufficient taxi clearances. **(T-3)**

7.4.10.3.1.5. Determine fuel transfer requirements. **(T-3)**

7.4.10.3.2. The CP/CSO will:

7.4.10.3.2.1. Control fuel distribution and the SPR drain pump. **(T-3)**

7.4.10.3.3. LMs will:

7.4.10.3.3.1. The LM is the hot refueling supervisor (HRS). There will be two LMs during FARP operations. **(T-3)**

7.4.10.3.3.2. The primary LM is responsible for supervising fuel servicing operations and ensures that all personnel are properly briefed on fueling procedures. **(T-3)** The secondary LM will be standing near the SPR/RGR port to observe the hose connection and be standing by to disconnect the hose in case of an emergency. **(T-3)**

7.4.10.3.3.3. The HRS will ensure the right paratroop door remains open during FARP operations. **(T-3)**

7.4.10.3.3.4. The HRS will position an inter-phone cord near the right paratroop door. **(T-3)**

7.4.10.3.3.5. The HRS will assist the hose deployment personnel (HDP) with hose deployment, notify the panel operator (PO) when to start or stop fuel flow by interphone, and monitor for fuel leaks. **(T-3)**

7.4.10.3.3.6. The HRS will immediately inform the PO and advise the crew of any emergencies and recommend course of action. **(T-3)** When the FARP is complete, the HRS will assist the HDP with closing the FARP site. **(T-3)** The primary HRS maintains interphone contact. **(T-3)**

7.4.10.3.3.7. The HRS will secure the aircraft for departure after all equipment and personnel are aboard. **(T-3)**

7.4.10.3.3.8. The primary HRS will brief whoever operates exits, canary slides, and ground loading ramps. **(T-3)** An HRS, upon landing and after clearance from the pilot, will open the cargo ramp. **(T-3)** Upon offload clearance, the HRS will lower the cargo ramp to the ground. **(T-3)**

7.4.10.3.4. The ramp and door is primary exit/entrance for hot brake/hung flare checks, and to clear FARP personnel off the aircraft. **(T-3)**

7.4.10.3.5. The primary HRS will have an unobstructed view of the entire FARP operation. **(T-3)**

7.4.10.3.6. HRS and HDP will not exit until cleared by the primary HRS. **(T-3)** Upon clearance, deploy the tanker end of the refueling hose towards the SPR panel/RGR port.

7.4.10.3.7. The secondary HRS will monitor the refueling hose to prevent the HDP from possibly damaging the hose/connector. **(T-3)** Once hose layout is complete, position the fire extinguisher and water container next to the SPR panel/RGR port. The secondary HRS then connects to the prepositioned inter-phone cord.

7.4.10.3.7.1. CAUTION: In the event the aircraft requires departure immediately, the PO must immediately discontinue refueling by placing all pumps and valve switches to the OFF/CLOSED position. **(T-3)** The secondary HRS must confirm the SPR valve/pod supply valve position with the PO to ensure no fuel is pressurizing the hoses prior to disconnecting the SPR nozzle. **(T-3) Note:** The HRS and HDP at each refueling point will perform an on-scene inspection of the pressurized system for leaks, slippage of fuel hoses from hose couplings, and general condition of hoses. **(T-3)** Do not use hoses that leak or have blistering, saturation, or cuts/abrasions, which expose the hose's reinforcement material. **(T-3)**

7.4.10.3.8. Drain and depressurize the residual fuel from the refueling hoses in accordance with applicable directives. **(T-3)** CAUTION: The secondary HRS disconnects the SPR nozzle after confirming with the PO the SPR valve/pod fuel valve position to ensure no fuel is pressurizing the hoses.

7.4.10.3.9. Turn off the pump, and disconnect the hose after all hoses have been rolled/stowed to the low (suction) side. The SPR drain pump and holding the hose overhead can drain the 10 ft. section. **Note:** Some residual fuel may remain in this section of hose.

7.4.11. Hose Deployment Personnel (HDP). FARP requires Air Force fuels personnel (AFSC 2FOXl). **(T-2)** Each receiver point will have a minimum of 1 HDP. **(T-3)** HDPs will deploy hoses from the aircraft and set up the refueling points. **(T-3)**

7.4.12. Hose Deployment from Aircraft Floor/Ramp. When deploying hoses for a multi-point site, refer to the FARP site survey for proper positioning of equipment.

7.4.12.1. CAUTION*:* Do not pull hoses while walking backwards.

7.4.12.2. Lay down hoses and retrieve additional lengths from aircraft once sufficient resistance is met. Repeat this step as necessary until positioning is complete. Minimize dragging connections/valves to prevent damage.

7.4.12.3. When using the RGR, drag the hose towards the SPR panel first to ensure proper slack is available for defueling.

7.4.12.4. Position hoses the full distance, then bring nozzle end back approximately 25 ft. (50 ft. when refueling fixed wing aircraft). HDPs will walk the length of the hoses back to the aircraft checking for kinks, twists, and dry break positions. **(T-3)**

7.4.12.5. After HDPs have walked the hoses, notify the primary HRS with a "thumbs up", or prebriefed signal that (dry) line checks is complete. HDPs will return to the aircraft for the fire extinguishers and water containers and return to the "X/T" fitting. **(T-3)**

7.4.13. Pressurized Line Check. HDPs will not perform a leak check without a water bottle and fire extinguisher. **(T-3)**

7.4.13.1. Position the fire extinguisher and water container alongside the refueling nozzle at the refueling point upon leak check completion. The HDP will place an infrared chemlight on the water container, then kneel indicating the point is ready for operation. **(T-3) Note:** If the point becomes non-operational, remove the chemlight from the water container. **(T-3)**

7.4.13.2. HDPs will remain at the refueling point to act as fire guard after passing the refueling nozzle to the receiver crew member. **(T-3)**

7.4.14. Bonding. Insert the bonding plug from the refueling nozzle into the aircraft's external receptacle prior to any other action. **(T-3)** The HDP will not place the hose on the ground, or touch the receiver aircraft until the bonding wire is removed. **(T-3)**

7.4.15. Completion of FARP. The HDPs will position themselves at each refueling point to drain the hose after the last receiver is complete. **(T-3)**

7.4.15.1. When using the RGR port, disconnect the nozzle from the port and attach to the SPR panel before starting to drain hoses. **(T-3)**

7.4.15.2. Stretch hoses to their full length and attach the squeegee to drain that segment of hose. After running the squeegee over the length of hose and reaching a connection, close both sides of the valve and disconnect hose. Install dust caps. Roll that segment of hose. Repeat steps for each section of hose. Return hoses to the aircraft.

7.4.15.3. Use squeegees to drain hoses. If squeegees are not available, walking and rolling the hoses suffices as an alternate method of draining. **Note:** This alternate method leaves more residual fuel in the hoses and increases tear down time as well as hose weight. When reaching the fittings, raise the hose and let fuel drain from the fitting into the next hose, close both valves while in raised position. When reaching the cross connection, only close the valve that is designated for the hose that has been evacuated.

7.4.16. Internal Communications. Aircrews should not conduct unnecessary voice communication.

7.4.16.1. The LM and flight deck will maintain voice communication. **(T-3)**

7.4.16.2. FARP operations will not occur if the HRS, PO, and flight deck cannot maintain interphone contact. **(T-3) Exception:** The HRS may clear off interphone to assist in site tear down.

7.4.17. Emergency Procedures. The HRS will review and brief all emergency procedures to the crew by the HRS prior to commencing FARP operations. **(T-3)**

7.4.17.1. All personnel, including ground controllers, will know the ground evacuation plans. **(T-3)**

7.4.17.2. WARNING: Stop all FARP operations immediately when a leak, unsafe condition, or system malfunction occurs. **(T-3)**

## 7.5. {ANG Only} Aircraft to Aircraft Refueling Operations (AARO) Other Than FARP (OTF).

7.5.1. AARO OTF. Aircraft to aircraft ground refueling operations may be accomplished with or without (hot or cold) the aircraft engines operating for simulated combat, training

operations, defense supporting civil authorities (DSCA), and humanitarian relief operations (HUMRO). This procedure permits the rapid refueling of aircraft or helicopters in forward operating areas in non-tactical, no threat environments. These operations also provide a means of fueling an aircraft where appropriate fuel is not available. Fuel is supplied from aircraft internal fuel tanks with pumps powered by ground power units, aircraft power units, or operating aircraft engines. These operations present hazards, which are not normally encountered in other fueling operations. Personnel involved in these operations must have a thorough knowledge of the aircraft fuel systems and fueling equipment used in the operation, all safety procedures, the sequential steps for the operation and undergone certification per command directives. Approved provider and receiver aircraft used in conducting AARO OTF operations are listed in T.O. 00-25-172.

7.5.1.1. Cold to Cold Aircraft Fueling. The transfer of fuel between two aircraft with no engines running.

7.5.1.2. Aircraft to Aircraft Operations (Hot). During AARO, if the provider aircraft has at least one engine running, it is considered a hot defueling operation.

7.5.1.2.1. Hot Defueling. Rapid defueling and wet wing defueling operations are considered hot defueling operations whenever the provider/source/tanker aircraft has at least one engine running.

7.5.1.2.1.1. Hot defueling can be done with all support equipment that has been approved for hot refueling. See T.O. 00-25-172.

7.5.1.2.1.2. Any aircraft that is approved as a FARP tanker aircraft is also approved for hot defueling operations. See T.O. 00-25-172.

7.5.2. Requirements. The following actions are mandatory prior to any type aircraft being employed in AARO OTF operations:

7.5.2.1. Aircraft to aircraft ground refueling will not be performed unless aircraft T.O. guidance, checklists, and appropriate fueling system checklists are available. **(T-3)**

7.5.2.2. Aircraft will not be fueled without qualified and certified personnel. **(T-3)** Servicing crew members include aircrews and/or ground support personnel.

7.5.2.3. These operations will not be performed until SSEA validated and approved procedures have been accomplished on the aircraft, fueling system, and support equipment. **(T-3)**

7.5.2.3.1. Refer to T.O. 00-25-172 for these aircraft and fuel systems that have been approved for aircraft to aircraft fueling operations.

7.5.2.3.2. In emergency situations that require the use of aircraft to aircraft refueling, the base/installation commander may authorize deviations from this policy. Refer to T.O. 00-25-172 for fire protection requirements.

7.5.2.4. The following actions are mandatory prior to the employment of AARO OTF by designated unit personnel:

7.5.2.4.1. The Hot Refueling requirements of T.O. 00-25-172 are completed for designated unit aircraft type. **(T-3)**

7.5.2.4.2. ANG certification of unit training program. **(T-2)**

7.5.2.4.3. ANG certification of initial cadre personnel performing AARO OTF. **(T-2)**

7.5.3. AARO OTF Certification. Certification will be in accordance with ANG guidance. **(T-2)**

7.5.4. AARO OTF Layout. Refer to T.O. 00-25-172 for Fire Protection Equipment Requirements and to determine safe distances between parking areas and fueling operations. AARO OTF operations may be conducted at any approved FARP or Hot Refueling sites. Prior coordination with owning agency is required for use of the site.

7.5.5. AARO OTF Operations.

7.5.5.1. Personnel Required to Conduct AARO OTF Operations. AARO OTF operations will be accomplished in accordance with squadron AARO OTF standard operating policies and with MDS required crew complement and qualified fuels personnel at the receiver site. **(T-3)**

7.5.5.1.1. At a minimum, one qualified fuels personnel will be used in conjunction with either the tanker aircrew or receiver aircrew acting as the aircraft fuel servicing supervisor or the HRS. **(T-3)**

7.5.5.1.2. It is recommended that two fuels personnel be used, one as the aircraft fuel servicing supervisor and one as the HRS at the receiver site.

7.5.5.2. AARO OTF Training. Provide initial and continuation aircrew training with guidance provided in squadron AARO OTF standard operating policies and AFMAN 11-2 MDSV1 guidance.

7.5.5.3. Aircraft Fuel Servicing Procedures. Personnel performing these operations will have a thorough knowledge of T.O. 00-25-172, specifically chapters covering electrostatic hazards and static grounding and bonding and specialized aircraft fueling operations. **(T-3)**

7.5.5.3.1. If AARO OTF operations are required at night, and no on site lighting is provided or available, personnel operating refueling equipment during these conditions must be NVG qualified. **(T-3)**

7.5.5.3.2. SSEA Reports. Policy and procedural information is incorporated in technical orders, regulations, instructions, manuals, and training programs by the MAJCOM.

7.5.5.4. Extra Equipment and Clothing Requirements. The wear of GORE-TEX® is authorized for aircraft servicing with JP-5/8/10, Jet-A, and diesel fuel (including mixed fuel criteria).

7.5.5.4.1. ANG will establish minimum extra equipment and clothing requirements. Suggested items for personnel performing AARO OTF duties include:

7.5.5.4.1.1. Spare Nomex® flight gloves.

7.5.5.4.1.2. Extra flight suit/complete change of clothes (including flight boots).

7.5.5.4.1.3. NVGs with spare battery on the crewmember’s person (as required).

7.5.5.4.1.4. Eye protection. (NVGs do not constitute eye protection).

7.5.5.4.1.5. Survival vest (as required).

7.5.5.4.1.6. Overt/infrared chemlights (as required).

7.5.5.4.1.7. Full water container to be carried on each person (e.g., canteen, camel back).

7.5.5.4.1.8. Infrared compatible flashlight (as required).

7.5.5.4.1.9. Sealable water and fuel resistant garment bag to store fuel-soaked cloths.

7.5.5.4.1.10. Towel.

7.5.5.4.1.11. Eyedrops and baby body wash to be used as rinse aids.

7.5.5.4.1.12. Extra-large Ziploc® bags. **Note:** Contact of fuel to human skin causes minor burns, irritation and loss of body oils. Immediately, remove all fuel soaked clothing and wash affected areas thoroughly. Put on clean clothing and seal fuel soaked clothes in a plastic bag. Clothing splashed or soaked with fuel will not be worn on aircraft due to combustion and fume hazard. **(T-3)**

# Chapter 8

# FORMATION AND MUTUAL SUPPORT OPERATIONS

## 8.1. Definitions.

8.1.1. The following definitions supplement guidance in the AFMAN 11-202V3.

8.1.1.1. Close Visual Formation. Close visual formations are operations in which visual signals from a lead aircraft are the sole altitude, attitude, and navigation reference for trail aircraft. The trail aircraft only utilizes visual references to determine spacing.

8.1.1.1.1. These operations typically require the utilization of AFPAM 11-205, *Aircrew Quick Reference to Aircraft Cockpit and Formation Flight Signals*, visual signals for communication between aircraft.

8.1.1.1.2. HC-130J aircrew are not authorized to conduct close-visual formation operations with another HC-130J aircraft. **(T-3) Exception:** Air to Air refueling operations, to include buddy & multiple-tanker formations, are exempt from this restriction for refueling-qualified HC-130J aircrew when conducted in accordance with ATP 3.3.4.2. and AFTTP 3-3.HC-130.

8.1.1.2. Enroute Formation. Enroute formations are operations in which two or more aircraft are operating under the same callsign to transit to or from an operating area.

8.1.1.2.1. Enroute formation operations utilize all available digital and electronic means to aid aircrew in determining appropriate altitude, attitude, and navigation references between lead and trail aircraft. These include, but are not limited to, tactical data link (TDL), air-to-air Tactical Air Navigation (TACAN), TCAS, Automatic Dependent Surveillance - Broadcast (ADSB), APX-116, and the APN-241 radar.

8.1.1.2.2. HC-130J aircrew are authorized to conduct enroute formation operations, to include takeoffs and recoveries.

8.1.1.3. Mutual Support. Mutual support operations are those in which two aircraft are operating on two separate callsigns and IFFs within the same area of operations.

8.1.1.3.1. HC-130J aircrew are authorized to conduct mutual support operations.

8.1.1.3.2. Aircrews conducting mutual support operations will adhere to AFMAN 11-202V3 limitations for proximity of aircraft. **(T-3)**

**8.2. Enroute Formation Operations.** The following guidance augments AFMAN 11-202V3. Reference AFTTP 3-3.HC-130 for enroute formation planning and execution TTPs.

8.2.1. Mission requirements determine when enroute formation operations are required. Typically enroute formations are utilized when there is a limitation to takeoff or landing periods, airspace, or when mutual support is desired between two aircraft.

8.2.2. Enroute formation procedures may be conducted in VMC or IMC. Inadvertent or unexpected IMC is an emergency procedure requiring appropriate IFF and radio calls to the area controlling agency. Aircrews will dissolve a visual formation utilizing inadvertent IMC procedures as described in AFTTP 3-3.HC-130 if they encounter inadvertent IMC. **(T-3)** When

conducting formation operations in an ATC environment, accomplish formation in accordance with FAA or host nation IFR procedures.

8.2.3. Conduct formation takeoffs in accordance with AFTTP 3-3.HC-130. Any deviations from TTP, if required, will be thoroughly briefed prior to execution. **(T-3)**

8.2.4. Weather minimums for formation takeoffs and landings are the minimums for the lowest suitable approach at the airfield, but not lower than 200 ft. and one mile visibility (RVR 5,000). During IFR formation operations, adhere to both ceiling and visibility minimums

8.2.5. Restrictions.

8.2.5.1. Aircrews will not conduct enroute formation operations for the following phases of flight:

8.2.5.1.1. Low-level modified contour flight. **(T-3)**

8.2.5.1.2. Airdrop operations. **(T-3)**

8.2.5.1.3. SCAs or other tactical approaches. **(T-3) Exception:** Formation overhead and downwind approaches may be conducted.

8.2.5.1.4. Maximum effort takeoffs and landings. **(T-3)**

8.2.5.2. Minimum aircraft separation for formation operations is 1,000 ft. (VMC) or 6,000 ft. (IMC). (N/A for aerial refueling tanker and receiver operations).

8.2.5.3. Aircrews will not conduct IMC formation unless the following conditions have been met:

8.2.5.3.1. Aircrews have planned and briefed formation IMC spacing, contracts, and contingencies before stepping to fly. **(T-3)** Aircrews are not authorized to 'ad hoc' rejoin as a formation in IMC conditions. **(T-3)**

8.2.5.3.2. Aircrews will not conducted IMC formation in forecasted icing, thunderstorm, or moderate (or greater) turbulence. **(T-3)**

8.2.5.4. Aircraft must have a minimum of two digital or electronic means of determining formation spacing available. **(T-3)**

8.2.5.5. Conduct formation recoveries in accordance with AFTTP 3-3.HC-130. Any deviations from TTP, if required, will be thoroughly briefed prior to execution. **(T-3)** Aircrews will use the following for recovery spacing:

8.2.5.5.1. Ensure minimum 6,000 ft./1 NM spacing between aircraft no later than 3 NM final (straight in). **(T-3)** For overhead and downwind approaches, trail aircraft may accomplish spacing by delaying the break.

8.2.5.5.2. Maintain minimum 6,000ft./1 NM spacing throughout the recovery. **(T-3)**

8.2.6. Responsibilities.

8.2.6.1. A formation lead will be designated during mission planning and, if practical, annotated on the flight authorizations. **(T-3) Exception:** For contingency operations, where time constraints preclude the designation of a formation lead prior to mission planning the aircrews conducting enroute formation operations will identify a formation lead and prior to join-up, both crews' ACs and CSOs must brief the requirements in **para 8.2.6.2**. **(T-3)**

8.2.6.2. Both ACs and CSOs will brief the following prior to conducting enroute formation operations: **Note:** Reference AFTTP 3-3.HC-130 formation briefing standards for in depth discussion on each topic.

8.2.6.2.1. Primary and secondary frequencies, communications plan, TDL and air-to-air TACAN settings. **(T-3)**

8.2.6.2.2. Ground Operations: Parking locations, communications check in times, taxi plan and spacing, primary landing airfield, landing taxi plan and debrief time. **(T-3)**

8.2.6.2.3. Takeoff type and spacing on departure, reject criteria, signals, and communications, climb out airspeed, VVI, attitude, and primary means of spacing and deconfliction. **(T-3)**

8.2.6.2.4. Enroute IMC spacing, inadvertent IMC procedures and altitudes, ATC communications priority and plan, emergency procedures requiring a dissolution of formation integrity and separation plan. **(T-3)**

8.2.6.2.5. Recovery airfield, primary alternates, diverts, type of recovery, dissolution of formation integrity, emergency and go around procedures. **(T-3)**

## 8.3. Mutual Support Operations.

8.3.1. If participating aircraft are on separate missions or separate ATO assigned tasks, aircraft deconfliction will be established by the participating ACs and CSOs. **(T-3)** This deconfliction can be geographic, altitude, or timing based.

8.3.2. If both aircraft are operating on the same mission or same ATO assigned task, a formation lead will be identified in mission planning. **(T-3)** Priority for the formation lead should be as follows: (1) the CSAR-C, (2) the AC on the CSAR-C/CROWN aircraft, (3) the aircraft, which will arrive on station first, (4) the aircraft with the highest situational awareness, longest loiter time, or most experienced crew. **Note:** the formation lead for mutual support operations does not need to brief all of the requirements from **para 8.2.6.2** if enroute formation operations are not going to be conducted.

# Chapter 9

# ABNORMAL PROCEDURES

## 9.1. In-Flight Emergency (IFE) Procedures.

9.1.1. Notification of Controlling Agencies. As soon as practical after completing the aircraft emergency action checklist, ACs will furnish the controlling agency and appropriate C2 agencies with a description and extent of the difficulty, assistance required, intentions, and any other pertinent information. **(T-3)**

9.1.2. The AC may initiate a CONFERENCE HOTEL when additional expertise is necessary. This procedure makes aircraft specialists accessible to the aircrew when in-flight situations pose systems-related questions that cannot be answered at the local level. See AFI 11-418, *Operations Supervision*, for contact information and further details.

9.1.3. Aircrews should use any and all means necessary to initiate Conference Hotel. Provide a narrative description of the situation including actions taken, intentions, and type of expertise desired.

## 9.2. Operations with Fuel Quantity Indicator Inoperative.

9.2.1. For other than normal ground refueling and defueling operations and associated guidelines in this chapter, aircrew will not transfer fuel into or out of a main or external fuel tank with an inoperative indicator or its symmetrical tank except with the guidance provided in the following:

9.2.1.1. Fuel transfer into a main or external tank with an inoperative indicator may be accomplished during contingency or emergency fuel need situations. All transfers, under these conditions require more than one crew member to monitor and coordinate the transfer to maintain lateral wing balance. **(T-3)**

9.2.1.2. A reliable source of known quantity transferred is available. **(T-3)** This source can be either internal aircraft operating fuel quantity indicators, or in-flight refueling tanker fuel on load data.

9.2.1.3. Maintain symmetrical tanks within 1,000 lbs. at all times. **(T-3)** If small amounts (4,000 lbs. or less) are transferred, then transfer up to 1,000 lbs. into the tank with the inoperative indicator followed by an equal amount into the tank(s) with operative indicator(s). If large amounts of fuel are transferred, then transfer 1,000 lbs. into the tank with the inoperative indicator, then up to 2,000 lbs. as needed into the tank(s) with the operative indicators. Then up to 1,000 lbs. as needed into the tank with the inoperative indicator to bring all tanks symmetrical, or continue up to 2,000 lbs. as needed. Repeat the cycle until desired fuel quantity and balance is achieved in applicable tanks.

9.2.1.4. Fuel may be transferred from main or external tanks with inoperative fuel quantity indicators only if the receiver requires emergency fuel. **(T-3)** In this situation, aircrew will comply with the following procedures:

9.2.1.4.1. The fuel flow counter for the refueling pod being used is operational to track the amount of fuel transferred. **(T-3)**

9.2.1.4.2. Transfer from only one tank at a time. **(T-3)**

9.2.1.4.3. Transfer no more than 1,000 lbs. at a time between the tanks with the inoperative indicator and its symmetrical tank to monitor fuel balance. **(T-3)**

**9.3. Continued Flight with Engine Loss.**

9.3.1. A flight may proceed on three engines to its destination if two engine capability exists, favorable operating conditions prevail both enroute and at the point of intended landing, and a suitable alternate airfield is available at all times.

