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Flying Operations

C-130J OPERATIONS PROCEDURES

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This publication implements Air Force Instruction (AFI) 11-200, *Aircrew Training, Standardization/Evaluation, and General Operations Structure,* by establishing specific guidance for the operation of the C-130J aircraft. This publication applies to all commanders, operations supervisors, and aircrew assigned or attached to all flying activities of commands operating C-130J aircraft. This publication is applicable to the Air Force Reserve and Air National Guard. This publication does not apply to the United States Space Force. Refer recommended changes and questions about this publication to the Office of Primary Responsibility (OPR) using DAF Form 847, *Recommendation for Change of Publication*; route DAF Forms 847 from the field through the appropriate functional chain of command. This publication may be supplemented at any level, but all direct Supplements must be routed to the OPR of this publication for coordination prior to certification and approval. The authorities to waive wing/unit level requirements in this publication are identified with a Tier ("T-0, T-1, T-2, T-3") number following the compliance statement. 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. Ensure all records generated as a result of processes prescribed in this publication adhere to Air Force Instruction 33-322, *Records Management and Information Governance Program*, and are disposed in accordance with the Air Force Records Disposition Schedule, which is located in the Air Force Records Information Management System. This manual requires the collection and or maintenance of information protected by the Privacy Act of 1974 authorized by Department of Defense Instruction (DoDI) 5400.11, *DoD Privacy and Civil Liberties Programs* and Air Force Instruction (AFI) 33-332, *Air Force Privacy and Civil Liberties Program*. The applicable SORNs F036 AF PC C, Military Personnel Records System and F011 AF XO A, Aviation Resource Management

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SUMMARY OF CHANGES

This document has been substantially revised and needs to be completely reviewed. Major changes include: incorporated a new combat offload method and approvals; added door bundle procedures, required aircrew publications, and multiple incorporated Flight Crew Information Files (FCIFs); moved roles and responsibilities to **Chapter 2**; removed the chapter on Aeromedical Evacuation; expanded guidance on adjusted maximum effort; corrected CAT II ILS minimums; added Block 8.1 appendix and 8.1.1 specific information; incorporated Airfield Marking Pattern-4 (AMP-4) guidance; and moved Long Range Navigation Checklists from this publication to the e-Pubs C-130J folder in the Electronic Flight Bag.

Chapter 1

GENERAL INFORMATION

1.1. General.

1.1.1. This manual provides guidance for operating the C-130J. It is an original source document for many areas, but for efficiency reaffirms information found in aircraft flight manuals, flight information publications (FLIP), and other Air Force directives. When guidance in this AFMAN conflicts with another source document, that document takes precedence. For matters where this AFMAN is the source document, waiver authority is in accordance with (IAW) **paragraph 1.3**. For matters where this AFMAN repeats information in another document, follow waiver authority outlined in the source document.

1.2. Key Words Explained.

1.2.1. "Will" and "Must" indicate a mandatory requirement.

1.2.2. "Should" indicates a preferred, but not mandatory, method of accomplishment.

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

1.2.4. "**Note**" indicates operating procedures, techniques, etc., considered essential to emphasize. "**Note**" is used to explain or highlight information.

1.2.5. "***CAUTION***" indicates operating procedures, techniques, etc., which could result in damage to equipment if not carefully followed.

1.2.6. "***WARNING***" indicates operating procedures, techniques, etc., which could result in personal injury or loss of life if not carefully followed.

1.3. Deviations and Waivers. Do not deviate from guidance in this AFMAN except when the situation demands immediate action to ensure safety. The Pilot in Command (PIC) is vested with ultimate mission authority and responsible for each course of action they choose to take.

1.3.1. Deviations. The PIC will report deviations or exceptions taken without a waiver through command channels to the Chief, Major Command (MAJCOM) Standardization/Evaluation (Stan/Eval), who in turn will notify Chief, Air Mobility Command Standardization/Evaluations (lead command) as appropriate for follow-on action. **(T-2)**

1.3.2. Waivers. Directive guidance that requires compliance throughout this manual is tiered IAW DAFMAN 90-161, *Publishing Processes and Procedures*. Unless otherwise directed (e.g., Tier waiver authority), the waiver authority for non-tiered requirements in this manual is the requestor's commander (no lower than Sq/CC or equivalent). For aircrews that Change Operational Control (CHOP) to a combatant commander, the Commander of Air Force Forces (COMAFFOR) is considered the MAJCOM Commander equivalent.

1.3.2.1. Permanent waivers affecting theater unique circumstances must be approved by, or coordinated through, the MAJCOM Director of Operations (A3). **(T-2) Note*:*** Reference to MAJCOM/A3 in this publication also refers to equivalent offices if MAJCOM operations is not named (A3).

1.3.2.2. Long-term waivers affecting multiple aircraft or missions, must be approved IAW DAFMAN 90-161 and sent from the appropriate MAJCOM Stan/Eval to AMC Stan/Eval. **(T-2)**

1.4. Supplemental Procedures. This AFMAN is a basic directive. Each user MAJCOM or operational theater may supplement this AFMAN according to AFPD 11-2, *Aircrew Operations* and DAFMAN 90-161, *Publishing Processes and Procedures*. Stipulate unique MAJCOM procedures (will not be less restrictive than this basic document) and publish MAJCOM/A3 or Deputy approved permanent waivers in the MAJCOM supplement.

1.4.1. Combined Command Operations. Plan and conduct all operations that include forces from multiple MAJCOMs using provisions in this AFMAN. Do not assume or expect aircrews to perform MAJCOM/Theater unique procedures without owning MAJCOM/A3 or Deputy approval and advance training.

1.4.2. Coordination Process. Forward MAJCOM approved supplements (attach DAF Form 673, *Department of the Air Force Publication/Form Action Request*) to Air Mobility Command/Aircrew Standards and Evaluations (AMC/A3V) for mandatory notification prior to approval. **(T-2)**

1.5. Local Supplement Coordination Process. Operations Group commanders (OG/CCs) may define local operating procedures to this manual in a unit supplement or locally generated Operating Instruction (OI). OG/CCs will obtain approval from MAJCOM prior to releasing their supplement or OI. **(T-2)** Send an electronic copy of the approved version to MAJCOM Stan/Eval. MAJCOM Stan/Eval will send approved copies to AMC/A3V. **(T-2)**

1.6. Definitions. Find explanations or definitions of terms and abbreviations commonly used in the aviation community in Title 14, Code of Federal Regulations, **Part 1**, *Definitions and Abbreviations*; Chapter 2; and, *The DoD Dictionary of Military and Associated Terms.* See **Attachment 1** for common terms used in this manual. BLK 8 information applies to all variations of BLK 8.1.X aircraft variations unless otherwise specified. See **Attachment 2** for BLK 8.1-only specific guidance.

Chapter 2

ROLES AND RESPONSIBILITIES

2.1. General.

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

2.1.2. Unit commanders and agency directors, to include transportation and base operations passenger manifesting agencies involved with or supporting C-130J operations will ensure appropriate personnel are familiar with the guidance within this AFMAN. **(T-3)**

2.1.3. 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-0)** The PIC will ensure compliance with this publication and the following:

2.1.3.1. Headquarters Air Force (HAF), MAJCOM, and Mission Design Series (MDS)-specific guidance

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

2.1.3.3. Air Traffic Control (ATC) clearances

2.1.3.4. Notices to Airmen (NOTAMs)

2.1.3.5. Aircraft Technical Orders (TOs); and,

2.1.3.6. Combatant Commander instructions and other associated directives.

2.1.4. Aircrew. Individuals designated on the flight authorization are responsible to fulfill specific aeronautical tasks regarding operating USAF aircraft as specified in this AFMAN or by other competent, supplemental authority.

2.2. Aircrew Operational Reports. The reporting requirements in this manual are exempt from licensing IAW AFI 33-324, *The Air Force Information Collections and Reports Management Program.*

Chapter 3

AIRCREW COMPLEMENT/MANAGEMENT

3.1. General. This chapter provides guiding principles to form/manage mobility aircrews. Commanders at all levels will follow this guidance to form aircrews and to develop aircrew-related work/rest schedules that optimize efficiency of mobility forces engaged in worldwide operations. **(T-3)**

3.2. Aircrew Complement. Squadron Commanders (SQ/CCs) will form aircrews based on fragmentation order/mission directive, Crew Duty Time (CDT) and Flight Duty Period (FDP) requirements, aircrew member qualifications, and other constraints to safely accomplish the mission tasking. **(T-2)** Table 3.1 summarizes crew position requirements for different crew types. **Exception*:*** Crew complement for specialized missions (e.g., Modular Airborne Firefighting System) is addressed in the AFMAN 11-2C-130J Vol 3 Addenda A/B covering those missions.

3.2.1. The minimum crew complement is an aircraft commander, flight pilot, and loadmaster. When a mission requires more than one aircrew member at a position, the SQ/CC will determine whether an instructor and Non-Mission Ready (NMR) crewmember meets mission requirements. **(T-3)**

3.2.2. SQ/CCs will form augmented aircrews for missions planned to take longer than a basic CDT. **(T-3)** Augmenting aircrew members must be current, qualified, and Mission Ready (MR) IAW AFMAN 11-2C-130JV1, *C-130J Aircrew Training*. **(T-3) Exception:** An NMR pilot may augment provided the other two pilots are MR Instructor Pilots (IPs). An NMR loadmaster may augment provided that there is at least one Instructor Loadmaster (IL) and one Mission Loadmaster (ML). SQ/CC will augment an aircrew for the full Flight Duty Period (FDP). **(T-3)** The commander with mission execution authority (no lower than OG/CC for training missions) may augment aircrews while the mission is in execution. (See AFMAN 11-202V3, *Flight Operations*, and applicable supplements for more on CDT/FDP). **(T-3)**

Table 3.1. Aircrew Complement.