9.3.2. If these conditions cannot be met, the AC will terminate the flight at the nearest facility, (preferably military) which, in the judgment of the AC, offers safe and favorable operating conditions. **(T-3)**

**9.4. Mishap/Accident.**

9.4.1. If involved in a mishap or incident, after landing and terminating the emergency, aircrew must pull the cockpit voice recorder power circuit breaker (ECB #464). **(T-3)**

**9.5. Insect and Pest Control (Aircraft Spraying).**

9.5.1. The AC will ensure required spraying is accomplished with the guidance provided in AFJI 48-104, *Quarantine Regulations of the Armed Forces*, FCG, or as directed by higher headquarters. Certify the spraying on Customs and Border Protection (CBP) Form 7507, *General Declaration (Outward/Inward) Agriculture, Customs, Immigration, and Public Health*, or on forms provided by the country transited. Do not spray with passengers on board. **(T-3)** The only exception is when mandated by the FCG.,

9.5.2. When spraying is necessary, wear leather or Nomex gloves while spraying. **(T-3)** Do not spray plastic surfaces. **(T-3)**

9.5.3. Spray spaces inaccessible from within the aircraft (e.g., baggage compartments, wheel wells, or other similar spaces) after completely loading fuel and cargo. **(T-3)**

9.5.4. Close all hatches, doors, ventilation, and windows. Spray the cabin (aft to forward), flight deck, and other spaces accessible from within the aircraft. Exit and close the crew entrance door when complete. Keep all doors and hatches closed for 10 minutes after dispensing. Ventilate for 15 minutes before allowing anyone on board. **(T-3)**

9.5.5. Spray for 50 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. **(T-3)**

9.5.6. When seeing any insect or rodent infestation of the aircraft in-flight, notify the destination C2 center, airfield management, or airport manager of the situation before landing so the proper authorities can meet the aircraft. **(T-3)**

9.5.7. Upon arrival, do not open doors or hatches except to enplane officials inspecting the aircraft for insect or rodent infestation. **(T-3)** Do not on load or offload until the inspection is satisfactorily completed. **(T-3)** This procedure may be altered to satisfy mission or local requirements, as arranged by the base air terminal manager.

**9.6. Dropped Objects.**

9.6.1. During aircraft exterior visual inspections, pay particular attention to surfaces, panels, and components, which could potentially be dropped objects. If a dropped object is discovered, the flight crew will:

9.6.1.1. Enter a write-up in the AFTO Form 781A. **(T-3)**

9.6.1.2. Notify the C2 agency as soon as practical. **(T-3)** Include route of flight, altitude, and weather conditions (e.g., turbulence…).

**9.7. Impoundment of Aircraft.**

9.7.1. If an aircraft is involved in a serious ground or in-flight incident, the AC should impound the aircraft immediately and contact the controlling command control center (CCC) for further instructions.

9.7.2. Aircrew Notification Procedures. When transiting installations, establish a point of contact with the C2 agency, base operations, or local airport manager.

**9.8. Fuel Jettison.**

9.8.1. Do not jettison fuel except in combat, emergency conditions, or rescue missions requiring gross weight reduction. **(T-3)**

9.8.2. Advise ATC should it become necessary to jettison fuel.

**9.9. Need for Medical Assistance.**

9.9.1. PM or CSO will notify landing airfield with sufficient time so medical personnel may meet the aircraft. **(T-3)** Notification includes:

9.9.1.1. The individual's sex.

9.9.1.2. Approximate age.

9.9.1.3. The nature of the medical problem.

**9.10. Suspected Laser Exposure.**

9.10.1. If laser exposure is suspected, notify C2 agency, intelligence, safety, and flight medicine as soon as possible. **(T-3)**

9.10.2. Report to the Flight Surgeon's office or nearest emergency room where the individual can have eyes examined immediately upon landing. **(T-3)**

9.10.3. Complete a safety incident form. **(T-3)**

**9.11. Landing Gear Malfunctions.** If a landing gear malfunction is encountered, the AC will make a full-stop landing. **(T-3)** The discrepancy must be corrected prior to the next flight. **(T-3)** **Note:** Gear indicator light failure does not constitute a gear malfunction. Check soft panel gear indications to confirm landing gear position. **Exception:** If repair capability does not exist and a positive determination is made that further flight can be accomplished, with the gear down and locked, the aircraft may be flown to a destination where repair capability exists provided the gear is not moved from the down and locked position. Required enroute stops are authorized

## 9.12. Soft Panel Operations.

9.12.1. For partial or complete hard panel failures, aircrews may revert to soft panel operations. Normally, if a soft panel is selected due to hard panel failure, it should be used for the remainder of the flight. Doing so mitigates the hazards associated with restoring hard panel functionality for an item when the mission computer commanded-state is unknown. Accomplishing the ENGINE SHUTDOWN and BEFORE LEAVING AIRPLANE checklists after the aircraft is parked ensures the soft panel retains control of the particular item throughout shutdown.

9.12.2. In all cases, ACs should consider the increased workload associated with using soft panels.

9.12.3. Hard panel failures may be the result of a physical failure or loss of communication with the mission computer. An aircraft "reboot" may recover hard panel functionality. To determine if hard panel functionality can be regained, the AC must follow the following procedures in sequential order:

9.12.3.1. Completely power down when accomplishing the BEFORE LEAVING AIRPLANE checklist. **(T-3)**

9.12.3.2. Complete all checklist items in the POWER UP checklist. **(T-3)** Do not proceed past the POWER UP checklist until it can be determined if the hard panel has recovered. **(T-3)** Depending on the system effected (such as APU, bleed air, landing gear, etc.), do not apply bleed air or hydraulics until hard panel functionality can be determined. **(T-3)**

9.12.3.3. To determine if a hard panel has recovered, confirm hard panel and soft panel selections and settings are identical. Press the line select key (LSK) to turn the soft panel OFF. If a CNI "CHK HARD PNL" or a referenced hard panel fault ACAWS message (e.g., "APU PNL FAULT", "DEF SYS PNL FAULT", etc.) does not appear, press the "VERIFY OFF" LSK. If feasible, check hard panel functionality.

9.12.3.4. If a CNI-MU "CHK HARD PNL" or a referenced hard panel fault ACAWS message appears, the hard panel has not recovered. The "CHK HARD PNL" message indicates there is a mismatch between the soft panel and hard panel commands to the mission computer independent of physical switch positions. Referenced hard panel fault messages are self-explanatory.

9.12.3.5. If it is determined that the hard panel has not recovered, at the AC's discretion, the mission may continue to a station supporting a repair capability, including en route stops. Do not reselect the hard panel. **(T-3)** If a flight continues under the control of two or more soft panels, the AC must obtain SQ/CC or deployed equivalent approval.

9.12.4. After returning to home station or repair facility with a hard panel malfunction, aircrew will shut down and turn the aircraft over to MX personnel. **(T-3)**

## 9.13. Aircraft Recovery from Unprepared Surfaces.

9.13.1. Unless an emergency dictates otherwise, aircrews will not accomplish recovery. **(T-3)** **Exception:** if there is no aircraft damage, the surface can support the aircraft, and the AC has coordinated with appropriate airfield and MX authorities.

**9.14. Participation in Aerial Events.**

9.14.1. See DAFI 11-209, *Participation in Aerial Events*.

**9.15. Navigation Malfunctions and Failures.**

9.15.1. Complete and/or comply with the following procedures/guidance:

9.15.1.1. Should INAV solutions noticeably separate and exceed 8 NM, determine and use the INS solution considered most accurate by evaluating both INSs using available radio aids, ground mapping radar, and GPS. **(T-3)** Highest validity should be given to positions referenced via radar. Next highest validity should be given to positions derived via radio aid fixing. When left to determine most probable position (MPP) via navigation solution comparisons, two agreeing INS positions are more valid than two agreeing GPSs; and two agreeing GPSs and one agreeing INS indicate a probable INS problem. Consider INS-radar/NAVAID, INS-INS, and INS-GPS position comparisons that are less than 4 NM difference to be valid and in agreement. Once the most accurate INS is determined, select it as the controlling solution. Update ETAs to ATC if required.

9.15.1.2. Situations may arise when crews cannot identify the faulty navigation system by simple comparison of positions between navigation solutions. In this case, aircrews should fly the aircraft halfway between the disagreeing INS solutions. Plot both CNI-SP solutions at least once every 30 minutes on the MPC, labeling the pilot CNI-SP navigation solution "MPP1" and the copilot's "MPP2". **(T-3)** Continue to evaluate outputs from each INS and try to use plotted position information to identify adverse trends.

9.15.1.3. Aircrews experiencing deterioration or failure of navigation equipment that reduces the capability to comply with MNPS prior to MNPS entry will return to a suitable airfield with a maintenance repair facility. **(T-3)**

9.15.1.4. Aircrews experiencing deterioration or failure of navigation equipment after entry into MNPS airspace should immediately report the malfunction to the controlling agency and subsequent agencies throughout the route of flight. Once the aircraft has entered oceanic airspace, the AC should continue to operate the aircraft in accordance with the oceanic clearance already received, appreciating that the reliability of the total navigation system has been significantly reduced. The AC should also prepare a proposal to ATC with respect to the prevailing circumstances and consult with ATC as to the most suitable action.

9.15.1.5. If an aircraft in MNPS airspace is unable to continue flight in accordance with ATC clearance for reasons such as severe turbulence, aircraft performance problems, or pressurization failure, a revised clearance should be obtained as soon as possible. If unable to obtain a new clearance, offset 30 NM from the assigned route by turning 90 degrees from track and maintain altitude if possible. Once offset 30 NM, climb or descend to an altitude, which differs from those normally used by 500 ft.

**9.16. Forced Penetration of Unfriendly Airspace.**

9.16.1. Refer to FIH for international signals for air intercept.

9.16.2. For contingency operations, consult SPINS and operational orders (OPORD).

9.16.3. Refer to AFTTP 3-3.HC-130, for intercept tactics.

## 9.17. Communications Instructions Reporting Vital Intelligence Sightings and Other Reports.

9.17.1. Report all vital intelligence sightings from aircraft as indicated in FIH. **(T-3)**

## 9.18. In-Flight Harassment or Hostile Action Against Aircraft.

9.18.1. Aircraft subjected to harassment or hostile action by foreign aircraft will immediately contact the nearest USAF air and ground voice facility and report the encounter. **(T-3)** Include aircraft nationality, type, insignia, or any other identifying features; note position, heading, time, speed when harassed, and type of harassment. Request relay of the report to the nearest C2 agency. Also, attempt to contact the nearest command post when in UHF and VHF range.

9.18.2. Other incidents are reported as indicated in CJCSM 3150.05D *Joint Reporting System Situation Monitoring Manual* and AFMAN 10-206, *Operational Reporting (OPREP).*

## 9.19. Due Regard Procedures.

9.19.1. Aircrews normally are not tasked to and should not fly “due regard” routings unless coordinated and authorized by the unit commander. The “due regard” or “operational” option obligates the military aircraft to be their own ATC agency to separate their aircraft from all other air traffic. If operational requirements dictate, the AC may exercise the “due regard” option to protect their aircraft. Aircraft should return to normal air traffic services as soon as practical. Fly “due regard” procedures in accordance with AFMAN 11-202V3 and FLIP GP “Operations and Firings over the High Seas”.

# Chapter 10

# LOCAL PROCEDURES

**10.1. Local Procedures.** Each Group, or equivalent, will develop local procedures. **(T-2)**

# Chapter 11

# OFF STATION/AUSTERE PROCEDURES

## 11.1. Responsibilities.

11.1.1. This chapter contains aircrew procedures not contained in the flight manual, other portions of this AFMAN, or other readily available publications.

11.1.2. Comply with T.O. 00-20-1. **(T-3)** Aircrew may assist the normal maintenance function when critical contingency taskings dictate their use, provided it does not impact crew duty and crew rest limits specified in **Chapter 2**.

11.1.3. The MC is responsible for the recovery items including:

11.1.3.1. Parking and receiving. **(T-3)**

11.1.3.2. Aircraft servicing, including aircraft ground equipment (AGE) usage. **(T-3)**

11.1.3.3. Supervision of minor maintenance within local capability. **(T-3)**

11.1.3.4. Minor configuration changes to meet mission tasking. **(T-3)**

11.1.3.5. Securing the aircraft before entering crew rest. **(T-3)**

11.1.3.6. Coordinating aircraft security requirements. **(T-3)**

11.1.3.7. Documenting AFTO 781-series forms. **(T-3)**

11.1.3.8. Non-DoD Installations. Contact the airport manager or installation commander to arrange for force protection. If available security is inadequate, purchase additional security using SF 44, *Purchase Order-Invoice-Voucher (Storage Safeguard Form).*

11.1.3.9. Utilizing Local Security. Request area patrol coverage from local security forces to include back-up response forces. If local authorities request payment for this service, use SF 44.

## 11.2. In-Process Inspections.

11.2.1. LMs must be aware of their responsibility to perform in-process inspections when clearing Red X symbols. **(T-3)** During the assembly where further assembly prevents the required inspection of the item, the LM must perform an in-process inspection. **(T-3)** Document the inspection in accordance with T.O. 00-20-1. **(T-3)**

11.2.2. LMs are authorized to clear Red X symbols for:

11.2.2.1. Intake and exhaust inspections.

11.2.2.2. Dust covers and plugs installed.

11.2.2.3. Aircraft panels removed and installed to facilitate other maintenance when qualified MX personnel are not available.

## 11.3. Security.

11.3.1. The HC-130J is a “Protection Level 3” (PL3) resource. Aircraft security at non-US military installations is the responsibility of the controlling agency. Additional equipment

onboard or installed on the aircraft may result in increased security measures. Lock the aircraft during all off-station missions remaining overnight. **(T-3)**

11.3.2. During pre-flight activities, inspect accessible areas not normally covered by normal pre-flight duties, to include aircraft wheel-wells, air conditioning compartments, crew/troop oxygen service panels, and cargo compartment for unauthorized packages, personnel, or other unfamiliar devices. Report any suspicious items to host security forces. Aircrews should maintain a heightened security posture throughout all pre-takeoff activities.

11.3.3. For non-permissive or uncertain environments, airfield and LZ security is the responsibility of the agency requesting the airlift. Coordinate with the agency requesting the airlift to ensure security meets the requirement for the mission.

11.3.4. For permissive environments, the DETCO or AC should evaluate force protection capability at home station prior to departure and receive updates enroute.

11.3.5. When landing at a DoD component installation, the installation commander is responsible to provide adequate security for the aircraft. The DETCO or AC will determine if security is adequate. **(T-3)**

11.3.6. Air Force Installation Security Program. The following security procedures are required in addition to DAFI 31-101, *Integrated Defense (ID)*, requirements for C-130 aircraft:

11.3.6.1. The aircraft is parked in an established restricted area and afforded protection via a roving patrol, a two-person internal security response team (ISRT), with immediate response not to exceed 3 minutes, and a two-person external security response team (ESRT), with response capability within 5 minutes.

11.3.6.2. When no permanent or established restricted area parking space is available, establish a temporary restricted area consisting of a raised rope barrier, and post with restricted area signs. **(T-3)** Provide a one-person mobile patrol, supported by a two-person ISRT capable of a 5 minute response. **(T-3)** Portable security lighting is provided during the hours of darkness if sufficient permanent lighting is not available.

11.3.6.3. At non-United States military installations, the AC will determine the adequacy of local security capabilities to provide aircraft security commensurate with this chapter. **(T-3)** If the AC determines security to be inadequate, the aircraft will depart to a station where adequate security is available. **(T-3)**

11.3.6.4. Inform the security force of all visits to the aircraft. **(T-3)** The AC will identify the security force POC. **(T-3)**

11.3.6.5. Security support is a continual requirement and is not negated by the presence of aircrew or ground crew members. Security force support terminates only after the aircraft doors are closed and the aircraft taxis.

11.3.6.6. Locking and Sealing. Lock and seal the aircraft during a “remain over night” (RON) on non-secure ramps. **(T-3) Note:** Lock the aircraft during all off-station missions remaining overnight. **(T-3)**

11.3.7. Aircrew Arming. The AC will direct armed crew members to remain with the aircraft and maintain surveillance of aircraft entrances and activities in the aircraft vicinity. **(T-3)**

Obtain a means to report suspicious or hostile activity to security forces (e.g., land mobile radio, cellular phone).

11.3.7.1. When crews are directed to carry weapons, at least one flight deck crew member, and one LM will be armed. **(T-3)** All crew members should know who is armed. The following procedures apply when arming is necessary:

11.3.7.1.1. Weapons Issue. Before departing home station, authorized crew members will obtain weapons, ammunition, box (if required), lock, and key. **(T-3)**

11.3.7.1.1.1. Crew members will be armed according to AFI 31-117, *Arming and Use of Force by Air Force Personnel*. **(T-2)**

11.3.7.1.1.2. Crew members must present a current AF Form 523, *USAF Authorization to Bear Firearms*. **(T-2)**

11.3.7.1.1.3. Crew members will be reissued the same weapon until the mission terminates at home station. **(T-3)** If an armed crew member must leave the crew enroute, transfer the weapon to another authorized crew member using AF Form 1297, *Temporary Issue Receipt*. **(T-3)**

11.3.7.1.2. Loading and Transfer of Weapons. Load and unload weapons at approved clearing barrels/facilities, if available. **(T-3)**

11.3.7.1.2.1. To transfer a loaded weapon to another crew member, place the weapon on a flat surface. **(T-3)**

11.3.7.1.2.2. Do not use a hand-to-hand transfer if weapon is not transferred in holster. **(T-3)**

11.3.7.1.3. Wearing of Weapons for Anti-Hijacking. Wear weapons in a holster, concealed at all times to protect the identity of armed crew members. **(T-3)**

11.3.7.1.3.1. Do not wear weapons off the flight line. **(T-3)**

11.3.7.1.3.2. **Exception:** Crew members may wear weapons to and from the C2, armories, and other facilities associated with aircrew activities such as base operations, fleet service, cargo or passenger terminals, flight line cafeterias, snack bars, etc.

11.3.7.1.4. Military Passenger Terminal Procedures. Armed crew members must discreetly identify themselves to military passenger service personnel upon arrival at security checkpoints. **(T-3)**

11.3.7.1.4.1. One crew member will present:

11.3.7.1.4.1.1. A valid set of crew orders. **(T-3)**

11.3.7.1.4.1.2. Military identification card. **(T-3)**

11.3.7.1.4.1.3. AF Form 523, USAF Authorization to Bear Firearms, authorizing the carrying of concealed weapons. **(T-3)**

11.3.7.1.4.2. Once terminal personnel verify this, they then authorize the crew member to vouch for the remaining crew members. The entire crew then proceeds through the magnetometer without removing objects from their pockets. This

prevents passengers from determining which crew members are armed.

11.3.7.1.5. Weapons Storage In-Flight. Crew members will be armed before beginning preflight, on-load or off-load duties and until completion of all post-flight duties. **(T-3)**

11.3.7.1.5.1. When no passengers are aboard, weapons may be stored in the gun box or rack in-flight after a satisfactory stowaway check.

11.3.7.1.5.2. If no gun box or rack is available, retain weapon for the duration of the flight. **(T-3)** Crew members will rearm before landing. **(T-3)** Weapons should not be unloaded before placing them in a gun box or rack.

11.3.7.1.6. Weapons Storage on the Ground. Aircraft gun box or rack use is acceptable at military base locations providing the aircrew coordinates with base security forces so they can provide a 24 hour guard at the aircraft.

11.3.7.1.6.1. When storing weapons in the gun box or rack:

11.3.7.1.6.1.1. Weapons should normally not be unloaded.

11.3.7.1.6.1.2. Inform C2/base operations which crew member has the gun box or rack key/combination. **(T-3)**

11.3.7.1.7. Crew Rest. During crew rest, store weapons in the most secure facility available, normally the base armory. **(T-3)** If a weapons storage facility is unavailable, or the country prohibits or restricts the entry of weapons, secure firearms and ammunition in the gun box or rack. **(T-3)**

11.3.7.1.8. Aircraft Without a Gun Box or Rack. If an aircraft without a gun box or rack must remain overnight at a location where a government-owned storage facility is unavailable, use the nearest acceptable facility.

11.3.7.1.8.1. Acceptable storage facilities are:

11.3.7.1.8.1.1. US or Allied military services armories.

11.3.7.1.8.1.2. US National Guard and Reserve armories.

11.3.7.1.8.1.3. US civil law enforcement armories.

11.3.7.1.8.2. If none of these are available, or the AC of MC believes weapons security may be compromised, crew members may secure their weapons in their quarters. One crew member will remain with the weapons at all times. **(T-3)** In this case, turn the ammunition over to the AC. **(T-3)**

11.3.7.2. Due to the dynamic nature of rescue, contingency and combat operations, unit commanders will designate all aircrew as arming group "A" with the guidance provided in AFI 31-117 and AFI 36-2654, *Combat Arms Program*.

11.3.8. Protective Standards For Aircraft Carrying Distinguished Visitors (DV). This paragraph applies specifically to aircraft transporting DVs Code 4 or above. The AC is responsible for aircraft security at enroute stops.

11.3.8.1. DoD Installations. Notify base security forces of estimated arrival and departure times. Request security forces maintain continuous security surveillance during the entire

ground time. If the installation is unable to comply, arrange for the best protection available.

11.3.8.2. Non-DoD Installations. Contact the airport manager or installation commander to arrange for force protection. If available security is inadequate, purchase additional security using AF Form 15, *USAF Invoice*.

11.3.9. Utilizing Local Security. Request area patrol coverage from local security forces to include back-up response forces. If local authorities request payment for this service, use AF Form 15.

11.3.10. Departure without Crew Rest. If local security forces are unacceptable or unavailable, the AC may waive FDP restrictions and depart as soon as possible for a destination with adequate force protection.

11.3.10.1. If unable to depart the location due to system malfunction, the aircrew must secure the aircraft to the best of their ability. **(T-3)** Aircrew will not leave the aircraft unattended. **(T-3)** Crew rest requirements are subordinate to aircraft security when the airframe may be at risk.

11.3.10.2. The AC or MC should rotate a security detail among the crew to provide for both aircraft protection and crew rest until relief is available. Coordinate through home station channels or the nearest DoD installation, US embassy, local military, or law enforcement agencies as appropriate to acquire additional security.

11.3.11. Tailored Security Measures. Standard physical security measures may be impractical at times due to mission, terrain, climate, sociopolitical sensitivities, or other factors. For example, some countries do not allow armed security personnel. On other deployments, the mission may rely on maintaining a low profile and attracting as little attention as possible.

11.3.11.1. At such locations, tailor security measures to meet unique requirements when necessary.

11.3.11.2. As a minimum, lock aircraft entry points and hatches. **(T-3)** If it is not possible to lock the aircraft, secure aircraft entry points and hatches in a manner to indicate unauthorized entry (i.e., taping hatch release handles or using seals).

11.3.11.3. The AC is the final authority for determining tailored security measures. **(T-3)**

11.3.11.4. Contact with US Embassy personnel is required at locations where security agreements are not in existence. **(T-2)**

11.3.12. Ground Security Teams. Ground security teams may be needed to guard the aircraft for planned overnight stops. Teams may be sized as appropriate based on mission requirements and threat evaluation (two member's minimum) and may be made up entirely, or in part, by members from other services. Teams may travel in MEP status and are responsible to the AC at all times. In turn, the MC is responsible for their welfare (transportation, lodging, etc.)

11.3.12.1. The MC will ensure security team members receive a mission briefing, aircraft egress training, and passenger briefings, as appropriate. **(T-3)** The SQ/CC is the final approval authority for the need of ground security teams for their aircraft and authority may be delegated to no lower than the AC.

11.3.12.2. Ground security teams will comply with AFMAN 24-204 at all times when carrying weapons, ammo and equipment onboard the aircraft. **(T-2)**

11.3.12.3. Due to the sensitivity of weapons in foreign countries, ground security teams will keep their weapons inside the aircraft and out of sight of foreign nationals, even if the FCG allows them to be carried outside the aircraft. **(T-2)** If a destination requires weapons to be carried outside the aircraft, the controlling MAJCOM's A3 must approve such action prior to deployment.

11.3.13. Unauthorized Entry. Use the following to detect unauthorized entry:

11.3.13.1. Use the aircraft lock and available aircraft ground security locking devices. **(T-3)**

11.3.13.2. Secure the doors in a manner that can indicate unauthorized entry (e.g., tape inside of doors to airframe so that entry pulls tape loose). **(T-3)**

11.3.13.3. Close and seal the crew entrance door with a metal boxcar seal (or other controllable device) and record/retain the seal number with the aircraft forms. **(T-3)**

11.3.13.4. Wipe the immediate area around lock and latches clean to aid in investigation of forced entry. **(T-3)**

11.3.13.5. Report any unauthorized entry or tampering to the Office of Special Investigation (OSI), security forces or local authorities, and the C2 agency. **(T-3)** Thoroughly inspect aircraft prior to flight. **(T-3)**

11.3.13.6. Coordinate with the local base operations representative on procedures for servicing the aircraft while the crew is away. If a padlock is used, leave the key or combination with base operations or the representative for servicing and MX personnel. **(T-3)**

11.3.14. Aircraft Security Risk Assessment. Aircrews should reference joint risk assessment management program (JRAMP) when staging OCONUS.

11.3.14.1. In coordination with planning agencies and electronic resources (such as JRAMP) use the aircraft force protection risk assessment matrix in **Table 11.1** to help assess the risk to parked aircraft in a permissive environment. This matrix is used for planned overnight stops at non-US military installations overseas and civilian airfields.

**Table 11.1. Aircraft Force Protection Risk Assessment Matrix.**

| FACTORS | 0 POINTS | 5 POINTS | 10 POINTS | 15 POINTS |
|---|---|---|---|---|
| The local terrorist threat is currently: (1) | Negligible | Low | Medium (3) | High (3) |
| The local mob violence threat is currently: (1) | Negligible | Low | Medium (3) | High (3) |
| Installation/Airport security services are: | Provided by host military forces only | Provided by host | Contract security forces only | Not available (3) |

| | | | | |
|---|---|---|---|---|
| | | military and contract security forces | | |
| Host security forces control entry: | The flightline and installation/airport | To the flightline only | To the installation/airport only | To neither the flightline nor the installation/airport (3) |
| There is perimeter fencing or barriers around: | The flightline and installation/ airport | The flightline only | The installation/ airport only | Neither the flightline or the installation/ airport (3) |
| Host security forces will provide_____ to guard the aircraft | An armed sentry | An unarmed sentry | Random security patrol coverage only | No sentry or random patrol coverage (3) |
| Host security forces will_____ security incidents involving the aircraft | Provide armed response to | Provide unarmed response to | Notify civilian authorities of | Notify the PIC of (3) |
| The aircraft will be parked: | | Separate from host military and civilian aircraft | Among other host military aircraft only | Among civilian aircraft |
| The aircraft will _____illuminated during the hours of darkness (2) | | Be adequately | Be marginally | Not be (3) |
| **TOTAL POINTS:**<br>1. Derive the local threat from valid intelligence sources only.<br>2. "Adequate lighting" is equal to the illumination provided by one standard USAF light cart.<br>3. If a security response team and security patrol is not present, commanders should consider deploying or contracting security personnel. | | | | |

11.3.14.2. A cumulative score of less than 55 implies that normal unmanned aircraft security measures are adequate. A score of 55 to 90 implies moderate security risk. Commanders may consider additional security measures. If the cumulative score is greater than 90, commanders should consider deploying or contracting security personnel. The SQ/CC or deployed commander is the final approval authority for aircraft security issues. Authority may be delegated no lower than the AC.

11.3.14.2.1. **Exception:** During unscheduled or emergency landings, the AC is the final approval authority for aircraft security. The MC should contact the US Embassy or United States Defense Attaché Office for security assistance. **Note:** Normally, additional security for the aircraft is not required at military installations within a NATO country or US civilian airfields approved by the FAA/ Transportation Security Administration (TSA).

11.3.15. Standby/Alert Aircraft Security. Ensure aircraft hatches and doors are secure to show unauthorized entry.

11.3.15.1. Seal the crew entrance door with a box car seal, or other controllable device, which prevents entry without damaging the door or lock. **(T-3)**

11.3.15.2. Notify the C2 agency that the aircraft is sealed and provide them a means to access the aircraft in an emergency. **(T-3)**

11.3.15.3. Annotate the AFTO 781 with the time the aircraft was sealed. **(T-3)**

11.3.15.4. The C2 senior controller may grant access to a sealed aircraft.

11.3.15.4.1. Document time of entry and ensure it remains launch capable. **(T-3)**

11.3.15.4.2. The AC or designated representative must be present if access to the aircraft is necessary and ensures the aircraft is resealed. **(T-3)**

11.3.15.4.3. The aircrew pre-flight portion remains valid if performed by one aircrew, sealed, and flown by another aircrew. **Note:** WG/CCs should develop local procedures for documentation and management in accordance with T.O. 00-20-1.

11.3.16. Enroute Security. If required, a ground security team may be assigned to the mission.

11.3.17. Entry Control Procedures. Unescorted entry is granted to aircrew members and support personnel assigned to the mission who possess their home station AF Form 1199, *Air Force Entry Control Card*, supported by an entry access list (EAL) or aircrew orders. Crew members and assigned crew chiefs are authorized escort authority.

11.3.17.1. Normally, non-United States nationals, such as cargo handlers, can perform their duties under escort and should not be placed on the EAL.

11.3.17.2. Personnel not on the EAL or aircrew orders must be escorted within the area. **(T-3)**

11.3.18. Preventing and Resisting Hijacking. Due to the sensitive nature of anti-hijacking procedures, aircrew members should reference AFI 13-207, DAFI 31-101, and FIH. Some aircraft contain equipment and documents that require protection per DoD 5200.1-R and AFI 16-1404, *Air Force Information Security Program*.

11.3.18.1. Do not release any information concerning hijacking attempts or identify armed aircrew members or missions to the public. **(T-3)**

11.3.18.2. The Air Transportation Security Act of 1974 and the Antihijacking Act of 1974 vest the FAA Administrator with exclusive responsibility for the direction of law enforcement activity in aircraft hijacking situations involving all aircraft (civil and military) in-flight in the United States.

11.3.18.3. Anti-hijacking is a crew duty performed exclusively by aircrew personnel. The hijacking of an USAF aircraft could create a serious international incident and jeopardize the safety of passengers and property. Some hijackers are mentally disturbed, emotionally unstable individuals for whom the threat of death is not a deterrent, but a stimulus to crime. Passenger terminals should be used for passenger screening to the maximum extent possible.

11.3.18.4. In taking action during an aircraft hijacking situation, military forces will act under military command within the scope of their duties. **(T-3)**

11.3.18.5. In the event an aircraft involved in an aircraft hijacking situation is carrying documents, equipment, or material that DoD has determined to be highly sensitive, or weapons of mass destruction, DoD will provide the FAA, and where appropriate, the Federal Bureau of Investigation (FBI) with all pertinent information. **(T-0)** Where possible, the FAA will consult and cooperate with DoD prior to directing any law enforcement activity. **(T-0)**

11.3.18.6. An aircraft is most vulnerable to hijacking when the aircrew is aboard and the aircraft is operationally ready for flight.

11.3.18.7. Make a concerted effort to prevent the hijacking of military or military contract aircraft by detecting potential hijackers before they board the aircraft.

11.3.18.8. Should preventive efforts fail, any actual attempt to hijack a military aircraft is resisted in a manner appropriate to the situation.

11.3.18.9. Since air piracy may be committed by political terrorists or by individuals to whom the threat of death is not a deterrent but a stimulus, ordinary law enforcement procedures may be ineffective. Thus, successful conclusion of a hijacking situation and apprehension of the hijackers may require use of specialized law enforcement techniques and procedures.

11.3.18.10. Delaying actions have been most successful in overcoming hijackings without loss of life or property.

11.3.18.11. Render assistance to hijacked civil or military contract aircraft as requested by the AC of the aircraft and the authority exercising operational control of the anti-hijacking effort. **(T-3)**

11.3.18.12. Preventive Measures. Commanders at all levels must ensure preventive measures are taken to minimize access to the aircraft by potential hijackers. **(T-2)** Aircrews will make every reasonable effort to resist an aircraft hijacking attempt. Resistance may vary from dissuasion, to direct physical confrontation, including the use of deadly force.

11.3.19. Acceptance of Passengers. The host station passenger processing or manifesting facility should conduct anti-hijacking inspections. Do not board passengers until the AC is fully satisfied with inspection results. **(T-3)** In the absence of qualified passenger service representatives, the AC will ensure the anti-hijacking inspection of passengers and baggage is accomplished. **(T-3)**

11.3.19.1. **Exception:** Supporting/supported forces may be anti-hijack inspected at the aircraft by the aircrew.

11.3.19.2. The TSA provides the latest guidance on passenger screening and carry-on allowances.

11.3.19.3. Aircrew must ensure thorough screenings are accomplished when processing passengers at locations without a military passenger terminal. **(T-3)**

11.3.19.4. Carry-on restrictions apply to all passengers required to process through the passenger terminal. Carry-on restrictions do not apply to personnel not required to process through the passenger terminal. This includes:

11.3.19.4.1. Crew members listed on the Flight Authorization for that mission.

11.3.19.4.2. MEPs for that mission.

11.3.19.5. Consider baggage contained in areas not readily accessible in-flight as checked baggage, even if carried to the aircraft by the passengers. This includes, but is not limited to segregated baggage compartments, floor loaded baggage tied down with cargo straps/chains, palletized baggage, and baggage in baggage bins.

11.3.19.6. The aircrew will brief passengers required to process through the passenger terminal, or equivalent, that baggage in these areas cannot be accessed in-flight. **(T-3)** If these passengers attempt to access checked baggage in-flight, all attempts should be made to stop the passengers from accessing the baggage. Land the aircraft at the nearest suitable airport (preferably a military facility) with appropriate law enforcement personnel. **(T-3)** If needed, request assistance removing the passenger(s) and any accompanying baggage from the aircraft. Comply with all law enforcement direction. **(T-3)**

11.3.19.7. Medical facility commanders are responsible for anti-hijacking inspection of patients. When patients are delivered to the aircraft by civilian sources, the aircrew will perform required inspections prior to loading. **(T-3)**

11.3.19.8. For aeromedical evacuation (AE) missions, the medical crew director (MCD) is the final authority for determining what medical items can be carried by/for AE patients.

11.3.19.9. During exercises or contingencies in support of combat operations involving the movement of large groups of personnel, the unit being supported should manifest passengers and perform anti-hijacking inspections.

11.3.19.10. Passengers will not carry weapons or ammunition on their person or in hand-carried baggage aboard an aircraft. **(T-3)**

11.3.19.10.1. **Exception** : Individuals specifically authorized to carry weapons with coordination of the AC. In all cases the crew will be aware of location of weapons and ammunition. **(T-3)**

11.3.19.11. Munitions. Troops and deadhead crew members will not retain custody of ammunition on an aircraft. **(T-3)** Turn munitions in to the troop commander or AC. **(T-3)** Troops will secure weapon safe and clear prior to entering aircraft **(T-3)**

11.3.19.11.1. During combat operations, when the tactical situation dictates, personnel who are prepared to engage an enemy force immediately upon deplaning at the objective may carry unchambered, loaded weapons aboard the aircraft at the discretion of the troop commander or team leader, with the AC's concurrence.

11.3.19.11.2. Dummy mags that can be easily identified may be loaded for training at the order of the team leader in coordination with the aircrew.

11.3.19.11.3. Designated security teams will only be armed in-flight on specifically designated missions identified on the mission “frag” as “in-flight arming required.” **(T-3)**

11.3.19.11.4. If weapons must be cleared, instruct the individual(s) to:

11.3.19.11.4.1. Move to a safe, clear area at least 50 ft. from any aircraft, equipment, or personnel before un-holstering or un-slinging their weapons. **(T-3)**

11.3.19.11.4.2. Clear weapons in accordance with standard safety procedures. Ensure troop commander or AC retains ammunition in accordance with **paragraph 11.3.7**. **(T-3)**

11.3.20. Initial Response. When an act of air piracy involves an Air Force installation or aircraft within the United States, response is according to the following guidelines until such time as FAA assumes active direction of anti-hijacking efforts. Resist all attempts to hijack a military aircraft. **(T-3)** Resistance may vary from simple dissuasion, through deception and subterfuge, to direct physical confrontation, including the prudent use of weapons.

11.3.20.1. To counter a hijacking, actual or threatened, while the aircraft is on the ground, delay movement of the aircraft to provide time for ground personnel and the aircrew to establish communication and execute coordinated resistance actions. **(T-3)**

11.3.20.2. The authority for determining when ground resistance is discontinued is vested in the highest available level of command. When adequate communication cannot be established, or when time does not permit, this authority is delegated in the following order:

11.3.20.2.1. MAJCOM commander exercising control of the aircraft.

11.3.20.2.2. MAJCOM commanders in whose AOR the airfield lies.

11.3.20.2.3. Senior operational commander on scene.

11.3.20.2.4. AC in compliance with this manual.

11.3.20.3. The AC will not takeoff if the hijacked aircraft is carrying weapons of mass destruction. **(T-0)** Refer to DoD 5210.41M, for additional guidance.

11.3.21. In-Flight Resistance. In the event of a hijacking, crew members will act immediately and resourcefully, without instruction, in order to counter the attacker successfully. **(T-3)** Evaluate the nature of the threat, danger to life or crippling damage to the aircraft in-flight, destination indicated by the hijacker, and the presence of sensitive material onboard prior to taking action. Some counter-hijacking actions the aircrew may consider are:

11.3.21.1. Engage the hijacker(s) in conversation in an attempt to calm them and to evaluate what course of action might be effective.

11.3.21.2. Dissuade the hijacker.

11.3.21.3. Use facts or subterfuge to convince the hijacker intermediate stops are necessary.

11.3.21.4. Propose more favorable alternatives, such as landing in a neutral, rather than a hostile, country.

11.3.21.5. Exploit any reasonable opportunity to incapacitate or overcome the hijacker physically, including the prudent use of firearms.

11.3.21.6. In any suspected or actual hijacking, get the aircraft on the ground as quickly as possible and keep it there. If the pilot needs to land quickly, the pilot requests an emergency descent clearance from ATC.

11.3.22. Communications between Aircrew and Ground Agencies. Aircrews facing a hijacking threat should transmit an in-the-clear notification of hijacking to ATC. Notify ground agencies as soon as practical and follow-up with situation reports as circumstances permit. Covert signals are no longer used per FAA guidance.

**11.4. Customs and Border Clearance.**

11.4.1. Border Clearance. Customs, Immigration, and Agriculture require certain forms for border clearance. **(T-2)** The LM will ensure that necessary forms are contained in the aircraft mission kit, distribute the forms to the crew, and ensure their completion prior to landing. **(T-3)** Crew members will deliver the forms to the proper persons and also comply with the requirements of this publication. **(T-3)**

11.4.2. The border clearance responsibility is as designated by the base or area command in accordance with DTR 4500.9R, Defense Transportation Regulation, Part V, *Department of Defense Customs and Border Clearance Policy and Procedures*, DAFI 24-602 Volume 2, *Cargo Movement*, applicable FCG, and other US entry requirements and related areas.

11.4.2.1. Normal Operations. The unit dispatching the mission is normally responsible for the border clearance of its aircraft.

11.4.2.1.1. When support is not available, border clearance is the responsibility of the AC. **(T-3)** Duties may be assigned to ground personnel or the LM, but the AC retains ultimate responsibility. When an HC-130J aircraft is on-loaded at a base without an air traffic function, comply with the following:

11.4.2.1.1.1. Cargo entry documents are in proper order. **(T-3)**

11.4.2.1.1.2. Departure or arrival to the US is through a port of entry where border clearance can be obtained. **(T-3)**

11.4.2.1.1.3. Border clearance for aircraft cargo, passengers, crew and baggage, if required, is obtained before takeoff to a foreign area, or after arrival from a foreign area. **(T-3)**

11.4.2.1.1.4. Aircraft spraying is accomplished, if required (see FCG and **paragraph 9.5**). **(T-3)**

11.4.2.2. Procedures for US Entry. Distribute personal customs declarations to all passengers and crew members while enroute. Brief passengers and crew members on customs regulations, and prepare and compile necessary border clearance forms for the ACs signature.

11.4.2.2.1. Enroute, notify the base of intended landing of any change in ETA, to ensure border clearance is accomplished as soon as possible after landing.

11.4.2.2.2. The MC must obtain a permit to proceed when the mission requires an aircraft, which has landed in the US for customs clearance, to proceed to another US base to obtain border clearance. **(T-2)** The permit delays customs inspection of cargo, passengers, and crew until arrival at the offload station, saving intermediate offloading

and reloading normally required for customs inspection. The permit is valid only to the airport of next landing, where the border clearance is completed, or a new permit obtained. Do not make intermediate stops unless required by an emergency, or directed by the controlling agency. **(T-3)**

11.4.2.2.3. When an aircraft lands for a US border clearance, a US Customs representative normally meets the aircraft to obtain the required documents. Do not deplane passengers or crew members unless necessary for safety (e.g., flare safety check) or preservation of life and property. **(T-3)** Do not unload until approved by customs and agriculture personnel or their designated representatives. **(T-3)** This procedure applies to the initial landing in the US and all subsequent landings until crew, passengers, and cargo complete final border clearance.

11.4.2.3. Inspections of US Aircraft by Foreign Officials. Follow USAF policy on status of military aircraft as stated in the FCG. This policy holds that US military aircraft are immune from searches, seizures, and inspections (including customs and safety inspections) by foreign officials. In addition, MC/ACs must be aware of, and adhere to, any specific FCG provisions for individual countries. **(T-0)**

11.4.2.3.1. Customs Search. If confronted with a search request by foreign authorities, aircrews should consider the following procedures:

11.4.2.3.1.1. In most cases, search attempts may be stopped by a statement to the foreign officials that the aircraft is sovereign and not subject to search without consent of headquarters (HQ) USAF or the US Department of State 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.

11.4.2.3.1.2. If foreign authorities insist on conducting a search, make every effort to delay the search until contact is made with HQ USAF (through MAJCOM C2) or the appropriate American Embassy.

11.4.2.3.1.3. The AC should unequivocally state that they have no authority to consent to the search and that they must relay the host nation request to these agencies for decision.

11.4.2.3.1.4. The AC should then notify these agencies of the request by the most expeditious means available and follow their instructions. **Note:** If necessary, seal the aircraft, enter crew rest, and cancel departure intentions until resolution of the matter by the appropriate authority.

11.4.2.3.2. If foreign officials refuse to desist in their search request, the AC should indicate that they would prefer to fly the aircraft elsewhere (provided fuel and mechanical considerations permit a safe departure) and request permission to do so.

11.4.2.3.3. If permission is refused and the foreign authorities insist on forcing their way on board the aircraft, the AC should state that they protest the course of action being pursued and that they intend to notify both HQ USAF and the appropriate American Embassy of the foreign action.

11.4.2.3.4. Without physical resistance, the AC should then allow the foreign agents onboard the aircraft, and thereafter report the incident to HQ USAF and appropriate embassy, as soon as possible.

11.4.2.3.5. Other procedures may apply when carrying sensitive cargo or equipment.

11.4.3. Exercise and Contingency Operations.

11.4.3.1. General. Certain missions, which do not transit normal ports of entry or exit, require special procedures to expedite compliance with customs, public health, immigration, and agricultural requirements. A joint memorandum of understanding establishes procedures and waivers.

11.4.3.2. Implementation. 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 US on-load or offload base instead of the normal port of entry, or at the foreign on load or offload base.

11.4.3.3. Customs Procedures. There are no outbound requirements. Filing of CBP Form 7507 is not required unless directed.

11.4.3.3.1. For inbounds, prepare one copy of the following documents before arrival:

11.4.3.3.1.1. CBP Form 7507 (passenger list not required).

11.4.3.3.1.2. Cargo Manifest. For troops out of country less than 140 days:

11.4.3.3.1.2.1. Troop commander’s certificate for examination of troop baggage.

11.4.3.3.1.2.2. Upon arrival at a CONUS offload base, a customs representative will meet the aircraft and accept the troop commander's certificate with respect to troop baggage. Individual baggage declarations are not required. The troop commander should have inspected troop baggage. Troops debark under the observation of the customs representative with only a spot check of articles and baggage. The customs officer may elect to make a more extensive inspection.

11.4.3.3.1.3. For troops out of the country 140 days or more:

11.4.3.3.1.3.1. One copy of DD Form 1854, *U.S. Customs Accompanied Baggage Declaration,* or CBP Form 6059B for each passenger and crew member.

11.4.3.3.1.3.2. Upon arrival at a CONUS offload base, a customs representative will meet the aircraft and collect all declarations. Troops debark under the observation of the customs representative, who may make discretionary examination of the baggage.

11.4.3.3.2. Immigration Procedures. There are no outbound requirements.

11.4.3.3.2.1. For inbounds, submit one copy of CBP Form 7507 to the immigration inspector. **(T-3)**

11.4.3.3.3. Agriculture Procedures. There are no outbound requirements.

11.4.3.3.3.1. Consult the FCG for inbound requirements.

11.4.3.4. Before loading, the Command responsible for airlifted cargo will clear vehicles and cargo of snails, pest plants and of soil. **(T-2)**

11.4.3.5. On arrival, agricultural inspectors inspect the aircraft after troops have disembarked. Crew members should assemble remains of in-flight lunches for prompt removal by fleet service personnel.

11.4.3.6. Military Customs Preclearance Inspection Program. The military customs program outlined in DTR 4500.9R Part V, chapter 506 was developed to assist DoD and other US Government agencies in the control of narcotics, contraband, and prohibited agricultural products, and to expedite entry of DoD personnel and material into the customs territory of the US.

11.4.3.6.1. Military customs inspectors accomplish this publication immediately prior to departure and may conduct more than one preclearance inspection on CONUS-bound aircraft.

11.4.3.6.2. When security considerations necessitate deviation from this policy, mission planners must coordinate with the appropriate agency to prevent jeopardizing the mission. **(T-3)**

## 11.5. Maintenance.

11.5.1. In all cases where aircrews must service the aircraft without qualified MX specialist assistance, comply with the appropriate maintenance T.O. **(T-3)**

11.5.2. Aircrews are not qualified to accomplish the required ground inspections. **(T-3)** In those instances where MX personnel are not available, the aircrew will enter a red dash symbol in the AFTO Form 781H 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. **(T-3)**

11.5.3. Aircraft Servicing and Ground Operations. Aircrews are qualified and authorized to perform those aircrew maintenance support tasks found in this volume. The aircrew performs these tasks only in the absence of qualified MX personnel.

11.5.3.1. Without exception, aircrews will use the applicable checklists and job guides during all refueling and defueling operations. **(T-3)**

11.5.3.2. The CSO and LM will assist the AC in maintaining and verifying the AFTO Form 781. **(T-3)**

11.5.3.2.1. Loading and Unloading During Servicing. The LM will not load or unload cargo containing explosives, oxygen, flammable gases or liquids during concurrent servicing (CS). **(T-3)** Winching is prohibited. **(T-3)** The LM will ensure cargo loading or unloading does not jeopardize passenger safety. **(T-3)**

11.5.3.2.1.1. Passengers shall not board or exit the aircraft during servicing. **(T-3)**

11.5.3.2.1.2. Passengers are not required to ground themselves.

11.5.3.2.2. Liquid Oxygen (LOX) Servicing. Crew members will not service liquid oxygen under any conditions. **(T-2)** Simultaneous fuel and oxygen servicing is not authorized. **(T-2)**

11.5.3.2.3. Aircraft Refueling. Crew members qualified in ground refueling may perform refueling duties in accordance with this chapter. A Crew chief should be scheduled on those missions where a need is anticipated.