Crew Position	Basic	Augmented	Tactical
Aircraft Commander (AC)	1	2 1	1
Flight Pilot	1	1	1
Loadmaster	1 2, 3	2	2 5

Notes:
1. ACs must be qualified in the appropriate mission to be accomplished. Transfer of Pilot in Command (PIC) duties between qualified ACs will be briefed to the crew.
2. Two loadmasters (LM) may be required, at the unit commander's discretion, depending on mission complexity. Combat or contingency missions with hostilities require two loadmasters.
3. Two LMs or one LM and another qualified crewmember are required if more than 40 passengers are scheduled to be carried (except during unit moves or contingencies). **(T-3)** If mission requirements dictate, the AC may exercise discretion for alternate LM seating.
4. Two LMs are required for all airdrops 14,000 feet MSL and above. **(T-3)**

5. An instructor loadmaster with a student satisfies the two loadmaster requirement for heavy equipment airdrops. Only one loadmaster is required for tactical missions if:
a. Personnel or door bundle (<100 lbs.) drops are performed using only one paratroop door.
b. High altitude (up to 14,000 feet MSL) non-static line personnel are dropped from the ramp and door, or only one paratroop door is opened.
c. Performing Container Delivery System (CDS) or Low-Cost Low-Altitude (LCLA) airdrops.
d. Dropping only standard airdrop training bundles (SATBs).
e. A no-drop (dry pass) is planned.
f. Mission cut contains sufficient ground time to permit one loadmaster to onload or offload cargo.
g. Performing a Combat Offload Method A.
h. Hot Refuel/Wet Wing Defuel training with no cargo or passengers/Mission Essential Personnel (MEP) (not involved in the operation) onboard.

3.2.3. Tactical Airlift Formation Lead Requirements.

3.2.3.1. Definitions:

3.2.3.1.1. Flight Lead crew: consists of an aircraft commander who is either flight lead certified or is receiving lead upgrade training from an instructor. A flight lead can accomplish mission commander duties, lead multiple element formations, and perform element lead duties in a multiple element formation.

3.2.3.1.2. Deputy Lead crew: a flight lead crew that is ready to assume formation lead duties if the formation lead aborts. A deputy lead is required for formations greater than three aircraft. Deputy lead may fly as the number two aircraft in the first element or may fly as second element lead. If the deputy lead is the second element lead and flight lead falls out, the number two aircraft must depart the formation if not flight lead certified (either single ship or in formation with flight lead) or breakout from the formation and rejoin the formation at the end.

3.2.3.1.3. An element consists of two aircraft. A flight consists of three or more aircraft.

3.2.3.2. Unilateral Visual Meteorological Conditions (VMC) training: No special requirements.

3.2.3.3. Unilateral Instrument Meteorological Conditions (IMC) training and other than unilateral formations:

3.2.3.3.1. Single-element formations. No special requirements.

3.2.3.3.2. Multiple-element formation. A flight lead crew is required in the lead and deputy lead position. A flight consists of at least three positions: lead, deputy lead/element lead and a wingman. If deputy lead aborts after station time, any crew can assume their position with the concurrence of the mission commander. At minimum an element lead crew is required in any element lead position; however, any crew can fly as the last ship of a formation even if it is as flight or element lead position. For multi-flight formations, a deputy lead is only required in the first flight of the formation, the subsequent flights only require a flight lead crew in the lead position. **Exception:** Multiple-element formations consisting of two aircraft (one in the flight lead and one in the element lead positions) may use single-element formation lead criteria.

3.2.4. Night Vision Device (NVD) Aircrew Complements. Normally, an NVD crew will consist of a NVD-certified crewmember in each of the primary crew positions (a crewmember in upgrade supervised by a qualified instructor meets this requirement). **(T-3)** The pilots may use NVDs even if the loadmaster is not NVD current/certified. However**,** NVD taxi operations requiring the loadmaster to clear the taxi route/wingtip clearance required a current NVD-certified loadmaster to utilize NVDs.

3.2.5. Joint Precision Aerial Delivery System (JPADS)/Improved Container Delivery System (ICDS) Aircrew Complement. JPADS/ICDS crews consist of JPADS certified basic airdrop crew and a PADS Operator (PO). The PO does not have to be MDS qualified but must be a rated airdrop qualified officer. The PO must be JPADS certified. **(T-2)** It is essential the PO receive a thorough Additional Crew Member (ACM) briefing prior to performing duties on aircraft other than their primary MDS.

3.3. Loadmasters. A non-current or unqualified loadmaster may serve as a primary aircrew member on any mission when supervised by a qualified instructor (direct supervision for critical phases of flight). A loadmaster that requires direct supervision does not satisfy the requirements of **Table 3.1** unless waived by unit commander or delegated representative (no lower than SQ/DO). For example, if two loadmasters are required and one requires direct supervision, then a third loadmaster that is a qualified instructor is required to provide direct supervision.

3.4. Flight Duty Period/Crew Duty Time. The C-130J sleeping provisions do not provide adequate privacy or noise levels to obtain suitable rest. FDP/CDT limits are IAW AFMAN 11-202V3 and applicable supplements. The SQ/CC or their designated representative may approve an extension of the tactical duty day up to 2 hours for delays occurring after initial takeoff, if requested by the aircrew. **(T-3)** Tactical events are defined as airdrop, visual low-level (day/NVD), formation (visual/Station Keeping Equipment (SKE)), assault landings/takeoffs, tactical approaches/departures, airfields that are defensive systems required, landings/takeoffs on an AMP-3/4 configured landing zone, and unimproved runway operations.

3.5. Alerting Procedures.

3.5.1. Aircrew alert time is normally 3+15 hours before scheduled takeoff time (4-hours for airdrop missions). This permits 1 hour for reporting and 2+15 hours for mission preparation (3 hours for airdrop missions). Individual locations may increase or decrease this time depending on specific requirements.

3.5.2. If the mission cannot depart within 4+00 hours of the scheduled takeoff, the PIC may continue the mission after a thorough re-evaluation of all as Operational Risk Management (ORM) factors. The controlling Command and Control (C2) agent will not ask the PIC to accept a takeoff outside of the 4-hour window. **(T-3)** The PIC will coordinate with C2 to continue the mission or enter crew rest and establish a legal for alert time. **(T-3)**

Chapter 4

AIRCRAFT OPERATING RESTRICTIONS

4.1. Objective. Redundant systems may allow crews to safely perform some missions when a component/system is degraded. The PIC has the final authority to determine if an aircraft with discrepancies is unable to accomplish the mission. The PIC will ensure a detailed explanation of the discrepancy is entered in the AFTO Form 781A, *Maintenance Discrepancy and Work Document*; and will include the following maintenance identifiers to effectively communicate aircraft status. **(T-3)**

4.1.1. Mission Essential (ME). The PIC will designate an item, system, or subsystem component essential for safe aircraft operation or mission completion as ME. **(T-3)**

4.1.2. Mission Contributing. The PIC will designate an item, system, or subsystem component, which is not currently essential for safe aircraft operation as mission contributing. These discrepancies should be cleared at the earliest opportunity. If circumstances change or mission safety would be compromised, re-designate as ME. Do not delay a mission to clear a mission contributing discrepancy. **(T-3)**

4.1.3. Open Item (OI). The PIC will designate discrepancies not expected to adversely impact the current mission or any subsequent mission as an OI. **(T-3)** These items are normally cleared at home station.

4.2. Minimum Equipment List (MEL) Guidance. The MEL is a pre-launch document that lists the minimum equipment/systems necessary to operate the aircraft. It is impractical to prepare a list that would anticipate all possible combinations of equipment malfunctions and contingent circumstances. A PIC who accepts an aircraft with degraded equipment/systems is not committed to subsequent operations with the same degraded equipment. PICs are not committed to operations with degraded equipment accepted by another PIC.

4.2.1. Account for the possibility of additional failures when accepting aircraft with inoperative systems or components. The MEL is not intended for continued operation over an indefinite period with systems/subsystems inoperative.

4.2.2. All emergency equipment will be installed unless specifically exempted by mission requirements/directives. **(T-3)**

4.2.3. Waiver Guidance. A PIC prepared to operate with a degraded MEL item will request a waiver through C2 channels. **(T-3)** The PIC will provide the C2 agent: 1) nature of request, 2) individual crew member qualification, 3) mission leg(s) requiring the waiver, 4) weather or other adverse conditions, and 5) the governing directive of waiver request to include volume, chapter, and paragraph. **(T-3)** Initiate waiver requests as soon as possible; plan for waiver processing to take at least one hour.

4.2.4. PICs operating with waiver(s) for degraded equipment will coordinate mission requirements (e.g., revised departure times, fuel requirements, maintenance requirements, etc.) with the controlling C2 agency. **(T-3)**

4.2.5. If beyond C2 communication capability, or when it is necessary to protect the crew or aircraft from a situation not covered by this chapter and immediate action is required, the PIC

may deviate according to **paragraph 1.3**. Report deviations (without waivers) through channels to the MAJCOM/A3V (or equivalent) within 48-hours. OG/CCs will collect background information and submit a follow-up written report upon request. **(T-3)**

4.3. Waiver Protocol. Waivers to operate with degraded equipment are granted on a case-by-case basis. The PIC determines the need for a waiver after coordinating with the lowest practical level of command. MEL waiver authority is as follows:

4.3.1. The Wing Commander (WG/CC) or equivalent, delegated no lower than the Operations Group Commander (OG/CC), is the waiver authority for all missions.