11.5.3.2.3.1. Aircrews should not refuel except in cases when MX support is not readily available and the mission would be delayed.

11.5.3.2.3.2. Crew members may augment MX refueling teams at enroute stops.

11.5.3.2.3.3. Crew members may perform refueling duties at austere locations or at stations without MX support.

11.5.3.2.3.4. Crew members acting as refueling supervisors and panel operators will comply with T.O. 00-25-172 and refueling job guides. **(T-3)**

11.5.3.2.3.5. Log all off-station fuel purchases per the guidance provided in AFI 11-253, *Managing Purchases of Aviation Fuel and Ground Services,* and DoDI 5000.64_DAFI 23-111, *Accountability and Management of DoD Equipment and Other Accountable Property,* if applicable.

11.5.3.3. Concurrent Ground Operations. The AC and chief servicing supervisor (CSS) will ensure CS is accomplished in accordance with T.O. 00-25-172 and servicing T.O.s. **(T-3)**

11.5.3.3.1. Aircrew performing Dash-1 preflight inspections or cargo loading concurrent with servicing must coordinate with the CSS. **(T-3)** The CSS will remain in continuous intercom contact with fuel servicing team members during the entire servicing operation. **(T-3)** When the aircrew is at the aircraft, the AC is responsible for all aspects of aircraft operations and shall inform the CSS how aircrew members participate in passenger evacuation and safety. **(T-3)**

11.5.3.3.2. Use the following guidelines when CS operations are conducted with passengers on board:

11.5.3.3.2.1. The AC shall designate a current and qualified crew member to remain on the flight deck to monitor interphone. **(T-3)** This crew member must be prepared to broadcast a request for emergency assistance on a radio tuned to the appropriate agency with ready access to an emergency response team. **(T-3)** The public address (PA) may be used to direct passenger evacuation in an emergency.

11.5.3.3.2.2. The passenger compartment monitor (PCM) shall brief passengers on emergency egress, exits, prohibitions, and hazards. **(T-3)** Passengers will remain seated but do not wear seat belts during CS. **(T-3)** Ensure passengers turn off all portable electronic devices, except medically required devices, prior to servicing. **(T-3)**

11.5.3.3.2.3. Passenger representatives assist the PCM when passengers board and exit. Passengers must remain outside the vapor hazard area, the fuel servicing safety zone, oxygen servicing area, and 25 ft. from fuel vents during servicing. **(T-3)**

11.5.3.3.2.4. The AC, designated aircrew representative, or CSS will advise PCMs if there is a need to evacuate passengers. **(T-3)**

11.5.3.3.2.5. Unless environmental conditions dictate, the crew entrance door and left paratroop door should remain open and the right paratroop door should remain closed and locked during concurrent servicing. The PCM may lower, but not lock, the left paratroop door during inclement weather.

11.5.4. Aircrew/Maintenance Engine Runs. Mixed aircrew/MX engine runs are not normally accomplished. When an aircrew member is necessary to start or run up engines for maintenance purposes, the following procedures apply:

11.5.4.1. MX personnel will accomplish all necessary inspections and preparations for the engine run. **(T-3)** These actions include but are not limited to:

11.5.4.1.1. Intake/exhaust inspections.

11.5.4.1.2. Access panel security servicing

11.5.4.1.3. AFTO Forms 781 documentation.

11.5.4.2. Aircrew members will begin with the POWER UP checklist, and complete all appropriate checklists through the BEFORE LEAVING AIRPLANE checklist. **(T-3)** Do not deviate from the flight crew checklist except when maintenance requires less than four engines to be started. **(T-3)**

11.5.4.3. Operate symmetrical engine pairs only when power settings above ground idle are necessary. **(T-3)**

11.5.4.4. Aircrew must ensure the cargo ramp and door are closed for all engine run-up's above flight idle. **(T-3)**

11.5.5. Towing. Do not conduct towing operations if qualified ground personnel are present. **(T-3)** The AC will coordinate with the senior MX officer or superintendent to ensure the towing supervisor and crew are qualified. **(T-3)**

11.5.5.1. Towing requires prior approval from the airfield operations officer or manager. **(T-3)** The AC will ensure the tow team supervisor briefs all personnel on their duties and the associated hazards. **(T-3)** Personnel must use the proper checklists. **(T-3)**

11.5.5.2. 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. **(T-3)** Under no circumstances will any crew member act as the towing supervisor. **(T-3)**

11.5.5.3. CAUTION: Aircraft damage may occur if the improper tow bar is used.

11.5.6. Hostile Environment Repair Procedures (HERP). Reference AFSOCM 11-201, *Hostile Environment Repair Procedures*, T.O. 1C-130(H)J-1, and checklists.

11.5.6.1. HERP kit contents will mirror MC-130J HERP kits described in AFSOCMAN 11-201. **(T-2)**

11.5.6.2. Stow HERP kit in accordance with AFI 11-2HC-130JV3 Addenda A.

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## Attachment 1

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T.O. 1C-130(H)J-9, *Cargo Loading Manual*, 31 August 2019

T.O. 1C-130(H)J-1, *Flight Manual*, 31 August 2019

T.O. 1C-130(H)J-1-1, *Flight Manual Performance Data,* 31 August 2019

T.O. 1C-130(H)J-1-4, *Communication/Navigation/Identification Management System (CNI-MS) Operator Manual*, 31 August 2019

T.O. 1C-130(H)J-5-1, *Sample Basic Weight Checklist*, 31 August 2019

T.O. 1C-130(H)J-1CL-1, *Pilot/CSO Checklist*

T.O. 1C-130(H)J-5-2, *Loading Data Manual*

T.O. 1C-130(H)J-1CL-2, *Loadmaster's Checklist*

T.O. 1C-130(H)J-9CL-1, *Loadmaster's On/Offloading Procedures*

T.O. 1C-130(H)J-5, *Weight and Balance*

T.O. 37A9-7-2-1, *Operations, Maintenance, and Illustrated Parts Breakdown—Forward Area Manifold Cart*, PN 87940, 1 January 1999

*Air Transportation Act of 1974*

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***Adopted Forms***

AF Form 15, *USAF Invoice*

AF Form 457, *USAF Hazard Report*

AF Form 523, *USAF Authorization to Bear Firearms*

AF Form 664, *Aircraft Fuels Documentation Log*

AF Form 651, *Hazardous Air Traffic Report*

AF Form 711B, *USAF Mishap Report*

AF Form 1199, *Air Force Entry Control Card*

AF Form 1297, *Temporary Issue Receipt*

AF Form 2282, *Statement of Adverse Effect – Use of Government Facilities*

AF Form 4015, *HARP Computation*

AF Form 4018, *CARP Computation*

AF Form 4052, *C-141/C-130/C-5 Air Refueling Worksheet*

AF Form 4076, *Aircraft Dash 21 Equipment Inventory*

AF Form 4108, *C-130 Fuel Log*

AF Form 4116, *C-130 Navigator Flight Plan and Log*

AF Form 4124, *Flight Crew Information Guide*

AFSOC Form 4139, *Special Operations Refueling Worksheet*

AFSOC Form 4119, *C-130 Fuel Planning Worksheet*

AFTO Form 46, *Prepositioned Life Support Equipment*

AFTO Form 781, *ARMS Aircrew/Mission Flight Data Document*

AFTO Form 781A, *Maintenance Discrepancies and Work Document*

AFTO Form 781H, *Aerospace Vehicle Flight Status and Maintenance Document*

CBP Form 6059B, *Customs Declaration*

CBP Form 7507, *General Declaration (Outward/Inward) Agriculture, Customs, Immigration, and Public Health*

DAF Form 847, *Recommendation for Change of Publication*

DD Form 175-1, *Flight Weather Briefing*

DD Form 365-4, *Transport/Tactical Weight and Balance Clearance, Form F*

DD Form 1385, *Cargo Manifest*

DD Form 1748-2, *Airdrop Malfunction Report*

DD Form 1801, *DoD International Flight Plan*

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

DD Form 1896, *Jet Fuel Identaplate*

DD Form 2130-2, *C-130 E/H/J Load Plan*

DD Form 2131, *Passenger Manifest*

SF 44, *Purchase Order-Invoice-Voucher (Storage Safeguard Form)*

***Abbreviations and Acronyms***

**A/T**—Autothrottle

**AAR**—-Air to Air Refueling

**AARO**—Aircraft to Aircraft Refueling Operations

**AC**—Aircraft Commander

**ACC**—Air Combat Command

**ACAWS**—Advisory, Caution and Warning System

**ACCI**—Air Combat Command Instruction

**ACFP**—Advance Computer Flight Plan

**ACM**—Additional Crew Member

**ACO**—Airspace Control Order

**ADS**—Aerial Delivery System

**ADSB**—Automatic Dependent Surveillance - Broadcast

**AE**—Aeromedical Evacuation

**AETC**—Air Education and Training Command

**AF**—Air Force

**AFCS**—Automatic Flight Control System

**AFH**—Air Force Handbook

**AFI**—Air Force Instruction

**AFMAN**—Air Force Manual

**AFMC**—Air Force Materiel Command

**AFPD**—Air Force Policy Directive

**AFR**—Air Force Reserve

**AFRC**—Air Force Reserve Command

**AFTTP**—Air Force Tactics, Techniques, and Procedures

**AFVA**—Air Force Visual Aid

**AGL**—Above Ground Level

**AIC**—Advanced Instrument Course

**ALTRV**—Altitude Reservation

**ALT SEL**—Altitude Selection

**AMC**—Air Mobility Command

**AMFLMETO**—Adjusted Minimum Field Length For Maximum Effort Take-Off

**ANG**—Air National Guard

**AOA**—Angle of Attack

**AP**—Area Planning

**APPR**—Approach (Switch Setting)

**APU**—Auxiliary Power Unit

**AR**—Air Refueling

**ARC**—Air Reserve Component

**ARCT**—Air Refueling Control Time

**AREP**—Air Refueling Exit Point

**ARFF**—Aircraft Rescue Fire Fighting Requirements

**ARIP**—Air-to-Air Initial Point

**ASRR**—Airfield Suitability and Restrictions Report

**ATC**—Air Traffic Control

**ATIS**—Automatic Terminal Information Service

**ATO**—Air Tasking Order

**ATOC**—Air Terminal Operations Center

**AWL**—Above Water Level

**A3JO**—Air Combat Command (ACC) Personnel Recovery Aviation Branch

**BAK**—Barrier Arresting Kit

**BAU**—Bus Adaptor Unit

**BIU**—Bus Interface

**BRNAV**—Basic Area Navigation Airspace

**C2**—Command and Control

**CARP**—Computed Air Release Point

**CAT**—Category

**CBP**—Customs and Border Protection

**CCC**—Command Control Center

**CCT**—Combat Control Team

**CDS**—Container Delivery System

**CEOI**—Command Electronic Order of Information

**CEP**—Combat Expendable Platforms

**CFL**—Critical Field Length

**CFP**—Computer flight plans

**CNBP**—Communication/Navigation Breaker Panel

**CNI-MS**—Communication/Navigation/Identification Management System

**CNI-MU**—Communication/Navigation/Identification Management Unit

**COMAFFOR**—Commander of Air Force forces

**COMSEC**—Communications Security

**CONUS**—Contiguous United States

**CP**—Copilot

**CP/CSO**—Copilot/Combat Systems Officer

**CRM**—Crew Resource Management

**CSAR**—Combat Search and Rescue

**CSAR-C**—Combat Search and Rescue Coordinator

**CSO**—Combat Systems Officer

**CVR**—Centerline Vertical Restraint

**DA**—Digital Autopilot

**DACO**—Departure Airfield Controlling Officer

**DAFIF**—Digital Aeronautical Flight Information File

**DCMA**—Defense Contract Management Agency

**DETCO**—Detachment Commander

**DFDR**—Digital Flight Data Recorder

**DH**—Decision Height

**DME**—Distance Measuring Equipment

**DoD**—Department of Defense

**DSCA**—Defense Supporting Civil Authorities

**DSN**—Defense Switched Network

**DST**—Degraded Systems Training

**DT**—Developmental Test

**DSDTS**—Dual Slotted Data Transfer System

**DTED**—Digital Terrain Elevation Data

**DV**—Distinguished Visitor

**DVT**—Divert

**DZ**—Drop Zone

**ECM**—Electronic Counter Measures

**EFB**—Electronic Flight Bags

**EGI**—Enhanced GPS INS

**EMCON**—Emission Control

**EMI**—Electro-Magnetic Interference

**EO/IR**—Electro-Optical/Infrared

**EOD**—Explosive Ordnance Disposal

**ER**—Exceptional Release

**ERAA**—Emergency Route Abort Altitude

**ERO**—Engine Running Offload and Onload

**ESRT**—External Security Response Team

**ETA**—Estimated Time of Arrival

**ETE**—Estimated Time Enroute

**ETP**—Equal Time Point

**F—Fahrenheit**—(degrees)

**FAA**—Federal Aviation Administration

**FAF**—Final Approach Fix

**FARP**—Forward Area Refueling Point

**FCC**—Federal Communications Commission

**FCF**—Functional Check Flight

**FCG**—Foreign Clearance Guide

**FCIF**—Flight Crew Information File

**FD**—Flight Director

**FDP**—Flight Duty Period

**FIH**—Flight Information Handbook

**FIR**—Flight Information Region

**FL**—Flight Level

**FLIP**—Flight Information Publication

**FLIP GP**—Flight Information Publication General Planning

**FMC**—Fully Mission Capable

**FMS**—Flight Management System

**FOB**—Fuel Onboard

**FODS**—Fire and Overheat Detector System

**FOM**—Figure of Merit

**FPA**—Flightpath Angle

**FSAF**—First Suitable Airfield

**ft**—feet

**FTU**—Formal Training Unit

**G/A**—Go-Around

**GCAS**—Ground Collision Avoidance System

**GCCS**—Global Command and Control System

**GMRS**—Ground-Marked Release System

**GNSS**—Global Navigation Satellite System

**GPS**—Global Positioning System

**GS**—Groundspeed

**HAA**—Height Above Aerodrome

**HAAR**—Helicopter Air to Air Refueling

**HAHO**—High-Altitude High Opening

**HALO**—High-Altitude Low Opening

**HARP**—High Altitude Release Point

**HAT**—Height Above Touchdown

**HDD**—Head Down Display

**HDG**—Heading

**HDP**—Hose Deployment Personnel

**HE**—Heavy Equipment

**HERP**—Hostile Environment Repair Procedures

**HF**—High Frequency

**HQ**—Headquarters

**hr**—Hour

**HRS**—Hot Refueling Supervisor

**HUD**—Head Up Display

**HUMRO**—Humanitarian Relief Operations

**ICAO**—International Civil Aviation Organization

**IFF/SIF**—Identification Friend or Foe/Selective Identification Feature

**IFR**—Instrument Flight Rules

**ILS**—Instrument Landing System

**IMC**—Instrument Meteorological Conditions

**INS**—Inertial Navigation System

**IP**—Instructor Pilot

**ISRT**—Internal Security Response Team

**JA/ATT**—Joint Airborne/Air Transportability Training

**JMD**—Jumpmaster Directed

**JPADS**—Joint Precision Aerial Delivery System

**JSIR**—Joint Spectrum Interference Resolution

**JRAMP**—Joint Risk Assessment Management Program

**JSOC**—Joint Special Operations Command

**KIAS**—Knots Indicated Airspeed

**KIO**—Knock-It-Off

**KTAS**—Knots True Airspeed

**LAA**—Lowest Acceptable Altitude

**LANTCOM**—Atlantic Command

**LM**—Loadmaster

**LPCR**—Low Power Color Radar

**LRC**—Long Range Cruise

**LSK**—Line Select Key

**LZ**—Landing Zone

**MAJCOM**—Major Command

**MARSA**—Military Assumes Responsibility for Separation of Aircraft

**MC**—Mission Computer

**MCM**—Mobile Contrent Management

**MDA**—Minimum Descent Altitude

**MDS**—Mission Design Series

**MEA**—Minimum En Route Altitude

**MEL**—Minimum Equipment List

**MEP**—Mission Essential Personnel

**MFCD**—Multifunction Control Display

**MFF**—Military Free Fall

**MFLMETO**—Maximum Effort Take-Off

**MHE**—Material Handling Equipment

**MM**—Maritime Mobile

**MNPS**—Minimum Navigation Performance Specifications

**MOCA**—Minimum Obstruction Clearance Altitude

**MPE**—Mission Planning Environment

**MSA**—Minimum Safe Altitude

**MSL**—Mean Sea Level

**MX**—Maintenance

**NM**—Nautical Mile

**NAV**—Navigation

**NAVAID**—Navigation Aids

**NDB**—Non-Directional Beacon

**NOPAC**—North Pacific

**NOTAM**—Notice to Airmen

**NATO**—North Atlantic Treaty Organization

**NVG**—Night Vision Goggle

**OAT**—Outside Air Temperature

**OEI**—One Engine Inoperative

**OCONUS**—Operating Outside The Contiguous United States

**OEI**—One Engine Inoperative

**OG/CC**—Operations Group/Commander

**OGV**—Group Standardization & Evaluations

**OPCON**—Operational Control

**OPR**—Office of Primary Responsibility

**OPORD**—Operational Order

**OPSEC**—Operational Security

**ORE**—Operational Readiness Exercise

**ORI**—Operational Readiness Inspection

**ORM**—Operational Risk Management

**OT**—Operational Test

**OTF**—Other Than FARP

**P—Pilot**—PA—Public Address

**PAA**—Primary Aerospace Vehicle Authorized

**PAR**—Precision Approach Radar

**PEC**—Practice Emergency Climb Procedure

**PFPS**—Portable Flight Planning System

**PF**—Pilot Flying

**PFD**—Primary Flight Display

**PI**—Point of Impact

**PIC**—Pilot In Command

**PIN**—Platform Identification Number

**PITCH**—Pitch Axis

**PJ**—Pararescue Jumper

**PM**—Pilot Monitoring

**PMC**—Partially Mission Capable

**PO**—Panel Operator

**P/CSO**—Pilot/Combat Systems Officer

**PRTF**—Personnel Recovery Task Force

**RA**—Resolution Advisory

**RAMZ**—Rigging, Alternate Method, Zodiac

**RASL**—Ram Air Static Line

**RCR**—Runway Condition Reading

**REF/MODE**—Reference Mode

**RegAF**—Regular Air Force

**RGR**—Rapid Ground Refueling

**RNP**—Required Navigation Performance

**RON**—Remain Over Night

**RRFL**—Required Ramp Fuel Load

**RSC**—Runway Surface Condition

**RNAV**—Area Navigation

**RVR**—Runway Visual Range

**RVSM**—Reduced Vertical Separation Minimums

**S/L**—Static Line

**SA**—Situational Awareness

**SACU**—Situational Awareness Communications Upgrade

**SAR**—Search and Rescue

**SATB**—Standard Airdrop Training Bundle

**SATCOM**—Satellite Communications

**SCA**—Self-Contained Approach

**SCP**—Start Climb Point

**SEL**—Altitude Select (Switch Setting)

**SID**—Standard Instrument Departure

**SIGMET**—Significant Meteorological Information

**SM**—Statute Miles

**SPINS**—Special Instructions

**SPR**—Single Point Refueling

**SQ/CC**—Squadron Commander

**SSEA**—System Safety Engineering Analysis

**STAR**—Standard Terminal Arrival Route

**SYN**—Synchronization Switch

**TA**—Traffic Advisory

**TACAN**—Tactical Air Navigation System

**TAWS**—Terrain Awareness and Warning System

**TDL**—Tactical Data Link

**TFF**—Terminal Fuel Flow

**T.O.**—Technical Order

**TOLD**—Takeoff and Landing Data

**TOT**—Time Over Target

**TPC**—Tactical Pilotage Chart

**TSA**—Transportation Security Administration

**TTP**—Tactics, Techniques, & Procedures

**UARRSI**—Universal Aerial Refueling Receptacle Slipway Installation

**UHF**—Ultra-High Frequency

**USAF**—United States Air Force

**VCOA**—Visual Climb Over Airport

**VFR**—Visual Flight Rules

**VHF**—Very High Frequency

**VMC**—Visual Meteorological Conditions

**VMCA**—Minimum Controllable Airspeed

**VRmax**—Maximum Effort Rotation Speed

**VVM**—Verbalize, Verify, & Monitor

**VVOD**—Vector Vertical Obstruction Data

***Office Symbols***

**19AF/A3M**—19th Air Force Graduate Training Division

**ACC/A3J**—Air Combat Command Personnel Recovery Division

**ACC/A3JO**—Air Combat Command Personnel Recovery Aviation Branch

**AF/A3T**—Air Force Training and Readiness Directorate

**ACC/A3TV**—Air Command Standardization and Evaluations Branch

**ACC/A6**—Air Combat Command Director of Cyberspace and Information Dominance

**AFRC/A3D**—Air Force Reserve Command Combat Division

**NGB A2/3/6/10OC**—Air National Guard Bureau Combat Air Forces Branch

***Terms***

**Additional Crew Member (ACM)**—Crew members and authorized flight examiners possessing valid aeronautical orders who are authorized to accompany the normal crew complement required for that mission.

**Aeromedical Evacuation (AE)**—Movement of patients under medical supervision between medical treatment facilities by air transportation.

**Aircraft Commander (AC)**—The aircrew member designated by competent authority as being in command of an aircraft and responsible for its safe operation and accomplishment of the assigned mission. For the purposes of this AFMAN, the term AC is used exclusively and has the same meaning as pilot in command (PIC), which is used in parent regulations.

**Air to Air Refueling (AAR)**—Airborne fuel transferred by tanker aircraft to receiver aircraft.

**Air Refueling Control Time (ARCT)**—The planned time that the receiver and tanker will arrive over the Air Refueling Control Point.

**Air Reserve Component (ARC)**—AFR or ANG units.

**Air Traffic Control (ATC)**—A service provided by an appropriate authority to promote the safe, orderly and expeditious use of the air transportation system and to maximize airspace utility.

**Border Clearance**—Those clearances and inspections required to comply with federal, state, and local agricultural, customs, immigration, and immunization requirements.

**Category I Route**—Any route that does not meet the requirements of a CAT II route.

**Category II Route**—Any route on which the cross-track and along-track position of the aircraft can be accurately (within RNP/RNAV airspace 95% limit) determined by the reception of a radio aid(s) (NDB, VOR, TACAN) at least once each hour. This includes cross cuts from two non-DME radio aids.

**Caution**—Indicates operating procedures, techniques, etc., which may result in damage to equipment if not carefully followed

**Civil Authorities**—Those elected and appointed officers and employees who constitute the government of the United States, the governments of the 50 states, the District of Columbia, the Commonwealth of Puerto Rico, United States territories, and political subdivisions thereof.

**Combat Control Team (CCT)**—A small task organized team of Air Force parachute and combat diver qualified personnel trained and equipped to rapidly establish and control drop, landing, and extraction zone air traffic in austere or hostile conditions. They survey and establish terminal airheads as well as provide guidance to aircraft for airlift operations. They provide C2, and conduct reconnaissance, surveillance, and survey assessments of potential objective airfields or assault zones. They also can perform limited weather observations and removal of obstacles or unexploded ordinance with demolitions.

**Combat Offload**—Method by which palletized cargo is offloaded without MHE.

**Command and Control (C2)**—The exercise of authority and direction by a properly designated commander over assigned and attached forces in the accomplishment of the mission. C2 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.

**Command and Control Center (CCC)**—An agency used by a commander to plan, direct, or control operations. Each CCC provides supervision, guidance, and control within its assigned area of responsibility. For the purpose of this publication, CCCs include the ACC or respective command center, AMC Command Center, Command Post (CP), Air Mobility Elements (AME), Airlift Coordination Centers (ACC), Combat Control Teams (CCT), Air Force Reserve Command (AFRC) Headquarters Command Post (HQ AFRC CP), NGB Field Support Center, and ARC wing or group operations centers and command posts.

**Computed Air Release Point (CARP)**—A computed air position at which the release of personnel, equipment, containers, and bundles is initiated to land on a specific PI.

**Contingency Mission**—A mission operated in direct support of an operation plan, operation order, disaster, or emergency.

**Course Of Action**—A scheme developed to accomplish a mission.

**Digital Aeronautical Flight Information File (DAFIF)**—Digitized FLIP data containing airport, runway, navigation aid, and enroute data. Contains both low and high altitude structures.

**Digital Terrain Elevation Data (DTED)**—A matrix of terrain elevation values that provides landform, slope, elevation, and/or terrain roughness information.

**Direct IP Supervision**—An IP must supervise from either seat. **Exception:** IP candidates under the supervision of a flight examiner during initial or requalification upgrade evaluations are not required to have another IP at the controls with them.

**Drop Zone (DZ)**—A specific area upon which airborne troops, equipment, or supplies are airdropped.

**Due Regard**—Operational situations that do not lend themselves to ICAO flight procedures, such as military contingencies, classified missions, politically sensitive missions, or training activities. Flight under "Due Regard" obligates the military AC to be their own air traffic control (ATC) agency and to separate his or her aircraft from all other air traffic. (See FLIP General Planning, section 7.)

**Emergency Route Abort Altitude (ERAA)**—The ERAA is designed to provide positive IMC terrain clearance during emergency situations that require leaving the low-level structure. Planners may compute several ERAAs for route segments transiting significant terrain differentials, or a single ERAA for the entire low-level route. Aircrew will compute an ERAA by adding 1,000 ft. (2,000 ft. in mountainous terrain) to the elevation of the highest obstruction to flight within 22 nautical miles either side of the entire planned route. **(T-3)** Aircrew will compute ERAAs for the route and conspicuously annotate them on the chart. **(T-3)**

**Equal Time Point (ETP)**—The point along a route at which an aircraft may either proceed to the FSAF or return to the LSAF in the same amount of time based on all engines operating (see **Chapter 11**).

**First Suitable Airfield (FSAF)**—and Last Suitable Airfield (LSAF). Utilized in the ETP calculation. These are represented as the “first nearest” and the “last nearest” airports in the ETP calculation in the PROGRESS pages of the CNI-MU. They are airports closest to the coast out and coast in waypoints that meet applicable criteria for HC-130J operations.

**Helicopter Air to Air Refueling (HAAR)**—Airborne fuel offload to a helicopter.

**High Altitude High Opening (HAHO)**—A high altitude airdrop in which personnel deploy their parachutes immediately on exiting the aircraft (no programmed free fall).

**High Altitude Low Opening (HALO)**—Airdrop of personnel or containers using a programmed free fall (parachutist) or a staged parachute delivery.

**High Altitude Release Point (HARP)**—A computed air position at which parachutists, equipment, containers, or bundles are released to land on a specific point of impact. A HARP is computed for all HAHO and HALO drops.

**Hot Refueling**—Aircraft hot refueling is fuel transfer to or from any fuel source other than another aircraft with one or more aircraft engines operating. Hot refueling includes fuel transfer from internal aircraft fuel tanks, auxiliary tanks or internally loaded fuel bladders.

**Hung Ordnance**—Any ordnance or stores that fail to release, jettison, or fire and cannot be removed from the weapon prior to landing (ALE-47 chaff or flare squibs that fail to fire are not considered hung ordnance).

**Interfly**—Intermixing of crew members from different units in the same aircrew or unit aircrews flying aircraft assigned to another unit.

**Intrafly**—The exchange and/or substitution of aircrew members from separate units under the same MAJCOM to accomplish flying missions.

**Joint Airborne/Air Transportability Training (JA/ATT)**—Continuation and proficiency combat airlift training conducted in support of DoD agencies. Includes aircraft load training and service school support.

**Jumpmaster (JM)**—The assigned airborne qualified individual who controls parachutists from the time they enter the aircraft until they exit.

**Landing Zone (LZ)**—Any specified zone used for the landing of aircraft.

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

**Low Level**—Operations conducted below 3,000 ft. AGL.

**Military Authority**—Assumes Responsibility for Separation of Aircraft (MARSA)—A condition whereby the military services involved assume responsibility for separation between participating aircraft in the air traffic control (ATC) system.

**Military Free Fall (MFF)**—HALO or HAHO airdrop operations.

**Minimum Safe Altitude (MSA)**—MSA is an intermediate altitude that will provide local terrain clearance, yet limit threat detection during situations that require leaving the modified contour profile, but do not require an overall route abort.

**-Compute MSA for enroute low level**, airdrop operations, and SCAs by adding 500 ft. above the highest obstacle or terrain feature within 3 NM of centerline or planned flight path, whichever is greater, and rounded up to the next 100ft increment.

**-Compute MSA for HAAR legs** by adding 1,000 f.t (2,000 ft. in mountainous terrain) to the highest obstacle or terrain feature within 5 NM either side of centerline or planned flight path, whichever is greater, and rounded up to the next 100 ft. increment.

**Mission Essential Personnel (MEP)**—Individuals who perform essential duties in support of a particular aircraft, aircrew, or mission.

**Modified Contour**—Flight in reference to base altitude above the terrain with momentary deviations above and below the base altitude for terrain depressions and obstructions to permit a smooth flight profile.

**Mountainous Terrain**—USAF aircrews shall consider as mountainous: those areas defined in 14 CFR §95.11 for CONUS, Alaska, Hawaii and Puerto Rico. For all other areas of operation, use a 500 ft. surface elevation change over a ½ NM distance, or less, to define the location of mountainous terrain.

**Night Vision Goggles (NVG)**—Self-contained, battery-operated devices that amplify light to enhance night vision.

**Note**—Indicates operating procedures, techniques, etc., which are considered essential to emphasize.

**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 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.

**Overwater Flight**—Any flight that exceeds power off gliding distance from land.

**Payload**—(1) The sum of the weight of passengers and cargo that an aircraft can carry. (2) The load (expressed in tons of cargo or equipment, gallons of liquid, or number of passengers), which the vehicle is designed to transport under specified conditions of operation, in addition to its unladen weight.

**Permit to Proceed**—Aircraft not cleared at the first US port of entry may move to another US airport on a permit to proceed issued by customs officials at the first port of entry. The permit lists the requirements to be met at the next point of landing (e.g., number of crew and passengers, cargo not yet cleared). ACs 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 AC for not complying with permit to proceed procedures.)

**Point of Impact (PI)**—The point on the drop zone where the first airdropped parachutist or cargo item lands or is expected to land.

**Self-Contained Approach (SCA)**—An approach conducted using self-contained, onboard navigation systems.

**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.

**Stabilized Approach**—Criteria that defines specific parameters in order to mitigate the risk during this critical phase of flight.

**Station Time (Air Force)**—A specified time at which aircrew, passengers, and material are to be in the aircraft and prepared for flight. Passengers will be seated and loads tied down. Aircrews will have completed briefing and aircraft preflight inspection prior to station time. Normally, station time will be 30 minutes prior to takeoff time.

**Station Time (Airborne)**—A specified time when parachutists will be seated in the aircraft with seat belts fastened. This time normally will be 5 minutes prior to Air Force station time.

**Suitable Airfield**—Normally, suitable airfields are those which meet weather, fuel, and runway (**Chapter 6**) requirements and are within 50 NM of flight plan course centerline.

**Time Out**—Common assertive statement to voice crew member concern when safety may be jeopardized.

**Time Over Target (TOT)**—The actual time an aircraft is at a geographic point or area carrying out an assigned mission.

**Training Mission**—Mission executed at the unit level for the sole purpose of aircrew training for upgrade or proficiency. This does not include operational missions as defined in this publication.

**Unilateral**—Operations confined to a single service.

**Warning**—Indicates operating procedures, techniques, etc., which may result in personal injury or loss of life if not carefully followed.

**Wing Commander**—An individual authorized to exercise authority over subordinates by virtue of rank or assignment. To include the authority and responsibility for effectively using available resources and for planning the employment of, organizing, directing, coordinating, and controlling military forces for the accomplishment of assigned missions.

## Attachment 2

## MINIMUM EQUIPMENT LIST

**A2.1.** Objectives.

A2.1.1. Using the following policies, the AC is the final authority in determining an overall status of an aircraft **(T-2)**

A2.1.2. The aircraft maintenance team should provide an aircraft for launch with all equipment operational (i.e., fully mission capable (FMC). Some missions can execute safely without all equipment being operational (i.e., partially mission capable (PMC).

A2.1.3. Enter a detailed explanation of the discrepancy in the AFTO Form 781A.

**A2.2.** Minimum Mission Equipment.

A2.2.1. The minimum equipment for the mission at hand may drive an aircraft to be PMC for one scenario and FMC for another. SQ/CCs should weight their resources against demands when reporting mission capable status to C2 agencies.

A2.2.2. Minimum Aircraft Operating Equipment Requirements.

A2.2.2.1. The AC will ensure compliance with the minimum operating equipment required for tactical employment contained in **Table A2.1** **(T-3)** Aircrew experience level and mission factors may dictate greater equipment requirements than those listed.

**Table A2.1. Minimum Operating Equipment Requirements.**

| EVENT | EQUIPMENT REQUIRED | NOTES |
|---|---|---|
| **Day Low Level** | 1. One Radar Altimeter<br>2. One Operable Internal Navigation System (INS) | - Aircraft not meeting min equipment requirements are restricted to MSA. |
| **NVG Modified Contour Low Level / Threat Penetration (Day or Night)** | 1. One Radar Altimeter<br>2. Low Power Color Radar (LPCR)<br>3. One Operable INS | - Aircraft not meeting min equipment requirements are restricted to MSA. |
| **Segmented Altitude or IMC Low Level** | 1. One Radar Altimeter<br>2. LPCR<br>3. One Operable Enhanced Global Positioning System (GPS) INS (EGI) | Real Beam Ground Mapping (RGBM) not required |
| **Visual Airdrop / Rescue Airdrop / System Airdrop** | 1. One Operable EGI | - System Airdrops performed with one operable EGI require position verification |

| | | |
|---|---|---|
| **NVG Airland** | 1. One Radar Altimeter<br>2. One Operable INS | - For Airfield Marking Pattern (AMP)-4 operations either the EO/IR or LPCR must be operational. |
| **NVG SCA / IMC SCA** | 1. One Radar Altimeter<br>2. LPCR<br>3. One Operable INS | - NVG SCAs performed with one operable INS require position verification. |
| **IMC Formation** | 1. TDL<br>2. Air-to-Air TACAN<br>3. TCAS<br>4. ADSB<br>5. APX-116<br>6. LPCR | - Only two of the listed items must be operational for IMC formation flight. |

A2.2.3. Minimum Equipment List (MEL) Policy.

A2.2.3.1. The MEL sets forth command policy regarding equipment/systems necessary to continue or complete missions after the aircraft is released from the responsible maintenance organization. ACs must use/comply with the MEL Tables at **A2.6**. **(T-2)** Equipment/systems not listed in **Table A2.2** through **Table A2.25** are considered required for flight without exception. **(T-2)** This list cannot anticipate all combinations of failures and contingencies, and is not intended for continued operations, over an indefinite period, with failed or degraded equipment/systems.

A2.2.3.2. ACs can accept aircraft with inoperative equipment/systems after evaluating mission impact. An AC accepting an aircraft without an item or system does not commit that AC (or a different AC) to subsequent missions or segments with the same item or system inoperative.

A2.2.3.3. Do not uninstall emergency equipment unless specifically exempted by mission requirements or directives.

A2.2.3.4. Waivers.

A2.2.3.4.1. A waiver is necessary when the “Required” column quantity and/or “Remarks or Exceptions” cannot be met for piece of equipment. Waivers are granted on a case-by-case basis. The AC determines the need for a waiver based on equipment status. An AC prepared to operate with an insufficient quantity or degraded MEL item shall request a waiver through the appropriate C2 channels (for ANG aircraft on ANG mission identifiers, coordinate through OG/CC). The AC shall provide the C2 agency the following:

A2.2.3.4.1.1. Nature of request **(T-2)**

A2.2.3.4.1.2. Individual crew member qualifications **(T-2)**

A2.2.3.4.1.3. Mission leg(s) requiring the waiver **(T-2)**

A2.2.3.4.1.4. The governing directive of waiver request to include volume, chapter, and paragraph. **(T-2)**

A2.2.3.4.2. Initiate waiver requests as soon as possible. MEL waiver authority is as follows:

A2.2.3.4.2.1. Training Missions.

A2.2.3.4.2.1.1. SQ/CC or equivalent with mission execution authority.

A2.2.3.4.2.2. MAJCOM Directed Missions.

A2.2.3.4.2.2.1. MAJCOM/A3 with mission execution authority for Regular Air Force, AFR, or ANG units flying MAJCOM-directed missions (includes Operational Readiness Inspections). Initiate the request with MAJCOM C2 agency.

A2.2.3.4.2.3. Contingency Missions.

A2.2.3.4.2.3.1. COMAFFOR (or equivalent) for the agency with C2, if not specified in the OPORD/Tasking Order.

A2.2.3.5. Other than MEL Waivers.

A2.2.3.5.1. Determine governing source document (i.e., AFI, Flight Manual, maintenance T.O., etc.) to ascertain waiver authority. Use C2 channels to notify the appropriate waiver authority with understanding that may require an extended response time.

**A2.3. Technical Assistance.**

A2.3.1. The AC may request technical support from their home unit, MAJCOM staff, and maintenance representatives.

**A2.4.** One-Time Flights.

A2.4.1. Authorized with proper waiver for airworthy aircraft, from one flight to another station to another

A2.4.2. The chief of maintenance, senior maintenance officer, or chief of the Air Force Materiel Command (AFMC) repair team must first authorize the release. **(T-2)**

A2.4.3. After maintenance release, contact the appropriate authority for flight authorization. **Note:** Any one-time flight request requires OG/CC (or equivalent) approval.

A2.4.4. Maintenance release, flight authorization, and AC concurrence are required prior to aircraft flight to a specific destination.

**A2.5.** Navigation Systems.

A2.5.1. **Chapter 4** lists authorized airspace and procedures for the HC-130J. Equipment listed in FLIP for compliance with appropriate airspace is mandatory. Loss of any component before airspace entry requires return to a station with maintenance repair capability or continued flight with degraded systems when acknowledged and approved by ATC or filing via routes permitting operation with degraded equipment.

**A2.6.** MEL Table Definitions/Column Identifiers.

A2.6.1. Installed.

A2.6.1.1. Number of Components or Systems Installed.

A2.6.1.1.1. In some cases, a component can be controlled from either a conventional (hard) panel or from a CNI-MU display (soft panel). Similarly, some indications can be viewed on either a hard panel or a soft panel. Since switch functions (or indications) may be duplicated on each of the three CNI-MU displays, the number of switches (or indications) installed may not always be clear. To clarify this condition, switches (or indications) are listed as '1' in the installed column even when they are duplicated on a soft panel.

A2.6.1.1.1.1. Although the indications on each pilot's HDDs can be repeated on more than one HDD, repetitions of data in excess of one per pilot are not relevant for flight and are not counted in this MEL. In general, the flight deck is designed to provide one set of data for each (in addition to the standby instruments). Thus, for most HDD indications, the "number installed" is listed as "2", one for each pilot.

A2.6.2. Required.

A2.6.2.1. The minimum number (quantity) of items required for operation provided the conditions specified in the remarks or exception column are met.

A2.6.2.1.1. Unless otherwise noted, when the item is a switch (or indication) which is duplicated on a soft panel, the number required for dispatch may be satisfied by either the hard panel switch (or indication) or by the switch (indication) on one of the associated soft panels. For HDD indications, the number required is '2' if both pilots must have an indication, '1' if only one pilot must have an indication and '0' if neither pilot is required to have the indication. For essential flight data (heading, airspeed, attitude and when required, navigation data), the pilot's and copilot's displays must have independent sources.

A2.6.3. Remarks and Exceptions.

A2.6.3.1. Some technical information and procedures are contained in this column. This is not all-inclusive; crew members shall refer to the flight manual and other directives for procedures, techniques, limitations, etc.

**Table A2.2. Air Conditioning and Pressurization.**

| System Item | Installed | Required | Remarks or Exceptions |
|---|---|---|---|
| **Air Conditioning System** | 2 | 1 | One may be inoperative provided:<br>(1) Cross-flow valve is operative<br>(2) Associated Flow Control Valve is CLOSED<br>(3) Consideration is given to the type of mission, fuel quantity, required cruise altitude, and oxygen quantity. |
| | 2 | 0 | Both may be inoperative provided:<br>(1) Both Flow Control Valves are CLOSED<br>(2) Aircraft is operated unpressurized<br>(3) Auxiliary Vent Valves are operative for ventilation |

| | | | |
|---|---|---|---|
| | | | (4) Consideration is given to required cruise altitude, fuel quantity, OAT, and oxygen quantity.<br>**NOTE**<br>Pressurization and both air conditioning systems may be needed if passengers or patients are carried. If a system fails, flight to a destination with repair capability (including enroute stops) may be accomplished (coordinate with the senior medical Aeromedical Evacuation Crew Member (AECM) when patients are carried). Passengers and patients will be briefed on the possibility that discomfort may be encountered. |
| **Air Conditioning Control Panel** | 1 | 0 | May be inoperative provided control is available through the associated soft panel. |
| a. Automatic Temperature Control System | 2 | 0 | May be inoperative provided:<br>(1) Respective Manual Temperature Control System is operative.<br>**OR**<br>(1) Respective Air Conditioning System is considered inoperative<br>(2) Temperature control is not required. |
| b. BA/ECS Channels | 2 | 1 | **NOTE**<br>Loss of the 2nd Channel will result in loss of all pneumatic-powered components and systems (except engine anti-ice). |
| c. Cargo Compartment Recirculation Fan | 1 | 0 | See Flight Manual for cooling restrictions. |
| d. Cross-Flow Valve | 1 | 0 | May be inoperative provided both air conditioning systems are serviceable.<br>**OR**<br>Only one air conditioning system is operative and the valve is manually positioned to Cargo Compartment 100% open. |
| e. Flow Control and Shut Off Valve | | | |
| (1) Cargo Compartment Air Conditioning System | 1 | 0 | May be inoperative provided:<br>(1) Divider Valve operative<br>(2) Right Wing Isolation Valve is operative<br>(3) ECS Cross-flow Valve is operative. |
| (2) Flight Station Air Conditioning System | 1 | 0 | May be inoperative provided:<br>(1) Divider Valve operative<br>(2) Left Wing Isolation Valve is operative |

| | | | |
|---|---|---|---|
| | | | (3) ECS Cross-flow Valve is operative. |
| f. Temperature Control Valve | 2 | 0 | May be inoperative provided:<br>(1) Valve is failed in the normal temperature range.<br>**OR**<br>(1) Air Conditioning System is considered inoperative. |
| g. Duct Overheat Temperature Sensor | 2 | 0 | May be inoperative provided associated Air Conditioning System is considered inoperative. |
| **Auxiliary Vent Valve, Flight Deck** | 1 | 1 | |
| **Auxiliary Vent Valve, Cargo Compartment** | 1 | 0 | |
| **Avionics Cooling System** | | | |
| a. Avionics Cooling Fans | 2 | 1 | |
| b. Cargo Compartment Avionics Cooling Fans | 2 | 1 | |
| c. Overhead Console Cooling Fans | 2 | 1 | **NOTE**<br>If both fail in flight, damage to HUD may occur. Use Primary Flight Displays (PFD) as required. If HUDs are stowed, pull the associated ECBs to prevent damage from heat. |
| **Cargo Under Floor Heat System** | 1 | 0 | May be inoperative provided consideration is given to OAT and the number of passengers/additional crew members on board. |
| **Pressurization System** | | | **NOTE**<br>Pressurization and both air conditioning systems may be needed if passengers or patients are carried. If a system fails, flight to a destination with repair capability (including enroute stops) may be accomplished (coordinate with the senior medical AECM when patients are carried). Passengers and patients will be briefed on the possibility that discomfort may be encountered. |
| a. Automatic Pressure Control System | 1<br>1 | 1<br>0 | One channel may be inoperative.<br>May be completely inoperative provided:<br>(1) Manual Pressurization System is operative |

| | | | |
|---|---|---|---|
| | | | (2) Consideration is given to the additional crew workload caused by using Manual Pressurization.<br>**OR**<br>(1) Aircraft is operated unpressurized<br>(2) Consideration is given to required cruise altitude, fuel quantity, OAT and oxygen quantity. |
| (1) CONST ALT Mode | 1 | 0 | May be inoperative provided consideration is given to the type mission to be flown (e.g., aeromedical missions). |
| b. Emergency Depressurization Handle | 1 | 0 | May be inoperative provided:<br>(1) Aircraft is operated unpressurized<br>(2) Consideration is given to required cruise altitude, fuel quantity, OAT and oxygen quantity. |
| c. Emergency Depressurization Switch | 1 | 0 | May be inoperative provided:<br>(1) Control is available through the associated soft panel<br>**OR**<br>(1) Aircraft is operated unpressurized<br>(2) Consideration is given to required cruise altitude, fuel quantity, OAT and oxygen quantity. |
| e. Manual Pressurization Control System | 1 | 0 | May be inoperative provided:<br>(1) Automatic Pressurization System is operative<br>**OR**<br>(1) Aircraft is operated unpressurized,<br>(2) Consideration is given to required cruise altitude, fuel quantity, OAT and oxygen quantity. |
| f. Outflow Valve | 1 | 0 | May be inoperative provided:<br>(1) Valve is manually positioned to full open<br>(2) Pressurization Mode Select Switch is positioned to NO PRESS<br>(3) Aircraft is operated unpressurized<br>(4) Consideration is given to required cruise altitude, fuel quantity, OAT and oxygen quantity. |
| h. Safety Valve | 1 | 0 | May be inoperative provided:<br>(1) Outflow Valve is manually positioned to full OPEN<br>(2) Aircraft is operated unpressurized |

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|---|---|---|---|
| | | | (3) Consideration is given to required cruise altitude, fuel quantity, OAT and oxygen quantity. |