4.3.2. Other than MEL Waivers. Determine the governing source document (e.g., AFI, flight manual, maintenance TO, etc.) to ascertain the waiver authority. Use C2 channels to notify the appropriate waiver authority. Waivers of this nature may require an extended response time.

4.3.3. Engineering Dispositions (ED). Dispositions are requested when aircraft are damaged and/or established maintenance TO procedures cannot be followed or do not exist. The onsite maintenance authority is responsible for requesting Engineering Dispositions. Most EDs allow maintenance to repair the aircraft and return it to unrestricted status; dispositions of this nature do not concern aircrews. However, EDs affecting aircrew operations require MEL waiver authority approval. **(T-2)**

4.3.3.1. PICs will coordinate dispositions containing flight restrictions, prohibitions, additional operating limits, or modified/nonstandard operating procedures with the appropriate MEL waiver authority. **(T-2)**

4.3.3.2. PICs will not accept dispositions appearing incomplete, in error, or unsafe. **(T-2)** Prior to rejecting a disposition, the PIC will contact the appropriate MEL waiver authority. **(T-3)** The waiver authority will attempt to resolve the issue. **(T-2) Note:** Deviations from the flight manual requires approval IAW the flight manual.

4.4. Technical Assistance. The PIC may request technical support and additional assistance from their home unit or MAJCOM C2 agency. Aircrews may access aircraft experts via CONFERENCE HOTEL call from satellite phone or phone patch. Current contacts are Lockheed Martin Ops Center (DSN 312-838-5140, commercial 817-777-3060, toll free 877-935-5858) or C-130J System Program Office via Robins Command Post (DSN 312-497-2612/13/14/15, commercial 478-327-2612/13/14/15).

4.5. MEL Table Definitions/Column Identifiers.

4.5.1. Installed - Number of components or systems installed.

4.5.1.1. In some cases, a component can be controlled from either a conventional (hard) panel or from a Communication Navigation Identification Management Unit (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.

4.5.1.2. Although the indications on each pilot's Heads Down Display (HDD) 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 the 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.

4.5.2. Required - The minimum number (quantity) of items required for operation provided the conditions specified in the remarks or exception column are met.

4.5.3. 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.

4.5.4. Remarks and exceptions. Some technical information and procedures are contained in this column. This is not all-inclusive; crewmembers must refer to the flight manual and other directives for procedures, techniques, limitations, etc. **(T-3)**

4.5.5. One-time flight clarification: A Red X discrepancy must be downgraded through maintenance channels prior to flight. **(T-2)** An MEL waiver may still be required. This condition does not preclude carrying cargo and passengers unless stipulated otherwise by the waiver. The priority is to move the airplane to a repair capable facility. PICs must coordinate with appropriate agencies to ensure repair capability exists at the destination. **(T-2)** One-time flights may include enroute stops only when necessary to recover the airplane. ***Example:*** An airplane departs on a gear-down flight from Djibouti International Airport and requires an enroute fuel stop (Cairo) before landing at the nearest repair-capable facility, Sigonella Naval Air Station.

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

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

4.5.6. Other mission and repair clarifications:

4.5.6.1. Must be repaired at next repair-capable facility: Mission may continue as scheduled. Item must be repaired upon reaching a repair-capable facility. Designate item ME upon reaching repair facility. Once maintenance action is initiated, and it is determined repairs are not possible, the PIC will discuss possible courses of action with C2 agency to return aircraft to service. **(T-2)**

4.5.6.2. Mission dictates requirement: PIC must consider the entire mission profile, not just the next leg. **(T-3)** ***Example:*** An airplane is departing an enroute station with repair capability, after engine start the Pilot Flying (PF) discovers the #1 engine anti-ice is inoperative. Icing conditions are not forecasted for the next leg. However, because the mission spans several days and repair capability does not exist at the scheduled enroute stops, the PIC elects to have the item repaired prior to departing.

4.6. Navigation Systems. TO 1C-130J-1, *Flight Manual,* and **Chapter 9** lists authorized airspace and procedures for the C-130J. Equipment listed in FLIP for compliance with appropriate airspace is mandatory. **(T-2)** Loss of any component before airspace entry requires return to a station with maintenance capability or re-filing via routes permitting operation with degraded equipment.

4.7. Soft Panel Operations.

4.7.1. 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 will mitigate 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 will ensure the soft panel retains control of the particular item throughout shutdown. In all cases, PICs must consider the increased workload associated with using soft panels. **(T-3)**

4.7.2. Hard panel failures may be the result of a physical failure or loss of communication with the mission computer (MC). An aircraft reboot may recover hard panel functionality. To determine if hard panel functionality can be regained, the following procedures must be followed in sequential order:

4.7.2.1. Completely power down when accomplishing the BEFORE LEAVING AIRPLANE checklist.

4.7.2.2. Complete all checklist items in the POWER UP checklist. Do not proceed past the POWER UP checklist until it can be determined if the hard panel has recovered. Depending on the system affected (such as Auxiliary Power Unit (APU), bleed air, landing gear, etc.), do not apply bleed air or hydraulics until hard panel functionality can be determined.

4.7.2.3. To determine if a hard panel has recovered, ensure hard panel and soft panel selections/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 Advisory, Caution, and Warning System (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.

4.7.2.4. If a CNI "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.

4.7.2.5. If it is determined that the hard panel has not recovered, at the PIC's discretion, the mission may continue to a station supporting a repair capability, including enroute stops. Do not reselect the hard panel. If a flight must continue under the control of two or more soft panels, a waiver is required.

4.7.3. After returning to home station or repair facility with a hard panel malfunction, aircrews will shut down and turn the aircraft over to maintenance personnel for required maintenance actions. **(T-3)**

4.8. BLK 8 Device Communication Reset. For applicable systems, use of the COMM RESET menu on the Avionics Management Unit (AMU) may recover system functionality. Reference COMM RESET in Section 18D of TO 1C-130J-1.

4.9. C-130J Minimum Equipment List. This MEL lists the minimum equipment and systems to launch the aircraft under routine operations. The MEL does not include all equipment or systems

essential to airworthiness. For items not listed on the MEL the PIC is the decision authority. The MEL is not intended to promote continued operation of the aircraft for an indefinite period with systems inoperative. Due to the various configurations of C-130Js, the number in the Installed column is a representation of the majority of the aircraft. No waiver is required for units operating MDS without applicable system installed. Tables that include BLK 8 equipment and systems provide additional guidance for BLK 8 aircraft and aircrew.

4.10. Supplements. Each MAJCOM may supplement the MEL (see **Chapter 1**).

Table 4.1. Air Conditioning and Pressurization.

System Item	Installed	Required	Remarks or Exceptions
Air Conditioning System	2	1	One may be inoperative provided: (1) Cross-flow valve is operative, (2) Associated Flow Control Valve is verified CLOSED, (3) Consideration is given to the type of mission, fuel quantity, required cruise altitude, and oxygen quantity.
	2	0	Both may be inoperative provided: (1) Both control valves are verified CLOSED (2) Aircraft is operated unpressurized, (3) Auxiliary vent valves are operative for ventilation and (4) Consideration is given to required cruise altitude, fuel quantity, Outside Air Temperature (OAT), and oxygen quantity. **Note:** 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 Medical Crew Director (MCD) 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: (1) Respective Manual Temperature Control System is operative, **OR** (2) Respective Air Conditioning System is considered inoperative, and (3) Temperature control is not required.
b. BA/ECS Channels	2	1	**Note:** 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, **OR** 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: (1) Divider valve operative, (2) Right wing isolation valve operative, (3) Cross-flow valve is operative.
(2) Flight Station Air Conditioning System	1	0	May be inoperative provided: (1) Divider valve operative, (2) Left wing isolation valve operative, (3) Cross-flow valve is operative.
f. Temperature Control Valve	2	0	May be inoperative provided: (1) Valve is failed in the normal temperature range, **OR** (2) 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	If both fail in flight, damage to Heads Up Display (HUD) may occur. Use Primary Flight Displays (PFDs) as required. If HUDs are stowed, pull the associated Electronic Circuit Breakers (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 crewmembers on board.
Pressurization System			
a. Automatic Pressure Control System	1	0	One channel may be inoperative May be completely inoperative provided: (1) Manual pressurization system is operative, and (2) Consideration is given to the additional crew workload caused by using manual pressurization, **OR** (3) Aircraft is operated unpressurized, and (4) Consideration is given to required cruise altitude, fuel/oxygen quantity, and OAT.
(1) CONSTANT ALTITUDE (CONST ALT) Mode	1	0	May be inoperative provided consideration is given to the type mission to be flown (e.g., Aeromedical Evacuation (AE)).

b. Emergency Depressurization Handle	1	0	May be inoperative provided: (1) Aircraft is operated unpressurized, and (2) Consideration is given to required cruise altitude, fuel/oxygen quantity, and OAT.
c. Emergency Depressurization Switch	1	0	May be inoperative provided: (1) Control is available through the associated soft panel, **OR** (2) Aircraft is operated unpressurized, and (3) Consideration is given to required cruise altitude, fuel/oxygen quantity, and OAT.
d. Manual Pressurization Control System	1	0	May be inoperative provided: (1) Automatic pressurization system is operative **OR** (2) Aircraft is operated unpressurized, (3) Consideration is given to required cruise altitude, fuel/oxygen quantity, and OAT.
e. Outflow Valve	1	0	May be inoperative provided: (1) Valve is manually positioned to full open (2) Pressurization mode select switch is positioned to NO PRESS, (3) Aircraft is operated unpressurized, and (4) Consideration is given to required cruise altitude, fuel/oxygen quantity, and OAT.
f. Safety Valve	1	0	May be inoperative provided: (1) Outflow valve is manually positioned to full open (2) Aircraft is operated unpressurized, and (3) Consideration is given to required cruise altitude, fuel/oxygen quantity, and OAT

Table 4.2. Auto Flight.

System Item	Installed	Required	Remarks or Exceptions
Autothrottle (A/T) System	1	0	
Digital Autopilot System	2	0	May be inoperative provided associated autopilot is not essential for performance of mission requirements. **Note:** An automatic altitude control system capable of maintaining altitude within 65 feet of that assigned is required for operation in Reduced Vertical Separation Minimum (RVSM) airspace.
Digital Autopilot/Flight Director (DA/FD) Controls			
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) Or Autopilot is considered inoperative. **Note:** 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: (1) Associated DA/FD Navigation (NAV) and Approach (APPR) Modes (except INAV) are considered inoperative (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/Instrument Landing System (ILS)/MB or Tactical Air Navigation System (TACAN).
d. Go-around (G/A) Switch	2	1	
e. Heading Knob	2	0	May be inoperative provided: (1) Associated DA/FD Heading (HDG) Mode is considered inoperative (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. **Note:** An automatic altitude control system is required for operation in RVSM airspace.
h. Pitch Control Wheel	1	0	May be inoperative provided: (1) Autopilot pitch attitude hold mode is operative, **OR** (2) Autopilot pitch mode is considered inoperative, and (3) Autopilot pitch OFF switch is positioned to OFF.
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. (BLK 8) Known P Ref Set Panel fault does not count as inoperative unless it ceases normal operations.
(1) ALT SEL Switch	2	0	May be inoperative provided: (1) Associated altitude alert system is considered inoperative, and (2) Associated DA/FD Altitude Select (SEL) Mode is considered inoperative, and (3) Ground Collision Avoidance System (GCAS) is serviceable. **Note:** An altitude alerting system is required for operation in RVSM.
(2) BARO SET Switch	2	1	**Note:** Both Baro 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. **Note:** For a given mode to be inoperative, both the pilot and co-pilot switches for that mode would have to be inoperative. **Note:** 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: (1) Autopilot roll attitude hold mode is operative, **OR** (2) Autopilot lateral mode is considered inoperative (3) Autopilot LAT OFF Switch is switched Off.

Digital Autopilot/Flight Director (DA/FD) Indications			
a. Automated Flight Control System (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: (1) Individual reference annunciations and markers (e.g., HUD, PFD cards, lines on tapes, carets) are operative, **OR** (2) 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 4.3. 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 including enroute stops.
High Frequency (HF) Radios	2	0	If not needed to contact ATC.
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. **Exception**: Formations must have at least one operational IFF per element. **Note:** An altitude reporting transponder is required for operation

a. Antenna	2	1	Mode 5 and Mode S require both antennas.
b. IFF Mode 5	1	0	May be inoperative provided aircraft is not operated in airspace that requires Mode 5. **Note:** Mode 5 is not required for flights that originate in and will remain inside the inner boundaries of all domestic & coastal Air Defense Identification Zone's surrounding the CONUS in RVSM airspace. Additionally, check the FCG to see if it is allowed on OCONUS missions.
UHF/VHF Radios	4	2	May be inoperative unless essential for performance of mission, route or Air Traffic Control requirements provided: (1) UHF No. 1 or VHF No. 1 is operative, and (2) At least one additional UHF or VHF radio is operative.
Automatic Dependent Surveillance – Broadcast (ADS-B)	1	0	May be inoperative provided aircraft not operated in ADS-B required airspace.
Swift Broadband Unit (BLK 8)	1	0	
Civil Datalink (BLK 8)			
a. Aircraft Communication Addressing and Reporting System (ACARS) (BLK 8)	1	0	May be inoperative provided not required by C2.
b. Automatic Dependent Surveillance – Contract (ADS-C) (BLK 8)	1	0	May be inoperative provided not required by airspace.
c. Controller Pilot Data Link Communications (CPDLC) (BLK 8)	1	0	May be inoperative provided not required by airspace.
Digital Switching Unit (DSU) (BLK 8)	1	0	One-time flight is authorized to a repair facility. The crew must operate in Backup Mode.

Digital Crew Unit (DCU) (BLK 8)	6	3/4	Must have one DCU accessible by each primary crew member according to mission set.
International Maritime Satellite (INMARSAT) (BLK 8)	1	0	May be inoperative provided VDL is available or aircraft is not operated in airspace requiring Civil Datalink capabilities.
Link 16 (BLK 8)			
a. Portable Mission Display (PMD) (BLK 8)	2	0	Unless required for mission accomplishment.
b. Multifunctional Information Distribution System – Low Volume Terminal (MIDS-LVT) (BLK 8)	1	0	Unless required for mission accomplishment.
c. Special Mission Display Processor (SMDP) (BLK 8)	1	0	Unless required for mission accomplishment.
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.
a. Flight Station Speaker	2	1	
b. Cargo Compartment Speaker	16/14	0	May be inoperative if passengers or troops are carried and, at the discretion of the crew, effective and safe communications can be conducted.

Table 4.4. Electrical System.

System Item	Installed	Required	Remarks or Exceptions
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	
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 (BLK 6.0)	13	13	
Electronic Circuit Breaker Unit (BLK 8)	15	15	ECBU #15 & 16 added, ECBU #14 skipped.
Indications (System Status Display)			
a. Loadmeter Indications	5	4	One engine or APU loadmeter indication may be inoperative provided the APU generator is operative.
b. Voltmeter Indication, AC	5	4	One engine or APU voltmeter indication may be inoperative provided the APU generator is operative.
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, **OR** Control is available through the associated soft panel.
Transformer Rectifiers (TRs)	4	3	One TR may be inoperative for flight to a repair facility including enroute stops.

Table 4.5. Equipment.

System Item	Installed	Required	Remarks or Exceptions
Aerial Delivery System (ADS)			

a. Aerial Delivery Control Panel	1	0	May be inoperative provided: (1) Control is available through associated Soft Panel, **OR** (2) 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 MFCD.
Pallet Lock Control Unit (PLCU)	10/7	0	May be inoperative provided heavy equipment airdrop or combat offload operations will not be conducted. May be inoperative provided PLCU 10(7) and PLCUs associated with a heavy equipment airdrop or combat offload operations are operational.
Printer (BLK 8)	1	0	
Microwave	1	0	May be inoperative provided crew does not need for mission accomplishment.
Lavatory	1	1	May be inoperative provided no passengers are onboard and the flight time does not exceed 3 hours. Flight time may be extended beyond 3 hours provided urinals are onboard and accessible, the crew can comfortably utilize the urinals (male vs female crew), and there is proper support to clean the urinals at the next destination.

Table 4.6. 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 or 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	
Nacelle Overheat Detection Loop	8	4	
Fire and Overheat Detector System (FODS) Controller	1	1	
Smoke Detector	4	1	The underdeck avionics compartment detector must be operational.

Table 4.7. 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 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.
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 (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 Sensor	2	1	

Table 4.8. Fuel.

System Item	Installed	Required	Remarks or Exceptions
Boost Pump, Main Tank	4	3	One may be inoperative provided: (1) Applicable flight manual limitations and procedures are observed, (2) Main tank transfer pumps are operative and, (3) ECBs for inoperative main tank boost pump are strapped open.
Crossfeed Manifold Fuel Pressure Indication	1	1	

Crossfeed Valve	4	0	May be inoperative provided: (1) Associated fuel level control valve is operative, (2) Affected valve is secured CLOSED, and (3) Main tank transfer pumps are operative. (4) Cross-ship separation valve is operative. **Note:** Valve must be manually closed if failed open or ECBs opened if valve is failed closed.
Cross-ship Separation Valve	1	0	May be inoperative provided valve is electrically disconnected and secured OPEN.
Fuel Control Panel	1	0	May be inoperative provided control is available through the associated Soft Panel. Consideration should be given to the addition to crew workload caused by using the soft panel.
Fuel Dump Valve	2	1	One may be inoperative provided the valve is secured CLOSED.
Fuel Management Controller	1	1	One channel may be inoperative.
Fuel Quantity Indications			**Note:** 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.
a. Auxiliary Tank	2	1	One may be inoperative provided: (1) All fuel flow indicators are operative, (2) Associated fuel transfer pump is operative, (3) All other fuel quantity indicators for tanks with fuel on the same side of the cross- ship valve are operative, and (4) Fuel quantity in the associated tank is verified by an accepted procedure prior to takeoff and at all enroute stops when the engines are shut down (magnetic sight gauge).
	2	0	Both may be inoperative provided associated fuel tanks are verified EMPTY.