**Table A2.3. Auto Flight.**

| System Item | Installed | Required | Remarks or Exceptions |
|---|---|---|---|
| **Autothrottle (A/T) System** | 2 | 0 | |
| **Digital Autopilot System** | 2 | 0 | May be inoperative provided:<br>(1) Associated autopilot is not essential for performance of mission requirements<br>(2) If both autopilots are inoperative, consideration is given to reduced flight duty period<br><br>Aircrew are not permitted to fly CAT II ILS with inoperative autopilot. |
| **Digital Autopilot/Flight Director (DA/FD) Controls** | | | **NOTE**<br>An automatic altitude control system capable of maintaining altitude within 65 ft of that assigned is required for operation in RVSM airspace. |
| a. Autopilot Disengage Switch (Control Wheel) | 2 | 0 | Both may be inoperative provided another method of disengaging the autopilot is operative (e.g. G/A Switch).<br>**NOTE**<br>Failure of either Autopilot Disengage switch will disengage any autopilot function that is engaged at that time and will prevent either autopilot from reengaging until the switch function is repaired. Deselecting flight director modes on the REF/MODE panel does not disengage the autopilot. The one exception is deselecting APPR after glideslope capture. This will disengage the autopilot. |
| b. Autopilot Engage Lever | 2 | 0 | May be inoperative provided associated autopilot is considered inoperative. |
| c. Course Knob | 2 | 0 | May be inoperative provided:<br>(1) Associated DA/FD Navigation (NAV) and Approach (APPR) Modes (except INAV) are considered inoperative<br>(2) Associated Course Arrow and indication is considered inoperative (except in INAV Mode) |

| | | | |
|---|---|---|---|
| | | | (3) Departure/route/approach to destination (and alternate, if applicable) does not require use of VOR/ILS/MB or TACAN. |
| d. Go-around (G/A) Switch | 2 | 0 | **Note:**<br>Consider Go-around implications. |
| e. Heading Knob | 2 | 0 | May be inoperative provided:<br>(1) Associated DA/FD Heading (HDG) Mode is considered inoperative<br>(2) Associated Heading Marker is considered inoperative. |
| f. Lateral Axis (LAT) OFF Switch | 1 | 0 | May be inoperative provided the Autopilot Lateral Mode is considered inoperative. |
| g. Pitch Axis (PITCH) OFF Switch | 1 | 0 | May be inoperative provided the Autopilot Pitch Mode is considered inoperative.<br>**Note:**<br>An automatic altitude control system is required for operation in reduced vertical separation minimum (RVSM) airspace. |
| i. Pitch Synchronization (SYN) Switch | 2 | 0 | |
| j. Reference Mode (REF/MODE) Panel | 2 | 1 | One time flight authorized to repair facility, including enroute stops. |
| (1) ALT SEL Switch | 2 | 0 | May be inoperative provided:<br>(1) Associated Altitude Alert System is considered inoperative<br>(2) Associated DA/FD Altitude Select (SEL) Mode is considered inoperative<br>(3) GCAS is serviceable.<br>**Note:**<br>An altitude alerting system is required for operation in RVSM airspace. |
| (2) BARO SET Switch | 2 | 1 | **Note:**<br>Both barometer set switches must be operational for operation in RVSM. |
| (3) Mode Select Switch | 18 | 0 | Individual Mode Select Switch(es) may be inoperative provided associated mode(s) is considered inoperative.<br>**Note:**<br>For a given mode to be inoperative, both the pilot and co-pilot switches for that mode would have to be inoperative.<br>**NOTE**<br>An automatic altitude control system is required for operation in RVSM airspace. |

| | | | |
|---|---|---|---|
| (4) Reference Select Switch | 2 | 1 | |
| (5) Reference Set Knob | 2 | 1 | |
| k. Turn Ring | 1 | 0 | May be inoperative provided:<br>(1) Autopilot Roll Attitude Hold Mode is operative.<br>**OR**<br>(1) Autopilot Lateral Mode is considered inoperative<br>(2) Autopilot LAT OFF Switch is switched OFF. |
| L. Pitch Control Wheel | 1 | 0 | May be inoperative provided:<br>(1) Autopilot pitch attitude hold mode is operative.<br>**OR**<br>(1) Autopilot pitch mode is considered inoperative<br>(2) Autopilot pitch OFF switch is positioned to OFF. |
| **Digital Autopilot/Flight Director (DA/FD) Indications** | | | |
| a. AFCS Annunciator Panel | 2 | 0 | May be inoperative provided inoperative annunciation(s) is operative on the HUD or HDD PFD at affected location. |
| b. Reference Set Panel Display | 2 | 0 | May be inoperative provided:<br>(1) Individual Reference Annunciations and Markers (e.g. HUD, PFD cards, lines on tapes, carets) are operative.<br>**OR**<br>(1) Associated Reference Annunciations and Markers (e.g. HUD, PFD cards, lines on tapes, carets) are considered inoperative. |
| **Flight Director System** | 2 | 0 | May be inoperative provided Flight Director is not required for mission accomplishment or approach. |

**Table A2.4. Communications.**

| System Item | Installed | Required | Remarks or Exceptions |
|---|---|---|---|
| **Control Wheel Hush Switch** | 2 | 1 | |
| **Control Wheel Microphone Switch** | 2 | 1 | |
| **Flight Station Speaker** | 2 | 1 | |
| **Get Home Radio Panel** | 1 | 0 | One time flight is authorized to a repair facility. Enroute stops are authorized. |
| **Identification Friend or Foe (IFF) System** | 1 | 1 | If self-test fails, you may takeoff if the IFF was operational on the previous mission. |

| | | | |
|---|---|---|---|
| | | | Aircraft will not depart with an IFF known to be inoperative.<br>**Note:**<br>An altitude reporting transponder is required for operation in RVSM airspace.<br>**Note:**<br>Mode 4 is not required for flights that originate in and will remain inside the inner boundaries of all domestic & coastal air defense identification zone ADIZs surrounding the CONUS. |
| a. Antenna | 2 | 1 | Mode 4 and Mode S require both antennas. |
| **Public Address (PA) System** | 1 | 0 | May be inoperative if passengers or troops are carried and, at the discretion of the crew, effective and safe communications can be conducted. |
| **UHF/VHF Radios** | 4 | 2 | May be inoperative unless essential for performance of mission, route or Air Traffic Control requirements provided:<br>(1) Ultra high frequency (UHF) No. 1 or very high frequency (VHF) No. 1 is operative,<br>(2) At least one additional UHF or VHF Radio is operative. |
| **High Frequency (HF) Radios** | 2 | 0 | May be inoperative unless essential for performance of mission, route, or Air Traffic Control requirements. |
| **ARC 231 Radio** | 2 | 0 | May be inoperative unless essential for performance of mission. |

**Table A2.5. Electrical Systems.**

| System Item | Installed | Required | Remarks or Exceptions |
|---|---|---|---|
| **Alternating Current (AC) Generator, Engine** | 4 | 3 | May be inoperative if repair capability is not available. Flight to a destination with repair capability, including enroute stops, may be made. The generator will be removed and the generator mount padded before flight. |
| **Batteries** | 2 | 2 | |
| **Direct Current (DC) Voltmeter** | 1 | 1 | |
| **Electrical Control Panel** | 1 | 0 | May be inoperative provided control is available through the associated soft panel. |
| **Electronic Circuit Breaker Unit** | 14 | 13 | |
| **Indications (System Status Display)** | | | |

| | | | |
|---|---|---|---|
| a. Loadmeter Indications | 5 | 5 | |
| b. Voltmeter Indication, AC | 5 | 5 | |
| c. Voltmeter Indication, DC | 2 | 2 | |
| **Inverters** | | | |
| a. Essential Avionics AC Bus | 1 | 1 | |
| b. Essential Avionics AC 26V Power | 1 | 1 | |
| c. Main Avionics AC Bus | 1 | 1 | |
| d. Main Avionics AC 26V Power | 1 | 1 | |
| **Regulated Power Supply (RPS) System** | 8 | 0 | May be inoperative provided the equipment normally powered through the inoperative Regulated Power Supply System is not required,<br>**OR**<br>Control is available through the associated soft panel. |
| **Transformer Rectifiers (TR)** | 4 | 3 | One TR may be inoperative for flight to a repair facility including enroute stops. |

**Table A2.6. Equipment.**

| System Item | Installed | Required | Remarks or Exceptions |
|---|---|---|---|
| **Aerial Delivery System (ADS)** | | | |
| a. Aerial Delivery Control Panel | 1 | 0 | May be inoperative provided:<br>(1) Control is available through associated Soft Panel<br>**OR**<br>(1) Airdrop operations will not be conducted. |
| **Multifunction Control Display (MFCD)** | 1 | 0 | May be inoperative provided Heavy Equipment airdrop or combat offload operations will not be conducted. **Exception:** May be inoperative for Heavy Equipment airdrop or combat offload during contingency operations if operational needs outweigh the risk of operating without the MFCD. |

| | | | |
|---|---|---|---|
| **Pallet Lock Control Unit (PLCU)** | 7 | 0 | May be inoperative provided Heavy Equipment airdrop or combat offload operations will not be conducted. The MFCD must be operational. |
| **Winch** | 1 | 0 | May be inoperative unless essential for performance of mission. |

**Table A2.7. Fire Protection.**

| System Item | Installed | Required | Remarks or Exceptions |
|---|---|---|---|
| **APU Fire Control Handle Lights** | 1 | 1 | |
| **APU Fire Detection Loop** | 2 | 1 | Flight to a station with repair capability, including enroute stops is authorized,<br>**OR**<br>The APU is considered inoperative. |
| **Bleed Air Overheat Detection Sensors** | 14 | 7 | One sensor in each zone may be inoperative for flight to a station with repair capability, including enroute stops. |
| **Engine/APU Fire Extinguisher Bottle** | 2 | 2 | |
| **Engine Fire Control Handle Lights** | 4 | 4 | |
| **Engine Fire Detection Loop** | 8 | 4 | One loop in each nacelle may be inoperative for flight to a station with repair capability, including enroute stops. |
| **Fire and Overheat Detector System (FODS) Controller** | 1 | 1 | One time flight authorized to repair facility, including enroute stops. |
| **Smoke Detector** | 4 | 1 | The under flight deck detector must be operational. |

**Table A2.8. Flight Controls.**

| System Item | Installed | Required | Remarks or Exceptions |
|---|---|---|---|
| **Aileron Trim Indicator** | 1 | 0 | Flight to a destination with repair capability, including enroute stops, may be made. The trim tab position must be visually verified prior to flight. |
| **Aileron Trim System** | 1 | 1 | |
| **Elevator Trim System** | 1 | 1 | |
| **Elevator Trim Tab Control Wheel Switch** | 4 | 4 | |

| | | | |
|---|---|---|---|
| **Elevator Trim Tab Power Selector Switch** | 1 | 1 | |
| **Emergency Elevator Trim Tab Switch** | 1 | 1 | |
| **Flap Position Indicator (AMU)** | 1 | 1 | |
| **Flap Position Indicator Gauge** | 1 | 0 | May be inoperative provided Flap Position Indicator Avionics Management Unit (AMU) is operative. |
| **Rudder System Direct Reading Pressure Gauge** | 2 | 0 | |
| **Rudder Trim Indicator** | 1 | 0 | Flight to a destination with repair capability, including enroute stops, may be made. The trim tab position must be visually verified prior to flight. |
| **Rudder Trim System** | 1 | 1 | |
| **Stick Pusher System** | 1 | 0 | Flight to a destination with repair capability, including enroute stops, may be made provided the Stall Warning System is operational. |
| **Stall Warning System** | 1 | 1 | **Note:** All stall warning system aural and visual warnings must be functional. |
| a. Angle of Attack (AOA) Sensor | 2 | 1 | |

**Table A2.9. Fuel.**

| System Item | Installed | Required | Remarks or Exceptions |
|---|---|---|---|
| **Auxiliary and External Tank Empty Pressure Switch** | 2 | 0 | Both may be inoperative provided the quantity gauges are serviceable. |
| **Auxiliary Tank Magnetic Sight Gauge** | 2 | 0 | Both may be inoperative provided the Magnetic Sight Gauge is not required to determine Auxiliary Tank fuel quantity. |
| **Boost Pump, Main Tank** | 4 | 3 | One may be inoperative provided:<br>(1) Applicable Flight Manual Limitations and Procedures are observed<br>(2) Main Tank Transfer Pumps are operative<br>(3) ECBs for inoperative Main Tank Boost Pump are strapped opened. |

| | | | |
|---|---|---|---|
| **Cross-ship Manifold Fuel Pressure Indicator** | 2 | 1 | |
| **Crossfeed Valve** | 4 | 0 | May be inoperative provided:<br>(1) Associated Fuel Level Control Valve is operative<br>(2) Affected Valve is secured CLOSED<br>(3) Main Tank Transfer Pumps are operative<br>(4) Cross-ship Separation Valve is operative.<br>**Note:**<br>Valve must be manually closed if failed open or ECBs opened if valve is failed closed. |
| **Cross-ship Separation Valve** | 3<br><br>3 | 2<br><br>0 | Two required for in-flight refueling missions.<br><br>May be inoperative provided valve is electrically disconnected and secured OPEN. |
| **Fuel Control Panel** | 2 | 0 | Use Soft Panels when either a Fuel Management Panel (FMP) or a Refuel Control Panel (RCP) fails. Note: Mission Computer automatically activates Soft Panel functionality for both FMP and RCP should any of these hard panels fail are removed. There will not be an associated soft panel ACAWS. Fuel dumping, aerial refueling tanker operations, and FARP through the RGR panel is possible through soft panel functionality at a reduced reaction time/increased crew workload during critical phases of flight. |
| **Fuel Dump Valve** | 2 | 1 | May be inoperative provided the valve is secured CLOSED and at least 2 Cross-ship Valves are operative. |
| **Fuel Management Controller** | 1 | 1 | One channel may be inoperative. |
| **Fuel Firewall Shutoff Valve** | 4 | 4 | |
| **Fuel Level Control Valve (FLCV)** | | | **Note:**<br>Mission fuel requirements must be considered before accepting inoperative FLCVs. |
| a. Auxiliary Tank, FLCV | 2 | 0 | Both may be inoperative provided valve is not required for ground or in-flight refueling. |

| | | | |
|---|---|---|---|
| b. Main Tank, FLCV | 6 | 0 | All may be inoperative provided:<br>(1) Valve is not required for ground or in-flight refueling<br>(2) All Main Tank Transfer Pumps are operative<br>(3) All Main Tank Crossfeed Valves are operative<br>(4) Cross-ship Separation Valves are operative.<br>**Note:**<br>If an inboard FLCV is failed closed, the associated tank cannot be fully refueled on the ground. If an outboard FLCV is failed closed, the associated tank cannot be fully refueled in-flight. |
| **Fuel Pressure Relief Valve** | 2 | 2 | |
| **Fuel Pressure Transducer** | 1 | 0 | |
| **Fuel Quantity Indications** | | | **Note:**<br>Although the fuel quantity indications can be displayed on multiple HDD System Status Displays as well as on the hard panel, repetitions in excess of one indication per tank are not relevant. The "number installed" includes one indication per tank and the "number required" specifies the number of tanks that must have an operative indication.<br>**Note:**<br>Aircrews will utilize a fuel log when fuel quantity indicators are inoperative. |
| a. Auxiliary Tank | 2 | 0 | Both may be inoperative provided:<br>(1) All Fuel Flow Indicators are operative<br>(2) Associated Fuel Transfer Pump is operative<br>(3) All other Fuel Quantity Indicators for tanks with fuel on the same side of the Cross-ship Valve are operative<br>(4) Fuel quantity in the associated tank is verified by an accepted procedure before each takeoff (magnetic sight gauge). |

| | | | |
|---|---|---|---|
| b. External Tank | 2<br><br><br><br><br><br><br>2 | 1<br><br><br><br><br><br><br>0 | One may be inoperative provided:<br>(1) All Fuel Flow Indicators are operative<br>(2) At least one associated Fuel Transfer Pump is operative<br>(3) All other Fuel Quantity Indicators for tanks with fuel on the same side of the Cross-ship Valve are operative<br>(4) Fuel quantity in the associated tank is verified by an accepted procedure before each takeoff (dipstick).<br><br>Both may be inoperative provided associated Fuel Tanks are verified EMPTY. |
| c. Main Tank | 4 | 3 | One may be inoperative provided:<br>(1) All Fuel Flow Indicators are operative<br>(2) Associated Fuel Boost Pump is operative<br>(3) All other Fuel Quantity Indicators for tanks with fuel on the same side of the Cross-ship Valve are operative<br>(4) Fuel quantity in the associated tank is verified by an accepted procedure before each takeoff (dipstick).<br>**Note:**<br>Ensure maximum outboard main tank fuel weight is not exceeded when stores of any kind are installed on the outboard wing (e.g. refueling pods). |
| d. Totalizer | 1 | 0 | |
| **Fuel Quantity Preset Switch** | 2 | 0 | |
| **Refuel Drain Pump** | 1 | 0 | May be inoperative provided the manifold is manually drained and in-flight refueling will not occur. |
| **Single Point Refuel Valve** | 1 | 0 | May be inoperative provided alternate refueling procedures can be used. In-flight refueling is not allowed. |
| **Transfer Pump** | | | |
| a. Transfer Pump, Auxiliary Tank | 2 | 0 | May be inoperative provided the electronic circuit breaker (ECB) for the inoperative pump are open. If pump is inoperative, associated tank is considered unusable. |

| | | | |
|---|---|---|---|
| b. Transfer Pump, External Tank | 4<br><br><br>4 | 2<br><br><br>0 | One pump in each tank may be inoperative provided ECBs for inoperative External Tank Transfer Pump are opened.<br>Both pumps in each tank may be inoperative provided:<br>(1) ECBs for inoperative pumps are open<br>(2) Both tanks are empty. |
| c. Transfer Pump, Main Tank | 4 | 3 | One may be inoperative provided ECBs for inoperative transfer pump are open and the respective Main Tank Boost Pump is operative. |

**Table A2.10. Hydraulic System.**

| System Item | Installed | Required | Remarks or Exceptions |
|---|---|---|---|
| **Hydraulic Control Panel** | 1 | 0 | May be inoperative provided control is available through the associated Soft Panel. |
| **Hydraulic Pumps** | | | |
| a. Auxiliary Hydraulic Pump | 1 | 1 | |
| b. Engine Hydraulic Pump | 4 | 4 | |
| c. Hand Pump, | 1 | 1 | |
| Auxiliary | | | |
| d. Suction Boost Pump | 2 | 2 | |
| **Hydraulic System Indications (System Status Display)** | | | |
| a. Auxiliary System Pressure | 1 | 0 | May be inoperative provided the direct reading gauge is serviceable. |
| b. Booster System Pressure | 1 | 0 | May be inoperative provided Rudder Boost Pressure Indication is operative. |
| c. Utility System Pressure | 1 | 0 | May be inoperative provided Rudder Boost Pressure Indication is operative. |

**Table A2.11. Ice and Rain Protection.**

| System Item | Installed | Required | Remarks or Exceptions |
|---|---|---|---|
| **Angle of Attack Sensor Anti-ice System** | 2 | 1 | May be inoperative provided AOA sensor is considered inoperative. |
| **Ice Detector** | 2 | 0 | Both may be inoperative provided:<br>(1) Wing Leading Edge Lights are operative,<br>**OR**<br>(1) Aircraft is not operated in known or forecast icing conditions. |
| **Ice Protection Control Panel** | 1 | 0 | May be inoperative provided control is available through the associated soft panel. |

| | | | |
|---|---|---|---|
| **Engine Anti-ice Valve** | 4 | 0 | Valve may be inoperative provided the failed valve has failed OPEN. If any valve is failed CLOSED, do not operate in known or forecast icing conditions. |
| **NESA Windshield Heat System** | 2 | 0 | May be inoperative provided aircraft is not operated in known or forecast icing conditions. Flight manual restrictions apply. |
| **Pitot Heat System** | 2 | 1 | May be inoperative provided associated pitot static system is considered inoperative. |
| **Propeller Ice Protection System** | 4 | 0 | May be inoperative provided aircraft is not operated in known or forecast icing conditions. |
| **Propeller De-icing Timer Unit** | 1 | 0 | May be inoperative provided aircraft is not operated in known or forecast icing conditions. |
| **Total Air Temperature Sensor Anti-ice System** | 2 | 0 | May be inoperative provided aircraft is not operated in known or forecast icing conditions. |
| **Windshield Defog** | 2 | 0 | |
| **Windshield Wiper** | 2 | 0 | May be inoperative provided aircraft is not operated in precipitation on the ground. |
| **Wing and Empennage Ice Protection System** | 1 | 0 | May be inoperative provided aircraft is not operated in known or forecast icing conditions. |

**Table A2.12. Indicating/Recording Systems.**

| System Item | Installed | Required | Remarks or Exceptions |
|---|---|---|---|
| **Cockpit Voice Recorder** | 1 | 1 | **Note:** The cockpit voice recorder will be operational unless parts are not available. Do not fly passengers with an inoperative cockpit voice recorder. |
| **Digital Flight Data Recorder (DFDR)** | 1 | 1 | **Note:** The DFDR will be operational unless parts are not available on station to repair the unit. Do not fly passengers without an operative DFDR. |
| **Dual Slotted Data Transfer System (DSDTS)** | 1 | 0 | May be inoperative provided aircrew has coordinated with maintenance before flight and manually record all takeoff and land times. Exceedances will be briefed to Maintenance. **(T-2)** |

**Table A2.13. Landing Gear And Brakes Fuel.**

| System Item | Installed | Required | Remarks or Exceptions |
|---|---|---|---|

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|---|---|---|---|
| **Anti-Skid System** | 1 | 0 | May be inoperative provided:<br>(1) Anti-Skid System ECBs are opened<br>(2) Flight Manual Performance limitations are applied<br>(3) Shall be repaired at first capable repair facility<br>(4) Maximum Effort operations are not allowed<br>(5) Restricted to one full stop landing.<br>**Note:**<br>A local training flight may continue once airborne if the antiskid fails provided the system is turned off. |
| **Brake Pressure Indication** | | | |
| a. Emergency Brake Pressure Indication | 1 | 0 | May be inoperative provided the Auxiliary System Pressure is operative. |
| b. Normal Brake Pressure Indication | 1 | 0 | May be inoperative provided Utility System Pressure Indication is operative. |
| **Landing Gear Lever Lock** | 1 | 0 | May be inoperative provided Landing Gear Control Panel is considered inoperative.<br>**Note:**<br>On associated Soft Panel, the Lock Function is satisfied by the Verify Switch. |
| **Landing Gear Position Indicator** | 3 | 3 | |
| **Landing Gear Warning Light** | 2 | 0 | May be inoperative provided GCAS is operational. |

**Table A2.14. Lights.**

| System Item | Installed | Required | Remarks or Exceptions |
|---|---|---|---|
| **Exterior Lighting** | | | |
| a. Landing Light, Vis/IR | 2 | 1 | One landing light may be inoperative provided taxi light on that side is operative.<br>During contingency operations, the SQ/CC may waive the requirement for 1 operational landing lights. |
| b. Navigation Light | 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. |
| c. Anti-collision (Strobe) Light | 2 | 0 | May continue to first stop where repairs can be made. |
| d. Taxi Light | 2 | 0 | Both may be inoperative provided landing lights are operative. |

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| e. Wing Leading Edge Lights | 2 | 0 | May be inoperative at night provided:<br>(1) Ice Detectors are operative<br>**OR**<br>(1) Aircraft is not operated in known or forecast icing conditions. |
| f. Wing Tip Taxi Lights | 2 | 0 | May be inoperative provided aircraft is not taxied in congested areas at night without adequate lighting for obstacle clearance. |
| **Flight Station Lighting** | | | May be inoperative provided sufficient lighting is operative to make each instrument, control and other device for which it is provided easily readable. |
| a. Copilot Displays Light Circuit | 1 | 1 | |
| b. Lamp Test Circuit | 1 | 1 | |

**Table A2.15. Navigation.**

| System Item | Installed | Required | Remarks or Exceptions |
|---|---|---|---|
| **ADC** | 2 | 1 | **Note:**<br>Both must be operative for operation in RVSM airspace & Cat 2. |
| **Automatic Dependent Surveillance-Broadcast (ADS-B) Out** | 1 | 0 | Must be operational when operating in airspace defined by Federal Regulations 14 CFR 91.225 & 14 CFR 91.227. |
| **Automatic Direction Finding (ADF) System** | 2 | 0 | Both may be inoperative provided departure/ route/approach to destination (and alternate, if applicable) does not require use of ADF.<br>**Note:**<br>All components must be operative for the ADF to be considered operative. |
| **Cursor System** | 2 | 0 | May be inoperative unless required to accomplish mission objectives. |
| **Digital Mapping System** | 1 | 0 | May be inoperative unless required to accomplish mission objectives. Consideration should be given to the terrain, required altitudes, route peculiarities, visibility, the crew's experience with the route and whether the mission is conducted during daylight or at night. |
| **Terrain Awareness and Warning System (TAWS)** | 1 | 0 | May be inoperative unless required to accomplish mission objectives. Consideration should be given to the terrain, required altitudes, route peculiarities, visibility, the crew's experience with the route and whether the mission is conducted during daylight or at night. |

| | | | |
|---|---|---|---|
| **Embedded Global Positioning/Inertial Navigation System (EGI)** | 2 | 1 | May be inoperative provided:<br>(1) Overwater (out of NAVAID range) or BRNAV flight will not be conducted,<br>(2) Consult FLIP for airspace restrictions. |
| **Global Positioning System (GPS)** | 2 | 0 | **Note:**<br>With GPS inoperative, the Inflight Alignment capability will not be available. |
| **Ground Collision Avoidance System (GCAS)** | 1 | 0 | May be inoperative provided passengers/troops will not be carried. Consideration should be given to the terrain, required altitudes, route peculiarities, visibility, the crew's experience with the route and whether the mission is conducted during daylight or at night. |
| **Inertial Navigation Unit** | 2 | 1 | Both must be functional to meet requirement of redundant heading, altitude, and airspeed information for Civil Airspace compliance. |
| **Radar, Low Power Color** | 1 | 0 | Required if thunderstorms or hazardous conditions that can be detected by airborne radar are forecast or exist along the route of flight, or essential to accomplish mission objectives. |
| a. Control Panel | 2 | 0 | Both may be inoperative provided:<br>(1) Control is available through the associated Soft Panel<br>(2) Modes other than the Map or Weather Modes are not essential to accomplish mission objectives. |
| **Radar Altimeter (RA)** | 2 | 0 | One may be inoperative provided CAT II ILS approaches will not be flown. See **paragraph 4.21.4**. for additional tactical restrictions. |
| **Standby Flight Instruments** | | | |
| a. Inclinometer (Slip ball) | 2 | 0 | May be inoperative provided HUD Slip/Skid Indicator at affected position is operative. |
| b. Magnetic Compass | 1 | 1 | |
| c. Standby Airspeed/Altimeter | 1 | 1 | |
| d. Standby Attitude | 1 | 1 | |
| **Tactical Air Navigation (TACAN)** | 2 | 0 | All components must be operative for the TACAN to be considered operative. If both TACANs are inoperative, DME is not available. |
| **Total Air Temperature Sensor** | 2 | 2 | |

| | | | |
|---|---|---|---|
| **Traffic Alert Collision Avoidance System (TCAS)** | 1 | 0 | May be inoperative provided:<br>(1) TCAS is deactivated and secured<br>(2) TCAS is not necessary for compliance with ATC requirements<br>) Passengers/troops will not be carried. |
| **UHF Direction Finder System** | 1 | 0 | May be inoperative unless essential for accomplishment of mission objectives. |
| **VHF Navigation System (VOR/ILS/MB)** | 2 | 1 | The No. 1 system must be operative.<br>**Note:**<br>All components must be operative for the VHF Navigation System to be considered operative. |