b. External Tank (if installed)	2	1	One may be inoperative provided: (1) All fuel flow indicators are operative, (2) At least one associated fuel transfer pump is operative, (3) All other fuel quantity indicators for tanks with fuel on the same side of the cross-ship valve are operative, and Fuel quantity in the associated tank is verified by an accepted procedure prior to takeoff and at all enroute stops when the engines are shut down (dipstick).
	2	0	May be inoperative provided associated fuel tanks are verified empty.
c. Main Tank	4	3	One may be inoperative provided: (1) All fuel flow indicators are operative, (2) Associated fuel boost pump is operative, (3) All other fuel quantity indicators for tanks with fuel on the same side of the cross-ship valve are operative, and (4) Fuel quantity is checked prior to first takeoff following fuel servicing by an accepted procedure (dipstick). (5) At enroute stops, when engines are shut down, the tank with the inoperative indicator and the symmetrically opposite tank will be checked by an accepted procedure prior to takeoff (dipstick). (6) Engine out training using the engine corresponding to the inoperative indicator or its symmetrical opposite will not be conducted during tank to engine operations.
d. Totalizer	1	0	
Fuel Quantity Preset Switch	1	0	
Refuel Drain Pump	1	0	May be inoperative provided the manifold is manually drained.
Single Point Refuel Valve	1	0	May be inoperative provided alternate refueling procedures can be used.
Single Point Refueling Drain Pump	1	0	May be inoperative provided manual draining can be accomplished.
Transfer Pump			

a. Transfer Pump, Auxiliary Tank	2	0	May be inoperative provided ECBs for inoperative pump are strapped open. If pump is inoperative, associated tank is considered unusable.
b. Transfer Pump, External Tank (if installed)	4	2	One pump in each tank may be inoperative provided ECBs for inoperative external tank transfer pump are strapped opened.
	4	0	Both pumps in each tank may be inoperative provided: (1) ECBs for inoperative pumps are open, and (2) Both tanks are empty.
c. Transfer Pump, Main Tank	4	3	One may be inoperative provided ECBs for inoperative transfer pump are strapped open and the respective main tank boost pump is operative.

Table 4.9. 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, Auxiliary	1	1	May be inoperative provided the electrical auxiliary pump is operative.
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 4.10. Ice and Rain Protection.

System Item	Installed	Required	Remarks or Exceptions
Angle of Attack (AOA) Sensor Anti-ice System	2	1	May be inoperative provided AOA sensor is considered inoperative.
Ice Detector	2	0	Both may be inoperative provided: (1) Wing leading edge lights are operative, **OR** (2) 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	Pilot Side may be inoperative if ADC 1 is considered inoperative. Co-pilot side must be operative.
Propeller Ice Protection System	4	0	May be inoperative provided aircraft is not operated in known or forecasted icing conditions.
Propeller De-icing Timer Unit	1	0	May be inoperative provided aircraft is not operated in known or forecasted 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 4.11. Indicating/Recording Systems.

System Item	Installed	Required	Remarks or Exceptions
Advisory Caution and Warning System (ACAWS)	1	1	
Cockpit Voice Recorder (CVR)	1	1	**Note:** All components must be operative for the CVR to be considered operative except as listed below.
a. Underwater Acoustic Locator Beacon (on CVR)	1	1	CVR Beacon may be inoperative provided flight profile does not include extended overwater segment(s).
Digital Flight Data Recorder (DFDR)	1	1	
a. Underwater Acoustic Locator Beacon (on DFDR)	1	1	

Table 4.12. Landing Gear and Brakes.

System Item	Installed	Required	Remarks or Exceptions
Anti-Skid System	1	0	May be inoperative provided: (1) Anti-Skid system ECBs are opened, and (2) Flight manual performance limitations are applied, and (3) Must be repaired at first capable repair facility, not including enroute stops. (4) Maximum effort operations not allowed.
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. **Note:** 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 4.13. Lights.

System Item	Installed	Required	Remarks or Exceptions
Exterior Lighting			
a. Landing Light, Vis/Infrared (IR)	2	1	One landing light may be inoperative provided taxi light on that side is operative. **Note:** Both landing lights may be inoperative if only flown during daylight hours.
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.
e. Wing Leading Edge Lights	2	0	May be inoperative at night provided: (b) Ice detectors are operative, **OR** (2) Aircraft is not operated in known/forecast icing.
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.
g. Formation Lights	9	4	Formation lights are not required for daylight ops. Two lights per wing are required for night formation flying.
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	

Covert Ramp Loading Lights (BLK 8)	1	0	May be inoperative provided they are not needed for mission execution.

Table 4.14. Navigation.

System Item	Installed	Required	Remarks or Exceptions
Air Data Computer (ADC)	2	1	See flight instrument requirements, **Chapter 6** of this AFMAN for CAT I restrictions with shared sources. **Note:** Both required for operation in RVSM airspace and CAT II ILS approaches.
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. **Note:** All components must be operative for the ADF to be considered operative.
Cursor System	1	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 hours or at night.
Doppler Velocity Sensor	1	0	
Embedded Global Positioning/Inertial Navigation System (EGI)	2	1	May be inoperative provided: (1) Overwater (out of NAVAID range) or Basic Area Navigation Airspace (BRNAV) flight will not be conducted, (2) Consult FLIP for airspace restrictions
Global Positioning System (GPS) (BLK6.0) / Military GPS (MGPS) (BLK 8)	2	0	Unless required for mission accomplishment. **Note:** With GPS inoperative, the in-flight alignment capability will not be available.

Civil Global Positioning System (CGPS) (BLK 8)	2	0	May be inoperative provided mission accounts for reduced RNAV/Required Navigation Performance (RNP) capabilities.
Ground Collision Avoidance System (GCAS)	1	0	May be inoperative provided passengers/troops will not be carried.
Radar, Low Power Color	1	0	Required if thunderstorms or hazardous conditions that can be detected by airborne radar are forecast or exist along route of flight. Required for AMP-4 operations. Radar not required for formation flight if another formation member has operable radar.
a. Control Panel	1	0	Required for AMP-4 operations. May be inoperative provided: (1) Control is available through the associated Soft Panel, and (2) Modes other than the map or weather (WX) modes are not essential to accomplish mission objectives.
Radar Altimeter (RA)	2	1	One may be inoperative provided CAT II ILS approaches will not be flown.
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	
Station Keeping Equipment (SKE)	1	0	May be inoperative unless required to accomplish mission objectives. Consideration should be given to crew experience with alternate formation flying techniques, mission peculiarities and whether the mission is conducted during daylight hours or at night.

Tactical Air Navigation (TACAN)	2	0	All components must be operative for the TACAN to be considered operative. If both TACANs are inoperative, Distance Measuring Equipment (DME) is not available. **Note:** 2 TACANs are required when performing RNAV procedures with a BLK 6.0 aircraft.
Total Air Temperature Sensor	2	2	
Traffic Alert Collision Avoidance System (TCAS)	1	0	Must be repaired at the next repair capable facility. Required for flight during NVD operations. May be inoperative provided: (1) TCAS is deactivated and secured, and (2) TCAS is not necessary for compliance with Air Traffic Control (ATC) requirements or airspace requirements. (3) Passengers/troops will not be carried.
UHF Direction Finder System	1	0	May be inoperative unless essential for performance of mission objectives.
VHF Navigation System (VOR/ILS/MB)	2	1	The No. 1 system must be operative. **Note:** All components must be operative for the VHF navigation system to be considered operative.

Table 4.15. Oxygen.

System Item	Installed	Required	Remarks or Exceptions
Crew Oxygen System	1	1	
Oxygen Regulators	10	3	May be inoperative provided one is available for each primary crewmember. Loadmaster's position must meet mission needs.

Table 4.16. Pneumatic.

System Item	Installed	Required	Remarks or Exceptions
Bleed Air Augmenter Valve	4	3 Less than 3	One may be inoperative provided: (1) Affected valve is CLOSED, (2) All nacelle shut off valves are operative. May conduct a one-time flight to repair facility, not including enroute stops. Fly unpressurized (manual / open) and with no icing forecast.
Bleed Air Divider Valve	1	0	May be inoperative provided: (1) Affected valve is OPEN, (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: (1) Affected valve is OPEN, and (2) Divider valve is operative.

Table 4.17. System Integration and Display.

System Item	Installed	Required	Remarks or Exceptions
Avionics Management Unit (AMU)	2	1	All displays and data fields must be operative for the associated AMU to be considered operative.
Bus Adapter Unit (BAU) Type I	6	4	BAU 3 (daytime only) and/or 6 will be used as replacements or can be failed (swap modules). 1, 2, 4, & 5 must be operational.
Bus Adapter Unit (BAU) Type II	4	4	
Bus Interface Unit (BIU)	2	2	

Communication/ Navigation/Breaker Panel (CNBP)	1	1	All displays and data fields must be operative for the CNBP to be considered operative. However, when an input is not present and the correct 'data not available' or 'fail' indication is displayed, the CNBP may still be considered operative provided the failed indication is not required for the current mission or flight.
Communication/ Navigation/ Identification Management Unit (CNI-MU)	3	2	One may be inoperative at the observer position. **Note:** All components must be operative for the CNI- MU to be considered operative except as listed below.
Communication/ Navigation/ Identification System Processor (CNI-SP)	2	1	One may be inoperative for one time flight to repair facility, not including enroute stops.
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	
Heads Down Display (HDD)	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.

Head Up Display (HUD)	2 2	1 0	One may be inoperative provided both HDDs on the affected side are fully operational. Both may be inoperative provided: All four heads down displays (HDDs) are operative (including operative independent PFDs in the pilot and copilot positions), and Forecast weather at destination is at or above Category I (CAT 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	
a. Special Mission Processor (Black/Unclassified) bus (BLK 8)	1	0	Unless required for mission accomplishment.
b. Special Mission Processor (Red/Classified) bus (BLK 8)	1	0	Unless required for mission accomplishment.
c. Special Mission Processor Interface (SMPI)(BLK 8)	2	0	Unless required for mission accomplishment.

Table 4.18. 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: (1) Inlet Door can be operated manually, and (2) Inlet Door is secured CLOSED prior to departure, **OR** (3) Inlet Door is secured CLOSED, and (4) APU is considered inoperative.

Table 4.19. Doors.

System Item	Installed	Required	Remarks or Exceptions
Cargo Ramp and Door System	1	0	Warning light, latching mechanisms, and locking systems will be operative for pressurized flight. **Note:** Aircraft will not takeoff 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: (1) All remaining latches are operative, (2) Latch warning system is operative, (3) No cargo is carried on the ramp, (4) Ramp is verified CLOSED and LOCKED before each departure, and (5) Cabin differential pressure is limited to 5 in. HG.
b. Cargo Door Down Locks	2	2	**Note:** If one fails, the aircraft must remain pressurized to keep the cargo door closed.
Cargo Door and Ramp Indicators			

a. Ramp/Door FULL Light	1	0	May be inoperative provided: (1) MFCD "RAMP & DOOR FULL OPEN" ACAWS message can be used, **OR** (2) Ramp position airdrop light (aft cargo comp.) is operative.
b. Ramp Position Airdrop Light	1	0	May be inoperative provided: (1) MFCD "RAMP & DOOR FULL OPEN" ACAWS message can be used, **OR** (2) Ramp/Door FULL light (flight station) is operative.
c. Ramp Warning Light	1	0	May be inoperative provided: (1) ACAWS RAMP OPEN PRESSURIZED and RAMP OPEN 250 messages are operative, **OR** (2) Ramp is verified CLOSED and LATCHED before each departure, **OR** (3) 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 4.20. 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 4.21. 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 (Caution) 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. Full Authority Digital Electronic Controls (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	4	
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	
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. If the loss of redundancy is on an outboard engine, carry out ATCS inoperative takeoff procedures if ATCS is DEGRADED. Flight with ATCS DEGRADED (***CAUTION***) must be authorized by the OG/CC. Operation with ATCS inoperative procedures will be followed. Two FADECs per engine must be serviceable for auto shutdown to be operative on that engine.
Nacelle Interface Unit (NIU)	4	4	

Chapter 5

OPERATIONAL PROCEDURES

5.1. Checklists. A checklist is not complete until all items have been accomplished. Momentary hesitations are authorized for coordination items, ATC interruptions, and deviations specified in the flight manual, etc. Notes amplifying checklist procedures or limitations may be added to the checklists. Currency of notes is a crewmember's responsibility. Checklist pages may be carried in separate binders provided checklist integrity is not compromised. MAJCOM Stan/Eval and the Air Force Materiel Command (AFMC) Flight Manual Manager are the checklist insert approval authorities. Send checklist inserts to MAJCOM Stan/Eval, who will in turn coordinate with AFMC for approval. All checklist inserts must have a Point of Contact (POC). Operations Group Stan/Eval will approve local in-flight guides and inserts not affecting TO guidance and procedures. **(T-2)**

5.2. Duty Station. Aircrew must occupy their assigned duty stations from takeoff to landing unless absence is necessary to perform duties in connection with the operation of the aircraft or physiological needs [14 CFR Part 91.105]. **(T-0)** With both pilots in their seats, PICs may authorize rest periods for one pilot occupying a primary duty station during non-critical phases of flight (the other pilot will be awake and alert).

5.2.1. Augmented Crew Station. Unless crew duties dictate otherwise, an extra pilot or loadmaster should occupy the augmented crew station to the maximum extent possible, especially in times of increased crew workload (e.g., critical phases of flight) to assist in scanning, promote effective Crew Resource Management/Threat and Error Management (CRM/TEM), and perform other tasks as determined by the PIC. The PIC may allow other individuals to occupy the augmented crew station as long as their presence will not hinder the performance of the crew. Qualified crewmembers, or unqualified crewmembers under the supervision of an instructor, may perform tasks assigned by the PIC.

5.2.2. For pilot seat swaps on the ground only, the PIC may allow a qualified loadmaster to occupy a pilot position to monitor brakes. The aircraft must be completely stopped with the parking brake set and the loadmaster will be briefed on the actions required to stop the aircraft in the event of brake failure. **(T-2)**

5.2.3. Cargo configuration permitting, Loadmasters stationed in the cargo compartment during takeoffs and landings or while performing scanner duties will occupy a crashworthy seat on aircraft modified by Time Compliance Technical Order (TCTO) 1C-130-2010, *Installation of the Loadmasters Crashworthy Seat on Selected C-130 Aircraft*. If cargo configuration does not permit the Loadmaster Crashworthy Seat to be placed in a crashworthy position, loadmasters will sit on the flight deck or may sit in a cargo compartment troop seat with seat belt fastened for takeoff and landing. If the tactical situation dictates, loadmasters may remain in a non-crashworthy position for takeoff and landing. If there are more than two loadmasters in the cargo compartment, e.g. traveling to the Area of Responsibility (AOR), the seats are for the primary loadmasters. **(T-2)** See also **Table 3.1**.

5.3. Flight Station Entry. PICs may authorize passengers and observers access to the flight station during all phases of flight. The total number of persons permitted in the flight station is limited to the number of seats with operable seat belts and a sufficient oxygen source. Passengers

and observers will not be permitted access to either pilot position. **(T-2)** See **paragraph 6.19** for further guidance on cockpit congestion.

5.4. Takeoff and Landing Guidance. An aircraft commander, or above, will occupy either the left or the right seat during all takeoffs and landings. The designated PIC (A-code) is not required to occupy a primary position, but still retains overall authority for conduct of the mission. **(T-3)**

5.4.1. An AC or IP will make all takeoffs and landings during:

5.4.1.1. Airlift of nuclear weapons. **(T-3)**

5.4.1.2. Aircraft emergencies, unless conditions prevent compliance or a First Pilot (FP) under direct supervision of an IP. **(T-3)**

5.4.2. PICs with less than 100 Primary Assigned Aircraft (PAA) hours since AC certification. **(T-3)** Unless the pilot in the other seat is an AC or above, Aircraft Commanders with less than 100 PAA hours since certification (N/A IPs) will make all takeoffs and landings under any of the following conditions:

5.4.2.1. Ceiling/visibility less than 300 feet and/or Runway Visual Range (RVR) 4000 feet (3/4 SM visibility). **(T-3)**

5.4.2.2. Runway Condition Reading (RCR) less than 12. **(T-3)**

5.4.2.3. Crosswind component greater than 15 knots. **(T-3)**

5.5. Landing Gear and Flap Operating Guidance. The PF will command configuration changes. The pilot monitoring (PM) will verify appropriate airspeed and configuration prior to echoing the gear or flap actuation command. The PM should operate the landing gear and flaps. Aircrew may elect to have the right seat pilot operate the gear if a safety of flight issue arises due to reaching across the flight deck. **(T-2)**

5.6. Outside Observer/ACM Duties. Available crewmembers will assist in clearing during taxi operations, and any time the aircraft is below 10,000 feet MSL as crew duties permit. **(T-3)**

5.7. Seat Belts.

5.7.1. All occupants will have a designated seat with a seat belt. Crewmembers will have seat belts fastened when occupying a duty position, unless crew duties dictate otherwise. LMs (or other crewmembers) required to be in the paratroop door at the scanning position will have a designated seat (other than the scanning seat) with a seat belt. **Exception**: When Loadmaster Crashworthy Seat installed, an additional designated seat is not required. If cargo configuration does not permit positioning the Loadmaster Crashworthy Seat in a crashworthy position, then loadmasters will have a designated seat with a seat belt. **(T-3)**

5.7.2. Loadmasters or authorized scanners will only use the permanently installed paratroop door seats when crashworthy seats are not installed during combat or contingency missions with hostilities, or while participating in training missions that enable aircrews to improve their visual threat scanning techniques and procedures. Loadmasters will always have an assigned seat, even if using the paratroop door seat for scanning. When scanning duties are completed the loadmaster must use their assigned seat for subsequent takeoffs and landings in non-threat environments. **(T-3)** When the paratroop door seat is used, the following conditions must be met:

5.7.2.1. The flight helmet will be worn. **(T-3)**

5.7.2.2. Paratroop door armor will be in place (if required). **(T-3)**

5.7.2.3. When the crashworthy seat is not installed, loadmasters/scanners will restrain themselves by either the primary or secondary method. **(T-3)**

5.7.2.3.1. Use the restraint harness depicted in TO 13A1-1-1 (NSN 1680-01-314-3184), *Repair, Cleaning, Inspection, And Testing of Aircraft Safety Belts, Shoulder Harness, and Miscellaneous Personnel Restraint Equipment*, as the primary means of loadmaster/scanner restraint. Route the harness straps through the support braces forward and aft of the paratroop doors with a girth hitch and attach to the restraint harness riser quick disconnect fittings. Ensure the leg and chest straps are connected. Attach the harness lifeline to a floor/Enhanced Cargo Handling System (ECHS) rail tiedown ring and adjust to limit vertical movement. A secondary method is the use of 5,000 lb straps routed around each of the supports located forward and aft of the paratroop door. Attach the hook end of the strap to the riser clip of the restraint harness and attach the ratchet end to a tiedown ring on top of the ECHS rails. Wrap the hook of the ratchet with cloth backed tape to ensure it does not separate from the tiedown ring. Attach the lifeline to a floor/ECHS tiedown ring and adjust to limit vertical movement.