**Table A2.16. Oxygen.**

| System Item | Installed | Required | Remarks or Exceptions |
|---|---|---|---|
| **Crew Oxygen System** | 1 | 1 | Minimum quantity is 5 liters, or as necessary for mission accomplishment. |
| **Oxygen Regulators** | 10 | 3 | May be inoperative provided one is available for each primary crew member. |

**Table A2.17. Pneumatic.**

| System Item | Installed | Required | Remarks or Exceptions |
|---|---|---|---|
| **Bleed Air Augmenter Valve** | 4 | 3<br><br><br><br>Less than 3 | One may be inoperative provided:<br>(1) Affected valve is CLOSED<br>(2) All Nacelle Shut Off Valves are operative.<br><br>May conduct a one-time flight to repair facility. Fly unpressurized (Manual/Open) and with no icing forecast. |
| **Bleed Air Divider Valve** | 1 | 0 | May be inoperative provided:<br>(1) Affected valve is OPEN<br>(2) Both Wing Isolation Valves are operative. |
| **Bleed Air Pressure Indication** | 1 | 1 | |
| **Bleed Air Environmental Control System Electronic Controller** | 1 | 1 | One channel may be inoperative. |
| **Nacelle Shutoff Valve** | 4 | 4 | |
| **Wing Isolation Valve** | 2 | 1 | One may be inoperative provided:<br>(1) Affected valve is OPEN<br>(2) Divider Valve is operative. |

**Table A2.18. System Integration and Display.**

| System Item | Installed | Required | Remarks or Exceptions |
|---|---|---|---|
| **Avionics Management Unit (AMU)** | 2 | 1 | **Note:** All displays and data fields must be operative for the associated AMU to be considered operative. |
| **Bus Adapter Unit (BAU) Type I** | 6 | 4 | |
| **Bus Adapter Unit (BAU) Type II** | 4 | 4 | |
| **Bus Interface Unit (BIU)** | 2 | 2 | |
| **Communication/Navigation/ Breaker Panel (CNBP)** | 1 | 1 | |
| **Communication/ Navigation/ Identification - Management Unit (CNI-MU)** | 3(4) | 2 | P and CP CNI-MUs must always be operable. Mission impacts should be evaluated if one CNI-MU is inoperative at the CSO position. Maintenance may move ACDS/CSO CNI-MU if P/CP's becomes inoperative. |
| **Data Bus, (1553B)** | | | |
| a. Avionics Bus | 2 | 2 | |
| b. Communication/ Navigation Bus | 2 | 2 | |
| c. Display Bus | 2 | 2 | |
| d. Electronic Warfare Bus | 1 | 0 | Unless required for mission accomplishment. |
| e. Interprocessor Communication Bus | 1 | 1 | |
| f. Panel Bus | 2 | 2 | |
| **Electro-Optical - Infrared (EO-IR)** | 1 | 1 | Aircraft or mission commander determines need to meet mission accomplishment. |
| **Heads Down Display (HDD) #1-#4** | 4 | 3 | One may be inoperative provided the HUD on the affected side is fully operational. **Note:** All data fields and displays must be operative for the associated HDD to be considered operative. However, when an input is not present and the correct 'data not available' or 'fail' indication (which may be a blank or removal of the indication) is displayed, the affected HDD may still be |

| | | | |
|---|---|---|---|
| | | | considered operative provided the failed indication is not required for the current mission. |
| **HDD #5-#8** | 4 | 0 | May be inoperative unless essential for accomplishment of mission objectives. |
| **Heads Up Display (HUD)** | 2 | 1(0) | One may be inoperative provided both HDDs on the affected side are fully operational.<br><br>Both may be inoperative provided:<br>(1) HDDs #1-4 are operative (including operative independent PFDs in the pilot and copilot positions),<br>(2) Forecast weather at destination is at or above Category I approach minimums. |
| a. HUD Control Panel | 2 | 0 | May be inoperative provided the associated HUD is considered inoperative. |
| b. HUD Declutter Switch, Control Wheel | 2 | 0 | |
| **Mission Computer** | 2 | 2 | One may be inoperative for a one time flight to a repair facility. Enroute stops are authorized. |

**Table A2.19. Auxiliary Power Unit (APU).**

| System Item | Installed | Required | Remarks or Exceptions |
|---|---|---|---|
| **AC Generator, APU** | 1 | 0 | May be inoperative provided APU electrical power is not required. External electrical power or aircraft battery power must be available for starting engines. |
| **Auxiliary Power Unit (APU)** | 1 | 0 | May be inoperative provided APU bleed air or electrical power is not required. An alternate air source and external electrical power or aircraft battery power must be available for starting engines. |
| **Bleed Air System, APU** | 1 | 0 | May be inoperative provided APU bleed air is not required. An alternate air source must be available for starting engines. |
| **Inlet Door, APU** | 1 | 0 | May be inoperative provided:<br>(1) Inlet Door can be operated manually<br>(2) Inlet Door is secured CLOSED prior to departure<br>**OR**<br>(1) Inlet Door is secured CLOSED<br>(2) APU is considered inoperative. |

**Table A2.20. Doors.**

| System Item | Installed | Required | Remarks or Exceptions |
|---|---|---|---|

| | | | |
|---|---|---|---|
| **Cargo Ramp and Door System** | 1 | 0 | Latching mechanisms and locking systems will be operative for pressurized flight.<br>**Note:**<br>Aircraft will not take-off with a malfunctioning ramp lock system, with cargo on the ramp. Aircraft may continue to destination if ramp locks malfunction in-flight. 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. Unpressurized flight, with no cargo on the ramp, may be performed with a cargo ramp lock malfunction when mission requirements dictate. |
| a. Ramp Latches | 10 | 9 | One may be inoperative provided:<br>(1) All remaining latches are operative<br>(2) Latch Warning System is operative<br>(3) No cargo is carried on the ramp<br>(4) Ramp is verified CLOSED and LATCHED before each departure<br>(5) Cabin differential pressure is limited to 5 IN HG. |
| **Cargo Door and Ramp Indicators** | | | |
| a. Ramp/Door FULL Light | 1 | 0 | May be inoperative provided:<br>(1) MFCD "RAMP & DOOR FULL OPEN" ACAWS message can be used<br>**OR**<br>(1) Ramp position airdrop light (aft cargo comp.) is operative. |
| b. Ramp Position Airdrop Light | 1 | 0 | May be inoperative provided:<br>(1) MFCD "RAMP & DOOR FULL OPEN" ACAWS message can be used<br>**OR**<br>(1) Ramp/Door FULL Light (flight station) is operative. |
| c. Ramp Warning Light | 1 | 0 | May be inoperative provided:<br>(1) ACAWS RAMP OPEN PRESSURIZED and RAMP<br>(2) OPEN 250 messages are operative<br>**OR**<br>(3) Ramp is verified CLOSED and LATCHED before each departure<br>**OR**<br>(4) Aircraft is operated unpressurized. |
| **Cargo Door and Ramp Sensors** | | | |

| | | | |
|---|---|---|---|
| a. ADS Arm Position Switches | 2 | 0 | May be inoperative provided the Aerial Delivery System is considered inoperative. |
| **Crew Entrance Door** | 1 | 1 | |
| a. Door Warning Light | 1 | 0 | May be inoperative provided the ACAWS CREW DOOR OPEN messages are operative. |
| **Paratroop Door** | 2 | 0 | May be inoperative provided affected Door is secured CLOSED and Latched, and the exit is not required to meet minimum emergency exits per number of passengers carried. |
| a. Door Warning Light | 2 | 0 | May be inoperative provided the associated ACAWS L TROOP DOOR OPEN 250 or R TROOP DOOR OPEN 250 message is operative. |

**Table A2.21. Propellers.**

| System Item | Installed | Required | Remarks or Exceptions |
|---|---|---|---|
| **Propeller** | 4 | 4 | |
| **Propeller Control Panel** | 1 | 0 | May be inoperative provided control is available through the associated Soft Panel. |
| a. Propeller Control Switch | 4 | 0 | May be inoperative provided control is available through the associated Soft Panel. |
| b. Prop Sync Switch | 1 | 0 | |
| **Propeller Synchrophasing** | 1 | 0 | |

**Table A2.22. Powerplant.**

| System Item | Installed | Required | Remarks or Exceptions |
|---|---|---|---|
| **Automatic Thrust Control System (ATCS)** | 1 | 1 | If ATCS is degraded, a component/sensor has potentially failed. If maintenance is not available and takeoff is necessary, flight with ATCS DEGRADED (C) must be authorized by the OG/CC. Operation with ATCS Inoperative procedures will be followed. |
| **Engine Assembly** | 4 | 4 | |
| **Engine Controls** | | | |
| a. Engine Start Panel | 1 | 0 | May be inoperative provided control is available through the associated Soft Panel. |
| b. FADEC Panel | 1 | 1 | |
| c. Low Speed Ground Idle Switch | 4 | 0 | |
| d. Oil Cooler Flap Indications | 4 | 0 | May be inoperative provided control is available through the associated Soft Panel and oil temp indication(s) is/are operational for affected oil cooler flap(s). |
| **Engine Indicating System** | | | |
| a. Fuel Flow Indication | 4 | 4 | |

| | | | |
|---|---|---|---|
| b. Gas Generator Speed (NG) Indication | 4 | 4 | |
| c. Horse Power Indication | 4 | 4 | |
| d. Measured Gas Temperature (MGT) Indication | 4 | 4 | |
| e. Oil Pressure Indication, Engine | 4 | 4 | |
| f. Oil Pressure Indication, Gearbox | 4 | 4 | |
| g. Oil Quantity Indication | 4 | 0 | May be inoperative provided the oil quantity is verified before flight and the OIL QTY 1 (2, 3, or 4) LO (C) is operational. |
| h. Oil Temperature Indication | 4 | 4 | |
| i. Power Turbine Speed (NP) Indication | 4 | 4 | |
| **Engine Oil System** | | | |
| a. Oil Cooler Flap Automatic Control | 4 | 0 | May be inoperative provided Oil Cooler Flap Manual Control is operative. |
| b. Oil Cooler Flap Manual Control | 4 | 4 | |
| **Full Authority Digital Electronic Controls (FADEC)** | 8 | 7 | One may be inoperative provided all dedicated sensor input and control logic is serviceable to/from the operative FADEC on the engine with lost redundancy and ATCS Inoperative Take-Off procedures are carried out. All eight engine FADECs must be serviceable for auto shutdown to be operative. ATCS will be degraded.<br>**NOTE**<br>If maintenance is not available and takeoff is necessary, flight with ATCS DEGRADED **(C)** must be authorized by the OG/CC. |
| **Nacelle Interface Unit (NIU)** | 4 | 4 | |

**Table A2.23. In-flight Refueling System.**

| System Item | Installed | Required | Remarks or Exceptions |
|---|---|---|---|
| **Universal Aerial Refueling Receptacle Slipway Installation (UARRSI) System** | 1 | 0 | System required for In-flight Refueling.<br>**Note:**<br>The Aux Hydraulic system and/or Override signal amplifier will not be used for training flights. |

**Table A2.24. Air Refueling System.**

| System Item | Installed | Required | Remarks or Exceptions |
|---|---|---|---|
| **Air Refueling Pods** | 2 | 0 | System required for air refueling. |
| **Refuel Control Panel** | 2 | 0 | Use Soft Panels when either a Fuel Management Panel (FMP) or a Refuel Control Panel (RCP) fails. **Note:** Mission Computer automatically activates Soft Panel functionality for both FMP and RCP should any of these hard panels fail are removed. There will not be an associated soft panel ACAWS. Fuel dumping, aerial refueling tanker operations, and FARP through the RGR panel is possible through soft panel functionality at a reduced reaction time/increased crew workload during critical phases of flight. |

**Table A2.25. Defensive Systems and Situation Awareness Equipment.**

| System Item | Installed | Required | Remarks or Exceptions |
|---|---|---|---|
| Countermeasures | 1 | 0 | Consider mission impact. Check SPINS. |
| CMDS Remote Dispense | 3 | 0 | Consider mission impact. Check SPINS. |
| Defensive Systems | 1 | 0 | Consider mission impact. Check SPINS. |
| Missile Warning System | 1 | 0 | Consider mission impact. Check SPINS. |
| Radar Warning Receiver | 1 | 0 | Consider mission impact. Check SPINS. |
| TDL | 1 | 0 | Consider mission impact. Check SPINS. |

## Attachment 3

### *TRAINING RESTRICTIONS SUMMARY TABLE*

**Table A3.1. Training Restrictions Summary Table.**

| | |
|---|---|
| **Simulated Engine Failure and 3-Engine Approaches/Landings/Missed Approaches** | Direct IP supervision is required except for IP candidates under the supervision of a flight examiner during initial or requalification upgrade evaluations to IP. **(T-3)**<br><br>One power lever may be retarded to FLIGHT IDLE at not less than VMCA (one-engine inoperative, out of ground effect) and not less than 300 ft. AGL.<br><br>Day simulated engine failure requires at or above circling minimums. At night, weather required is the higher of circling minimums or above 1,000 ft. ceiling and 2 SM visibility.<br><br>Do not conduct simulated engine failures if the crosswind component is not within the recommended zone of the landing crosswind chart. **(T-3)**<br><br>Use all 4 engines for a touch-and-go takeoff.<br><br>Simulated engine-out no-flap landings restricted to AC candidate and above only.<br><br>Planned go-arounds from simulated engine-out no-flap approaches not authorized.<br><br>Required go-arounds from simulated engine out no-flap approaches require setting the flaps to 50% and using all four engines.<br><br>Do not compound engine out circling approaches with any other simulated malfunctions. |
| **Flaps Up Approach/Landing** | An IP must be at a set of controls. **(T-3)**<br><br>Maximum aircraft gross weight limited to 120,000 lbs.<br><br>The crosswind component must be within the recommended zone on the crosswind chart. **(T-3)** |

| | |
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| | Weather must be at or above circling minimums. At night, weather must be at or above 1,000 ft. ceiling and 2 SM visibility, or circling minimums, whichever is higher.<br><br>Use 50% flaps for a go-around and touch-and-go takeoff.<br><br>Do not compound no-flap circling approaches with any other simulated malfunction. |
| **Touch-and-Go Landings** | Minimum runway length is: 5,000 ft. for 50% flap flight idle touch-and-go landings. 6,000 ft. for all other touch-and-go landings.<br><br>Minimum ceiling/visibility: 300 ft. and RVR 4,000 (3/4 SM visibility).<br><br>Only authorized when crosswind component corrected for RCR is within the recommended zone of the landing crosswind chart.<br><br>Do not accomplish touch-and-go landings on slush covered runways.<br><br>Do not perform ground-idle touch-and-go landings in conjunction with no-flap landings. |
| **Stop-and-Go Landings** | The runway remaining must be greater than or equal to CFL or AMFLMETO, as appropriate.<br><br>Crosswind component corrected for RCR is in the recommended zone of the landing crosswind chart.<br><br>Minimum ceiling/visibility: 300 ft. and RVR 4,000 (3/4 SM visibility).<br><br>Must use flight manual defined “partially braked landing” to stop.<br><br>Meets normal wake turbulence criterion.<br><br>Not authorized in conjunction with no-flap landings. |
| **Go-around, Missed Approaches** | Planned go-arounds from simulated engine-out no-flap approaches not authorized. |

| | |
|---|---|
| | Required go-arounds from simulated engine out no-flap approaches require setting the flaps to 50% and using all four engines.<br><br>Plan to fly no lower than enroute LAA unless operational requirements dictate other altitudes. |
| **Slow Flight** | An IP must be at a set of controls.<br><br>Slow flight training is only authorized at or above 5,000 ft. AGL. **(T-3)**<br><br>Fly at approach, threshold, and 10 knots above the stall speed caret with gear down and flaps 0%, 50%, or 100%.<br><br>Do not exceed 15-degrees angle of bank.<br><br>If Air Refueling MOS is demonstrated, do not use any angle of bank. |
| **Approach to Stalls** | An IP must be at a set of controls. **(T-3)**<br><br>Only authorized during day VMC at a minimum of 5,000 ft. AGL or 5,000 ft. above a cloud deck. |
| **Instrument Steep Turns (N/A for Tactical maneuvers)** | Only authorized during day VMC with up to 60-degrees bank.<br><br>Restrict turns to 5,000 ft. AGL (or 5,000 ft. above a cloud deck) for bank angles in excess of 45-degrees. |
| **Simulated Emergencies During Low Level Training** | Restricted to flat or rolling terrain.<br><br>Will only be conducted on specific legs identified during the crew briefing.<br><br>Do not compound emergencies.<br><br>As determined by the IP, initiate a climb to an intermediate altitude, Detection Free Altitude (DFA), or MSA. Continue a climb to, or maintain required altitude until the completion of the simulated emergency. |

## Attachment 4

## ETP CALCULATION

**A4.1.** General.

A4.1.1. ETP computations are not required for maritime search procedures.

A4.1.2. The ETP provides crews a tool for recovery airfield decision-making when in-flight emergencies occur. Flight crews must complete ETP computations on CAT I routes when the total time between the LSAF and FSAF is 5 hours or more. **(T-2)**

A4.1.3. Certain mission sets require fuel planning to maximize on station time at a particular location. In that regard, an ETP may not be the most effective means of determining appropriate recovery fuel, particularly for overwater missions returning to the station of departure. If that is true, use the following guidance. If not, default to ETP calculation procedures.

A4.1.4. Flight crews must annotate and plot ETPs on the MPC and MFP prior to the coast-out waypoint. **(T-2)**

A4.1.5. Squadron-approved computer programs which use similar algorithms as the manual computation may be used. The MAJCOM certified MPE Fuel Analysis Tool (FAT) is approved for computing ETPs. Enter ETP information into the CNI PROGRESS page during preflight.

A4.1.5.1. CNI-computed ETPs only become accurate upon reaching the PERF CRUISE altitude. CNI-computed ETPs can be obtained for different airspeeds (i.e., 260 KTAS for a three engine scenario).

A4.1.5.2. CNI-computed ETP do not calculate if you do not overfly the programmed coast-out point.

A4.1.6. If actual winds drive a 15 minute difference in arrival to a reporting point prior to the ETP, re-compute the ETP with a squadron approved computer program or by manual calculation.

**A4.2.** Circular Routing (Search/Maritime Search) Procedures.

A4.2.1. Pre brief JOKER and BINGO fuel states prior to take off. Should mission profile change enroute, ensure return fuel state is sufficient per this manual utilizing CNI-MU LEGS page calculated with tactical burn rates, fuel offloads and onloads where applicable.

A4.2.2. For all circular mission routes, BINGO fuel must be inspected and updated every half hour to ensure appropriate high or low level recovery routing to a location with fuel onload support.

A4.2.3. Should required BINGO fuel decrease, and maximum on station time is desired, ACs will update BINGO fuel to ensure the aircraft will reach overhead landing or refueling location within required remaining fuel. **(T-3)**

**A4.3.** To Compute A Manual ETP (Non Circular/Search Procedures).

A4.3.1. Identify and record the LSAF, coast-out point, approximate midpoint of the CAT I portion, coast-in point, and FSAF. The coast-out point, approximate midpoint, and coast-in

point are actual waypoints on the flight plan. The coast-out point for ETP purposes occurs after initial level-off.

A4.3.2. Determine the distance from the LSAF to the FSA

A4.3.3. Determine average groundspeed (GS) for the first-half (coast-out to midpoint) and second-half (midpoint to coast-in) of the CAT I portion.

A4.3.4. Divide the respective enroute distance by the enroute time to/from the midpoint to determine accurate average GS.

A4.3.5. Calculate a wind factor (WF1, WF2) for each half by subtracting the flight-planned average TAS from the averaged GS.

A4.3.5.1. If a tailwind is experienced the WF is positive. If a headwind is experienced the WF is negative.

A4.3.6. Use the provided formulas to compute the time it takes to fly from the ETP to the FSAF. Use this time and the second-half-averaged GS to calculate a distance from the FSAF that the ETP occurs.

**Figure A4.1. Formulas.**

**Figure A4.1. Formulas.**

*Formulas to compute the time it takes to fly from the ETP to the FSAF.*

$$Time\ (ETP - FSAF) = \frac{Distance\ (LSAF - FSAF)}{Wf_2 - Wf_1 + 2TAS}$$

*Where 'Time' is calcualted in hours and distance is nautical miles.*

$$Distance\ (ETP - FSAF) = Time\ (ETP - FSAF) \times GS\ (2nd\ half)$$

*The ETP always occurs upwind of the geographing midpoint.*

A4.3.7. Use INDEX FROM/TO and PROGRESS pages as alternate in-flight time and distance updates to diversion bases along the route. To obtain correct ETE calculations, accurate GS must be input.

A4.3.8. Do not depart without checking manual ETP calculations against computer ETP calculations. Failure to follow this guidance could result in the inability of an aircraft to make landfall prior to fuel exhaustion.