5.7.3. All crewmembers will have seat belts fastened during takeoff and landing. Fasten shoulder harness unless crew duties dictate otherwise. Crewmembers performing instructor or flight examiner duties or in upgrade training to instructor or flight examiner are exempt from seat belt requirements if not occupying a primary crew position; however, they will have a seat available with an operable seat belt. **(T-3)**

5.7.4. Litter patients, actual or simulated, must remain secured on litters for takeoff and landing. **(T-3)**

5.8. Aircraft Lighting. Aircraft lighting procedures are IAW AFMAN 11-202V3, AFMAN 11-218, *Aircraft Operations and Movement on the Ground*, and applicable TOs.

5.8.1. NVD Lighting. Follow the exterior lighting guide in Air Force Tactics, Techniques, and Procedures (AFTTP) 3-3.C-130J, *Combat Fundaments C-130J*, for all NVD training situations. Lights-out operations during peacetime will be conducted IAW AFMAN 11-202V3. Total lights out operations are authorized with concurrence of the controlling agency in restricted airspace and warning areas, or locally designated airfields documented in a Letter of Agreement (LOA).

5.8.2. Cargo compartment lighting will be dictated by the tactical situation and will be coordinated between the mission commander/PIC and loadmaster(s). Cargo compartment emergencies may require overt lighting on full bright. The nature of the emergency and the tactical situation will dictate what level of lights is used, and whether the loadmaster continues the use of NVDs.

5.8.3. Strobe Lights. For tactical operations refer to AFTTP 3-3.C-130J, *Combat Aircraft Fundamentals*. For non-tactical operations, the aircraft strobe lights will be operated as follows:

5.8.3.1. BEFORE STARTING ENGINES Checklist. Set the top strobe to RED. **(T-3)**

When operating the APU, set the top strobe to RED. **(T-3)**

5.8.3.2. LINEUP Checklist. Set both strobes to WHT for day and night single-ship and day formation. Set both strobes to RED for night formation. PICs may select most appropriate lighting configuration for conditions (e.g., IMC). **(T-3)**

5.8.3.3. AFTER LANDING Checklist. Set the top strobe to RED. The top strobe must remain in RED until APU shutdown. **(T-3)**

5.9. Portable Electronic Devices. Portable procedures are IAW AFMAN 11-202V3.

5.9.1. Do not connect unauthorized equipment (laptop computers, video equipment, food preparation equipment, audio players, etc.) to the aircraft intercom, PA, radio, or electrical systems. Missions requiring devices with continual power source may connect electrical devices with a surge protector and a built-in circuit breaker. **(T-3)**

5.9.2. The user must provide the certification letter for any device(s) to be used to the aircrew prior to the appropriate PIC preflight briefing. **(T-3)**

5.9.3. Iridium phones will be turned off within 25 feet of ground refueling operations and during takeoff, approach and landing. **(T-3)**

5.10. Advisory Calls. Refer to AFMAN 11-202V3 applicable supplements for a listing of mandatory advisory calls, responses, and aircrew actions. The PF will announce changes to the level of automation, flight director and autopilot mode selections, and mode transitions, (e.g., “Autopilot engaged”, “Altitude Hold”, “Autothrottle”, “Nav-Capture”, etc.) (BLK 8 e.g., “VNAV PATH Captured”, “Autothrottle Armed”, etc.) and/or when circumstances require deviating from normal procedures. The PM will make all advisory calls except those designated for other crewmembers. For BLK 8 the PF will announce HUD Special Alerts without an associated aural alert, and the PM will acknowledge the PF. Mandatory calls are as follows: **(T-3)**

5.10.1. Takeoff. State “V-ONE” at V1 (Refusal Speed). State “ROTATE” at VR (Rotation Speed). If V1 is adjusted to equal VR, state “ROTATE” at VR.

5.10.2. Takeoff Aborts and Landings. The PM will advise the PF which power levers to bring to reverse (“ALL 4”, “INBOARDS”, “OUTBOARDS”).

5.10.3. Deviations. Any crewmember seeing a heading (+/- 10 degrees), airspeed (+/-10 knots), or altitude (+/- 100 feet) deviation with no attempt to correct the deviation will immediately notify the PF. Any crewmember seeing a potential terrain or obstruction problem will immediately notify the PF.

5.11. Stabilized Approach. Stabilized approach procedures are IAW AFMAN 11-202V3 and applicable supplements.

5.11.1. Visual Transition. It is imperative for aircrews to review the airfield environment. Identify key features such as approach light type, airfield lighting, geographic layout/configuration of runways, taxiways, ramps, etc. To the maximum extent possible, this study will take place during the crew mission briefing and reviewed again prior to descent. **(T-3)**

5.11.2. Missed Approach/Go-Around. Aircrew will brief actions for anticipated missed approach/go-around to include specific crewmember duties. **(T-3) Note:** Missed approach/go-around guidance is contained in TO 1C-130J-1 and AFMAN 11-202V3.

5.11.3. Formal Training Unit (FTU) only. FTUs will train students to ensure they understand and are capable of complying with all aspects of stabilized approach criterion. FTU instructors must use their expertise and experience to only deviate from the guidelines of stabilized approach criteria as required during appropriate instructional scenarios. **(T-3)**

5.12. Crew Resource Management/Threat and Error Management (CRM/TEM). CRM/TEM procedures are IAW AFMAN 11-290, *Cockpit/Crew Resource Management Program and Threat & Error Management Program*.

5.12.1. Fuel Panel. The fuel panel is considered a "verification" panel. The PM/LM or additional crewmember will advise the PF before operating the panel (e.g., priming, crossfeeding, tank-to-engine, transferring, non-standard configurations, and dumping). After completing the task, the PF/PM will verify the panel is set correctly. To facilitate this coordination, pilots should plan to make changes to the fuel panel during periods of low workload such as before taxi and during cruise segments. **(T-3)**

5.12.2. Primary Net. BLK 8 primary crewmembers will establish a primary net which they will be monitoring during all phases of flight. **(T-3)** Secondary nets may be coordinated as a crew for additional communication and do not need to be monitored by all crewmembers. If secure communications are planned to be utilized then secure nets 4 and 5 must be used by the crew for interphone. **(T-3)**

5.12.3. Civil Datalink. BLK 8 crews using Civil Datalinks will ensure they reference the

Global Operational Datalink (GOLD) Manual for standard procedures and restrictions. **(T-3)**

5.13. Automation. Automation procedures are IAW AFMAN 11-202V3.

5.13.1. Crews will follow the guidance, except for cruise flight (above 10,000 feet): The PF will fly the aircraft and maintain a dedicated heads-up lookout. **(T-3)** If the PF intends to be heads-down, aircraft control will be transferred to the PM, who will remain heads-up. **(T-3)** Heads-down time does not include momentary scanning of the CNI-MU, HDDs, and panels.

5.13.2. **Table 5.1** and **Table 5.2** provide standard actions for both pilots during Automated and Manual flight.

5.13.2.1. Automated Flight is defined as the autopilot fully engaged and coupled to the Flight Director. Use autothrottles as desired. ***CAUTION:*** If the autothrottles 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. ***CAUTION:*** If the BLK 8 Flight Management System (FMS) target airspeed is coupled to the autothrottles with autothrottles engaged the crew must be aware of the speeds commanded by the FMS to avoid potential near stall conditions based on aircraft configuration, particularly in the terminal environment and during multiple practice approaches.

5.13.2.2. Manual Flight is defined as the PF providing manual input to the flight controls. Use autothrottle as desired.

Table 5.1. Automated Flight.

	PF	**PM**
REF/MODE PANEL		
Reference Settings (1) (HP, RAD ALT, Indicated Airspeed (IAS), FPA, MINS) (VS for BLK 8)	- Set as required	- Verify settings
Mode Selections (ALT, NAV, HDG, APPR, IAS, VS, Coordinated Airplane Positioning System (CAPS)) (VNAV and A/T for BLK 8)	- Select desired mode - Announce mode status	- Verify and acknowledge
LATERAL FLIGHT		
Direct To/Intercept Course To/ Route Modification	- Verify route modification - Direct the PM to execute	- Modify route as directed - Execute when directed
Radar Vector/Heading Change	- Set the heading reference - State setting	 - Verify and acknowledge
VERTICAL FLIGHT		
Climb/Descent	- Set new altitude reference - State setting - (BLK 8) Direct PM to execute desired VNAV profile	- Set altitude reference on corresponding CNI-MU page - Verify and acknowledge - (BLK 8) Execute when directed

Note:
1. For arrival/approach planning, the PF may transfer aircraft control to the PM and set all reference settings as required for the planned approach.

Table 5.2. Manual Flight.