## Attachment 5

## FREQUENCY LISTINGS

**Table A5.1. Search and Rescue Frequencies.**

| Frequency | Usage | Mode1 | Authority |
|---|---|---|---|
| 251.9 MHz | Operational and Training | V | RFA2 |
| 252.8 MHz | Operational and Training | V | RFA |
| 259.0 MHz | Operational and Training | V | RFA |
| 381.0 MHz | Operational and Training | V | RFA |
| 46.85 MHz | Operational and Training | V | RFA |

**Table A5.2. Emergency Frequencies.**

| Service | Frequency | Communication Service | Function |
|---|---|---|---|
| International Distress and Emergency | 500 kHz | Aeronautical, Maritime, Survival Craft | Distress (Telegraphy) |
| | 2182 kHz | Aeronautical, Maritime Mobile (MM), Survival Craft | Distress |
| | 3023 kHz | Mobile | SAR |
| | 5680 kHz | Mobile | SAR Operations |
| | 8364 kHz | Aeronautical, MM | SAR |
| | 40.5 MHz | Mobile | Military Joint Common (US&P only) |
| | 121.5 MHz | Aeronautical | Emergency and Safety |
| | 123.1 MHz | Aeronautical, Mobile | SAR, Scene of Action |
| | 156.3 MHz | Aeronautical, MM | SAR Operations |
| | 156.8 MHz | MM | Call, Reply and Safety |
| | 243.0 MHz | Military Aeronautical | Emergency and Survival |
| | 406-406.1 MHz | Mobile-Satellite | Emergency Position-Indicating Radio beacon |
| | 53.3 MHz (36K00F3E) | | |

**Table A5.3. Air/Ship/Air Calling Frequencies.**

| Frequency | Usage | Mode1 | Authority |
|---|---|---|---|
| 4.182 MHz | May be used by any aircraft to communicate with stations (ships) in the maritime mobile service. | V | RR 11784 |
| 6.273 MHz | | V | RR 1178 |
| 8.364 MHz | | CW | RR 1178 |
| 12.546 MHz | | V | RR 1178 |
| 16.728 MHz | | V | RR 1178 |
| 22.245 MHz | | V | RR 1178 |

**Table A5.4. Citizen Band (CB) Conversion Table.**

| Channel | MHz | Channel | MHz | Channel | MHz | Channel | MHz |
|---|---|---|---|---|---|---|---|
| 1 | 26.965 | 11 | 27.085 | 21 | 27.215 | 31 | 27.315 |
| 2 | 26.975 | 12 | 27.105 | 22 | 27.225 | 32 | 27.325 |
| 3 | 26.985 | 13 | 27.115 | 23 | 27.235 | 33 | 27.335 |
| 4 | 27.005 | 14 | 27.125 | 24 | 27.245 | 34 | 27.345 |
| 5 | 27.015 | 15 | 27.135 | 25 | 27.255 | 35 | 27.355 |
| 6 | 27.025 | 16 | 27.155 | 26 | 27.265 | 36 | 27.365 |
| 7 | 27.035 | 17 | 27.165 | 27 | 27.275 | 37 | 27.375 |
| 8 | 27.055 | 18 | 27.175 | 28 | 27.285 | 38 | 27.385 |
| 9 | 27.065 | 19 | 27.185 | 29 | 27.295 | 39 | 27.395 |
| 10 | 27.075 | 20 | 27.025 | 30 | 27.305 | 40 | 27.405 |

**Notes:**
a. Modes are V for voice, CW for International Morse Code, and FM for VHF FM.
b. The USAF RFA list is the authority for the use of these frequencies.
c. Joint Publication 3-50, Volume 1, and DAFI 17-220, *Spectrum Management*, explain the use of these frequencies, which are authorized in the RFA of the ITU Radio Registration (see following note).
d. The International Telecommunications Union (ITU) Convention of 1959 promulgated Radio Regulations (RR 994, 999, 1107, and 1323) which permit the use of frequencies for general air- to-ship communications uses.
e. In order to be on the correct frequency, ensure HF equipment is set to AM, not Upper Side Band (USB).

**Table A5.5. International Preset Maritime Channels.**

| Channel | Frequency | | Use |
|---|---|---|---|
| | Ship | Shore | |
| 1 | 156.050 | **160.65** | Public Correspondence, Port Ops, Ship Movement |
| 2 | **156.100** | **160.700** | Public Correspondence, Port Ops, Ship Movement |
| 3 | **156.150** | **160.750** | Public Correspondence, Port Ops, Ship Movement |
| 4 | **156.200** | **160.800** | Public Correspondence, Port Ops, Ship Movement |
| 5 | 156.250 | **160.850** | Public Correspondence, Port Ops, Ship Movement |
| 6 | 156.300 | | Safety (Inter-ship) Ship -to -Aircraft During Rescue |
| 7 | 156.350 | **160.950** | Public Correspondence, Port Ops, Ship Movement |
| 8 | 156.400 | | Commercial (Inter-ship) |
| 9 | 156.450 | | Port Ops, Inter-ship, Ship Movement |
| 10 | 156.500 | | Port Ops, Inter-ship, Ship Movement |
| 11 | 156.550 | | Port Ops, Ship Movement |
| 12 | 156.600 | | Port Ops, Ship Movement |
| 13 | 156.650 | | Port Ops, Inter-ship, Ship Movement |

| | | | |
|---|---|---|---|
| 14 | 156.700 | | Port Ops (Inter-ship/Ship-To-Coast), Ship Movement |
| 15 | 156.750 | | Port Ops, Inters-hip, Ship Movement |
| 16 | **156.800** | | **Distress, Safety And Calling** |
| 17 | 156.850 | | Port Ops, Inter-ship, Ship Movement |
| 18 | 156.900 | **161.500** | Port Ops, Ship Movement |
| 19 | 156.950 | **161.550** | Port Ops, Ship Movement |
| 20 | 157.000 | 161.600 | Port Ops, Ship Movement |
| 21 | 157.050 | **161.650** | Port Ops, Ship Movement |
| 22 | 157.100 | **161.700** | Port Ops, Ship Movement |
| 23 | 157.150 | **161.750** | Public Correspondence |
| 24 | 157.200 | 161.800 | Public Correspondence (Ship-To-Coast) |
| 25 | 157.250 | 161.850 | Public Correspondence (Ship-To-Coast) |
| 26 | 157.300 | 161.900 | Public Correspondence (Ship-To-Coast) |
| 27 | 157.350 | 161.950 | Public Correspondence (Ship-To-Coast) |
| 28 | 157.400 | 162.000 | Public Correspondence (Ship-To-Coast) |
| 60 | **156.025** | **160.675** | Public Correspondence, Port Ops, Ship Movement |
| 61 | **156.075** | **160.675** | Public Correspondence, Port Ops, Ship Movement |
| 62 | **156.125** | **160.725** | Public Correspondence, Port Ops, Ship Movement |
| 63 | 156.175 | **160.775** | Public Correspondence, Port Ops, Ship Movement |
| 64 | **156.225** | **160.825** | Public Correspondence, Port Ops, Ship Movement |
| 65 | 156.275 | **160.875** | Public Correspondence, Port Ops, Ship Movement |
| 66 | 156.325 | **160.925** | Public Correspondence, Port Ops, Ship Movement |
| 67 | 156.375 | | Inter-ship, Port Ops, Ship Movement |
| 68 | 156.425 | | Port Ops, Ship Movement |
| 69 | 156.475 | | Inter-ship, Port Ops, Ship Movement |
| 70 | 156.525 | | Digital Selective Calling (DSC) |
| 71 | 156.575 | | Port Ops, Ship Movement |
| 72 | 156.625 | | Non-Commercial / Non-Commercial (Inter-ship) |
| 73 | 156.675 | | Inter-ship, Port Ops, Ship Movement |
| 74 | 156.725 | | Port Ops, Ship Movement |
| 75 | 156.775 | | |
| 76 | 156.825 | | |
| 77 | 156.875 | | Inter-ship |
| 78 | 156.925 | **161.525** | Public Correspondence, Port Ops, Ship Movement |
| 79 | 156.975 | **161.575** | Port Ops, Ship Movement |
| 80 | 157.025 | **161.625** | Port Ops, Ship Movement |
| 81 | 157.075 | 161.675 | Public Correspondence, Port Ops, Ship Movement |
| 82 | 157.125 | **161.725** | Public Correspondence, Port Ops, Ship Movement |
| 83 | 157.175 | **161.775** | Public Correspondence, Port Ops, Ship Movement |

**Notes:**
Transmissions on frequencies or channels in **BOLD** are not allowed within U.S. territorial waters, but are allowed on the high seas and most other countries.
No shore frequency listed indicates that the frequency is the same as that used on ships.

## Attachment 6

### *CREW COMPLIMENT BY EVENT/MISSION*

**Table A6.1. Crew Complement By Event/Mission.**

| **Event/Mission Description** | **AC** | **CP** | **CSO** | **LM** [1, 14] |
|---|---|---|---|---|
| Airdropping single articles of hand-deployed equipment with or without a parachute, either deployed individually or in combination with personnel airdrops, with or without trail-line or drop-line procedures, through any exit, with or without any in-flight rigging/re-rigging/inspection, and with or without Buffer Boards | | | | |
| a. Non-high speed airdrops with a Mission Computer, Ground, Pilot, or Jumpmaster directed release point<br>1. With wheels on the bundle or rigged with a skid-board (or featuring a smooth, rigid, flat base) on aircraft integrated roller(s) and/or HSLLADS roller(s)<br>i. 350 pounds or less | 1 | 1 | 0 | 1 |
| ii. Greater than 350 pounds but less than 500 pounds | 1 | 1 | 0 | 2 [2] |
| 2. Without wheels on the bundle and not using aircraft integrated rollers / HSLLADS rollers to maneuver / position the equipment.<br>i. 100 pounds or less | 1 | 1 | 0 | 1 |
| ii. Greater than 100 pounds but no greater than 350 pounds | 1 | 1 | 0 | 2 [2] |
| iii. Greater than 350 pounds but no greater than 500 pounds | 1 | 1 | 0 | 3 [2] |
| b. Loadmaster directed airdrops<br>1. With wheels on the bundle or rigged with a skid-board (or featuring a smooth, rigid, flat base) on aircraft integrated roller(s) and/or HSLLADS roller(s)<br>i. 100 pounds or less dropped from same door/exit LM is spotting | 1 | 1 | 0 | 1 |
| ii. 100 pounds or less dropped from a different door/exit from which one LM is spotting | 1 | 1 | 0 | 2 |
| iii. Greater than 100 pounds but not greater than 350 pounds | 1 | 1 | 0 | 2 [2] |
| iv. Greater than 350 pounds but not greater than 500 pounds | 1 | 1 | 0 | 3 [2] |

| | | | | |
|---|---|---|---|---|
| 2. Without wheels on the bundle and not using aircraft integrated rollers / HSLLADS rollers to maneuver / position the equipment<br>i. 100 pounds or less dropped from same door/exit LM is spotting | 1 | 1 | 0 | 1 |
| ii. 100 pounds or less dropped from a different door/exit from which one LM is spotting | 1 | 1 | 0 | 2 [2] |
| iii. Greater than 100 pounds but not greater than 350 pounds | 1 | 1 | 0 | 3 [2] |
| iv. Greater than 350 pounds but not greater than 500 pounds | 1 | 1 | 0 | 4 [2] |
| c. Dynamic High Speed Aerial Delivery (DHSAD)<br>1. With wheels on the bundle or rigged with a skid-board (or featuring a smooth, rigid, flat base) on aircraft integrated roller(s) and/or HSLLADS roller(s)<br>i. 100 pounds or less<br>With Buffer Boards | 1 | 1 | 0 | 2 [3,5,10] |
| bb. Without Buffer Boards | 1 | 1 | 0 | 2 [5,10] |
| ii. Greater than 100 pounds but not greater than 350 pounds<br>aa. With Buffer Boards | 1 | 1 | 0 | 2 [2,5,10] |
| bb. Without Buffer Boards | 1 | 1 | 0 | 2 [5] |
| iii. Greater than 350 pounds but not greater than 500 pounds<br>aa. With Buffer Boards | 1 | 1 | 0 | 2 [6,12] |
| bb. Without Buffer Boards | 1 | 1 | 0 | 2 [12] |
| 2. Without wheels on the bundle and/or not using aircraft integrated rollers / HSLLADS rollers to maneuver / position the equipment<br>i. 100 pounds or less<br>aa. With Buffer Boards | 1 | 1 | 0 | 2 [3,5,10] |
| bb. Without Buffer Boards | 1 | 1 | 0 | 2 [5,10] |
| iv. Greater than 100 pounds but not greater than 350 pounds<br>aa. With Buffer Boards | 1 | 1 | 0 | 2 [2,5,10] |
| bb. Without Buffer Boards | 1 | 1 | 0 | 2 [5] |

| | | | | |
|---|---|---|---|---|
| v. Greater than 350 pounds but not greater than 500 pounds<br>aa. With Buffer Boards | 1 | 1 | 0 | 3 [5,6,11,12] |
| bb. Without Buffer Boards | 1 | 1 | 0 | 3 [5,6,11] |
| Airdropping equipment loads on skid-boards or CEPs rigged with a release gate and positioned on aircraft integrated rollers and/or HSLLADS rollers deployed individually, as a single stick, as multiple sticks, and/or in combination with personnel airdrops, and with or without any authorized in-flight rigging/re-rigging/JAI duties | | | | |
| a. Positioned in the Center Vertical Restraint (CVR) and the ECHS/CVR are providing the required vertical restraint for the load<br>1. Gravity exit via CDS/CRL/CEP flaps settings achieving an aircraft deck angle<br>i. CDS rigging (single stick)<br>aa. Static-line retriever gate cut | 1 | 1 | 0 | 2 [5,10] |
| bb. Manual gate cut | 1 | 1 | 0 | 1 [7] |
| cc. Combination of Static-line retriever and manual gate cuts (i.e., multiple CRRC procedures) | 1 | 1 | 0 | 2 [9] |
| ii. CDS rigging (double stick)<br>aa. Static-line retriever gate cut | 1 | 1 | 0 | 2 |
| bb. Simultaneous manual gate cuts | 1 | 1 | 0 | 2 [13] |
| iii. CRL rigging (single item dropped per pass) | 1 | 1 | 0 | 1 [7] |
| iv. CRL rigging (two items dropped per pass) | 1 | 1 | 0 | 2 [9] |
| v. CEP rigging (single side with single item or multiple items rigged) | 1 | 1 | 0 | 1 [7] |
| vi. CEP rigging (both sides with single or multiple items each side) | 1 | 1 | 0 | 2 [9] |
| 2. Manually pushed to exit aircraft with no deck angle<br>i. CRL rigging (single item 600 pounds or less) | 1 | 1 | 0 | 1 [7] |
| ii. CRL rigging (single item greater than 600 pounds) | 1 | 1 | 0 | 2 [5,10] |
| b. Not in the CVR or otherwise not being vertically restrained by the CVR and/or ECHS | 1 | 1 | 0 | 2 [5,10] |

| | | | | |
|---|---|---|---|---|
| 1. Gravity exit via CDS/CRL/CEP flaps settings achieving an aircraft deck angle<br>i. CDS rigging (single stick)<br>aa. Static-line retriever gate cut | | | | |
| bb. Manual gate cut | 1 | 1 | 0 | 1 [7] |
| ii. CRL rigging (single item dropped per pass) | 1 | 1 | 0 | 1 [7] |
| iii. CRL rigging (two items dropped per pass side by side on ramp or floor) | 1 | 1 | 0 | 2 [9] |
| iv. CEP rigging (centerline or offset to a single side with a single item or multiple items rigged) | 1 | 1 | 0 | 1 [7] |
| v. CEP rigging (both sides with single or multiple items each side) | 1 | 1 | 0 | 2 [9] |
| 2. Manually pushed to exit aircraft with no deck angle<br>i. CRL rigging of item(s) positioned on the ramp (per item)<br>600 pounds or less | 1 | 1 | 0 | 1 [7] |
| bb. Greater than 600 pounds | 1 | 1 | 0 | 2 [5,10] |
| ii. CRL rigging of item(s) positioned on the cargo floor (any weight) (per item) | 1 | 1 | 0 | 2 [5,10] |
| Heavy Equipment | | | | |
| a. MFCD Airdrop of Unilateral Training Loads (15 foot extraction parachute) | 1 | 1 | 0 | 1 |
| b. MFCD Airdrop of Actual Equipment in training (any size extraction parachute) or Unilateral Training Loads with greater than 15 foot extraction parachute(s) | 1 | 1 | 0 | 2 [5,10] |
| c. MFCD Airdrop of Actual Equipment in Exercises / Contingencies / Mission Rehearsals / Directed Taskings / Combat / Combat Support<br>1. (15 foot extraction parachute) | 1 | 1 | 0 | 1 |
| 2. (greater than 15 foot extraction parachute) | 1 | 1 | 0 | 2 [5,10] |
| d. Contingency Airdrop procedures<br>1. In training via simulated load / dry pass only | 1 | 1 | 0 | 1 |

| | | | | |
|---|---|---|---|---|
| 2. Unilateral Training Loads or Actual Equipment in Exercises / Contingencies / Mission Rehearsals / Directed Taskings / Combat / Combat Support | 1 | 1 | 0 | 2 [5,10] |
| Personnel Airdrop | | | | |
| a. Static-line<br>1. Tailgate Exit | 1 | 1 | 0 | 2 [5,10] |
| 2. One paratroop door open | 1 | 1 | 0 | 1 |
| 3. Both paratroop doors open | 1 | 1 | 0 | 2 [9] |
| b. Military Freefall (MFF)<br>1. One open exit/door at an altitude not requiring the crew to be on supplemental oxygen | 1 | 1 | 1 | 1 |
| 2. One open exit/door at an altitude requiring the crew to be on supplemental oxygen | 1 | 1 | 1 | 2 [5,10] |
| 3. Both paratroop doors open (with or without crew supplemental oxygen requirement) | 1 | 1 | 1 | 2 [9] |
| Pyrotechnic Operations | | | | |
| a. Illumination Flare delivery<br>1. Manually deployed out the ramp or through the AS-6BKS paratroop door portal at an altitude not requiring supplemental oxygen, or via the AS-22 ejector system allowing for aircraft pressurization at any aircraft capable deployment altitude<br>i. Deploying up to one parachute flare per minute | 1 | 1 | 0 | 2 [3,5,10] |
| ii. Deploying parachute flares at a rate of more than one per minute | 1 | 1 | 0 | 2 [9] |
| 2. Manually deployed out the ramp or through the AS-6BKS paratroop door portal at an altitude requiring supplemental oxygen | 1 | 1 | 0 | 2 [5,10] |
| b. Smoke/Sea Dye Marker delivery<br>1. Manually deployed out the ramp or through the AS-6BKS paratroop door portal at an altitude not requiring supplemental oxygen, or via the AS-22 ejector system allowing for aircraft pressurization at any aircraft capable deployment altitude | 1 | 1 | 0 | 1 |

| | | | | |
|---|---|---|---|---|
| 2. Manually deployed out the ramp or through the AS-6BKS paratroop door portal at an altitude requiring supplemental oxygen | 1 | 1 | 0 | 2 [5,10] |
| MA-1/2 Kit delivery | | | | |
| a. MA-1 Kit delivery<br>1. With Buffer Boards | 1 | 1 | 0 | 2 [2,5,10] |
| 2. Without Buffer Boards | 1 | 1 | 0 | 2 [5,10] |
| b. MA-2 Kit delivery<br>1. With Buffer Boards | 1 | 1 | 0 | 2 [5,10] |
| 2. Without Buffer Boards | 1 | 1 | 0 | 2 [9] |
| Aerial Refueling Tanker Operations | | | | |
| a. Single Hose movement / Single receiver in contact (or attempting contact) only one side at a time | 1 | 1 | 1 | 1 [4] |
| b. Dual Hose movement / Two receivers in contact simultaneously (or one receiver in contact and a second receiver attempting to contact other hose) | 1 | 1 | 1 | 2 [9] |
| c. Spare Tanker Operations (all tankers) | 1 | 1 | 1 | 2 [8,9] |
| Formation Operations | | | | |
| a. One other aircraft participating | 1 | 1 | 1 | 1 [8,9] |
| b. Multiple other aircraft/elements participating | 1 | 1 | 1 | 2 [8,9] |
| Aerial Refueling Receiver Operations | | | | |
| a. Normal Operations | 1 | 1 | 0 | 1 |
| b. Covert / Low-level Operations | 1 | 1 | 1 | 2 [5,10] |
| Specialized Refueling Operations | | | | |

| | | | | |
|---|---|---|---|---|
| a. FARP Tanker<br>1. Single Point | 1 | 1 | 1 | 2 [9,15] |
| 2. Multiple refueling points | 1 | 1 | 1 | 2 [9,15] |
| b. FARP Receiver or Hot Refueling | 1 | 1 | 0 | 1 |
| c. Any other Specialized Refueling Operations (see AFI 11-235 for examples)<br>1. On NVGs/using covert procedures (e.g., Adaptive basing operations/exercises) | 1 | 1 | 1 | 2 [9] |
| 2. In overt/non-NVG conditions (e.g., DSCA operations, natural disaster response) | 1 | 1 | 0 | 2 [3,5,10] |
| Combat Offload | | | | |
| a. Method A | 1 | 1 | 0 | 1 |
| b. Method B | 1 | 1 | 0 | 2 [5,10] |
| c. Method C | 1 | 1 | 0 | 1 |
| Infiltration / Exfiltration (RAPIDS) with or without bi-fold auxiliary loading ramp and/or with or without Buffer Boards | | | | |
| a. Four-wheeled vehicle(s) / Helicopters | 1 | 1 | 1 | 2 [9] |
| b. Personnel / Casualty Trans-load | 1 | 1 | 1 | 1 |
| Passenger/Personnel Movements/Airlift (Training, Exercises, Contingencies, AFMAN 24-204 Chapter 3 movements, DSCA, Non-combatant Evacuation Operations (NEO), etc.) | | | | |
| a. 40 passengers or less | 1 | 1 | 0 | 1 |
| b. More than 40 passengers | 1 | 1 | 0 | 2 [3,5,10] |
| Miscellaneous | | | | |

| | | | | |
|---|---|---|---|---|
| a. NVG Modified Contour Low Level | 1 | 1 | 1 | 1 |
| b. Any Low Level other than NVG Modified Contour | 1 | 1 | 0 | 1 |
| c. Self-Contained Approach (SCA) | 1 | 1 | 1 | 1 |
| d. Combat Search and Rescue – Coordination (CSAR-C) | 1 | 1 | 1 | 2 [5] |

**Notes:**

1. For combination airdrops and concurrent servicing use higher crew complement requirement. Aircrews with mixed currency/certifications/qualifications may perform events/missions for which they are current/certified/qualified in combination provided the individual event/mission crew complement requirements in this table are satisfied (e.g., CEP airdrop with a deck angle in combination with MFF personnel may be performed with a LM current in CEP airdrop but non-current in personnel airdrop with a second LM current in personnel airdrop but non-current in CEP airdrops).

2. Partial complement make-up may be filled by thoroughly briefed pushers (i.e., if a "2" is indicated, then either two LMs or one LM with one thoroughly briefed pusher may execute this event/mission). Thoroughly briefed pushers do not need to be on the aircraft intercommunication system.

3. Partial complement make-up may be filled by a safety observer in the cargo compartment (i.e., either two LMs or one LM with one safety observer is required). Safety observer must be on aircraft intercommunication. Use another crew member as a safety observer if crew complement permits. If the observer is not an HC-130J crew member, brief safety points of interest and observer position/movement limits. Observer is only required during the event/mission and during takeoff and landing for passenger movements).

4. Both hoses may remain extended and receivers may cross over to opposite observation position if EMCON allows radio communication and aircraft sensor (with CSO to operate it) is available to monitor receivers not in view of LM.

5. Instructor to Student ratio of 1:2 permitted.

6. For high-speed events/missions requiring duties on the ramp, crew complement requirements above 2 may be filled by thoroughly briefed pusher(s) (i.e., where "3" is indicated, either three LMs or two LMs with one thoroughly briefed pusher meets intent).

7. For authorized in-flight/en-route rigging/re-rigging/JAI duties, a second LM is required to separate airdrop inspection duties from airdrop rigging and airdrop execution duties. An instructor with a student satisfies the intent of this requirement.

8. For spare tanker and formation operations, ensure sufficient scanners are available to provide aircraft commander with positional awareness of aircraft not visible to the aircraft commander and/or relay aircraft commander communication (EMCON dependent) to other participating aircraft if directed. Spare tanker operations requires two scanners on both tanker aircraft. Other formation operations may only require one scanner if only one other aircraft needs to be kept

track of. The AC determines scanner requirements based on the mission, weather, threat, and participants.

9. Instructor to student ratio of 1:1 is required.

10. An instructor with a student meets the minimum crew complement requirements for this event/mission.

11. If wheeled pry-bar is available for use in flight, crew complement requirement may be reduced by one.

12. An instructor with two students meets the minimum crew complement requirement for this event/mission.

13. Aircrew complement for this event/mission will not include student LMs nor LMs in supervised status (i.e., non-current MLs or LMs receiving an evaluation)

14. Additional time is required for pre-flight, loading, rigging, and aircraft configuration when a second LM is not available or when crew complement consists of an instructor with one student.

15. Aircrew complement also requires HDP (see AFI 11-235 for HDP requirements)