	PF	**PM**
REF/MODE PANEL		
Reference Settings (1) (HP, RAD ALT, IAS, FPA, MINS) (VS for BLK 8)	- Direct PM to set if required - Verify settings	- Set as directed by PF
Mode Selections (2) (ALT, NAV, HDG, APPR, IAS, VS, CAPS) (VNAV and A/T for BLK 8)	- Select desired mode - Announce mode status	- Verify and acknowledge
LATERAL FLIGHT		
Direct To/Intercept Course To/ Route Modification	- Verify route modification - Direct the PM to execute	- Modify route as directed - Execute when directed
Radar Vector/Heading Change	- Verify and acknowledge	- Set heading reference - State setting
VERTICAL FLIGHT		
Climb/Descent	- (BLK 8) Direct PM to execute desired VNAV profile - Verify and acknowledge setting	- Set new altitude reference - Set altitude reference on corresponding CNI-MU page - (BLK 8) Execute when directed
Notes: 1. For arrival/approach planning, the PF may transfer aircraft control to the PM and set all reference settings as required for the planned approach. 2. The PF may direct the PM to select desired modes. In this case, the PM will make the necessary announcements and the PF will verify and acknowledge. **(T-3)**		

5.14. Transportation of Pets. Transporting pets (dogs and cats only) in conjunction with the sponsor's permanent change of station is authorized. Other animals (e.g., goats) are normally prohibited, but may be moved according to DOD 4515.13, *Air Transportation Eligibility.*

5.15. Runway, Taxiway and Airfield Requirements.

5.15.1. Minimum Runway and Taxiway Requirements. For peace-time, do not use runways less than 3,000 feet. Minimum runway width is 80 feet (60 feet for maximum effort). Minimum taxiway width is 30 feet. **(T-3)**

5.15.2. Runway Length for Takeoff and Landing. The minimum runway required for a normal takeoff is the charted Critical Field Length (CFL). The minimum runway required for normal landings is the charted landing distance over 50-foot obstacle with outboard engines in high speed ground idle and inboard engines in maximum reverse.

5.15.2.1. Normal takeoffs will not be made if Runway Available is less than CFL, or if Refusal Speed is less than Ground Minimum Control Speed (VMCG)**.** In such conditions the PIC will either:

5.15.2.1.1. Download cargo or fuel.

5.15.2.1.2. Wait until weather conditions improve.

5.15.2.1.3. Utilize maximum effort procedures, see **paragraph 5.15.2.4**.

5.15.2.2. Runway Length for Intersection Takeoffs. Normally, takeoffs will be 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, etc.) allows for a safe takeoff and departure. Take Off and Landing Data (TOLD) computations must be based on the runway remaining from the point at which the takeoff is initiated.

5.15.2.3. 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. Departure end overruns (if stressed and authorized) may also be used for landing if needed.

5.15.2.4. Maximum Effort Operations. Use maximum effort procedures when conditions (TOLD, runway dimensions, and/or obstacles) or directives require their use. Runway widths less than 80 feet require a maximum effort qualified crew (maximum effort procedures are not required if normal CFL or normal landing distance over a 50-foot obstacle is available). **(T-3)** All maximum effort operations must fall in the "Recommended" area of the Performance Manual Crosswind Chart and the crosswind component corrected for RCR must be within the recommended zone for takeoff and landing unless otherwise approved by the OG/CC. **(T-3)**

5.15.2.5. Maximum Effort Takeoff. Use maximum effort takeoff procedures if available runway length is less than CFL, or if refusal speed is less than Ground Minimum Control Speed (VMCG), or if necessary to clear takeoff obstacles in VMC (all engines operating). **Note:** See **paragraph 5.15.2.5.3**.

5.15.2.5.1. Minimum runway length is the charted ADJUSTED Minimum Field Length for Maximum Effort Takeoff (MFLMETO), and minimum rotation speed is Adjusted Maximum Effort Rotation Speed (AMAX V_{ROT}). **(T-3)** Waiver authority to use unadjusted MFLMETO or MAX V_{ROT} is delegable no lower than the OG/CC (or Air Operations Center (AOC) Senior Director for higher headquarters tasked missions) and only if mission necessity precludes downloading cargo or waiting for conditions to improve. **(T-2)** ***WARNING*:** If using unadjusted MFLMETO or MAX V_{ROT} when an

engine failure occurs, airspeed is close to stall speed and may be below minimum control speed. If obstacles are in the flight path, a successful takeoff may not be possible. If a decision is made to stop, there may be insufficient runway to complete the stop.

5.15.2.5.2. Acceleration Check. An acceleration check is required when refusal speed is less than rotation speed. An acceleration check should also be completed when, in the opinion of the PIC, a critical condition exists (heavy Gross Weight, high Pressure Altitude, obstacles, Runway Surface Condition (RSC), etc.). **(T-2)**

5.15.2.5.3. Maximum Effort Takeoff and Landing Data. When using adjusted maximum effort (AMAX) procedures for training (without 8.1), AMAX V_{ROT} mitigation may be omitted provided that the runway available is greater than or equal to CFL and the decision is briefed. Climbout performance data displayed on TAKEOFF DATA 3/4 and 4/4 pages are not valid for adjusted maximum effort (AMAX) speeds and procedures; displayed MAX EFF data always reflects (unadjusted) maximum effort takeoff (MAX) speeds and procedures. When using AMAX or MAX effort procedures, C-130J takeoff climb performance data is not valid for one-engine inoperative Instrument Flight Rules (IFR) departure planning. See **Table 6.3** for Visual Flight Rules (VFR) departure options utilizing AMAX procedures.

5.15.2.6. Maximum Effort Landing. Use maximum effort landing procedures whenever the runway length available for landing is less than that required for a normal landing. **(T-2)** Plan the touchdown within the first 500 feet of usable runway. **(T-3)**

5.15.2.6.1. The minimum runway required for a maximum effort landing is equal to the charted Maximum Effort landing ground roll plus 500 feet. **(T-2)**

5.15.2.6.2. Compute landing performance using two outboard engines in ground idle, two inboard engines in reverse, ("2OB HGI; 2IB REV" in the Performance Manual), and maximum anti-skid braking. **(T-2)**

5.15.3. Arresting Cables.

5.15.3.1. Do not land on approach end arresting cables (does not include recessed cables). **(T-3)** If the aircraft lands before the cable, the crew should contact the tower to have the cable inspected.

5.15.3.2. Do not takeoff or land over an approach end cable that has been reported as slack, loose, or improperly rigged by Notice To Airmen (NOTAM), automatic terminal information service (ATIS), or ATC. **(T-3)**

5.15.3.3. Operations are authorized on runways where BAK-12 systems are installed, with an eight point cable tiedown system. When operating from runways equipped with other types of systems, or if it is unknown if the BAK-12 system includes eight-point tiedowns, aircrews should recognize the increased risk of damage to the aircraft.

5.15.4. Other Airfield Requirements. Runways designated for OG/CC approval in the Global Decision Support System (GDSS)/Airfield Suitability and Restrictions Report (ASRR) do not require a Landing Zone (LZ) survey. See AMCI 11-211, *Destination Airfield Suitability Analysis*, for runway designations.

5.15.5. RCR and RSC Limitations. IAW Flight Information Handbook (FIH).

5.15.5.1. The performance charts used to determine braking action are based on concrete runways. When RCR values are not reported, the following runway surfaces in **Table 5.3** are based on operational experience and should be used only as a guide.

Table 5.3. Landing Zone (LZ) Runway Condition Reading (RCR) Values.

SURFACE TYPE	RCR (DRY)	RCR (WET)
Asphalt	23	12
Aluminum Matting	20	10
M8A1/with Anti-Skid (Pierced Steel Planking (PSP))	20	8
M8A1/without Anti-Skid PSP	13	3
Clay	16	5
Crushed Rock	16	5
Grass	12	5

5.15.5.2. Limit operations on snow, slush and water covered runways to an RSC of 10. This equates to a covering of one inch of slush/water and up to three inches of loose, blowing snow. Performance data does not exist for coverings in excess of these amounts.

5.15.5.3. On runways partially covered with snow or ice, takeoff computations will be based on the reported RSC, Runway Condition Assessment Matrix (reference FIH), or RCR for the cleared portion of the runway. A minimum of 40 feet either side of centerline should be cleared (30 feet for maximum effort operations). If 40 feet either side of centerline is not cleared (30 feet for maximum effort ops), computations will be based on the non-cleared portion. **(T-3)**

5.16. Aircraft Taxi and Taxi Obstruction Clearance Criteria and Foreign Object Damage (FOD) Avoidance.

5.16.1. Aircraft Taxi and Taxi Obstruction Clearance Criteria IAW AFMAN 11-218.

5.16.1.1. Aircraft Operations and Movement on the Ground, aircraft may taxi into or out of a marked parking spot without marshallers/wing walkers at home station along fixed taxi lines which have been measured to ensure a minimum of 10 feet clearance from any permanent obstruction. Adjacent aircraft are considered a permanent obstruction provided the aircraft is parked properly in its designated spot and not moving. Aerospace Ground Equipment (AGE) and vehicles are considered a permanent obstruction provided it is parked entirely within a designated area. Areas will be designated by permanent markings such as painted boxes or lines on the ramp or another suitable means.

5.16.2. FOD Avoidance. Make every effort to minimize the potential for engine FOD. Crews should:

5.16.2.1. Carefully review airfield layout during mission planning. Be familiar with taxi routes, turn requirements, and areas for potential FOD.

5.16.2.2. Minimize power settings during all taxi operations.

5.16.3. Reverse Taxi. The PIC will coordinate reverse taxi directions and signals with the loadmaster and marshaller (when available). Before reverse taxiing, the loadmaster will:

5.16.3.1. Secure all cargo and ensure all passengers are seated. **(T-3)**

5.16.3.2. Open the aft cargo door and lower the ramp to approximately 12 inches above horizontal. **(T-3)**

5.16.3.3. Position himself/herself on the aircraft ramp to direct reverse taxi, report any hazards, and provide the PIC with timely interphone instructions on turns, distance remaining, conditions of the maneuvering area, and stopping point. **(T-3)**

5.16.3.4. Stop no less than 25 feet from an obstruction. **(T-3)**

5.16.3.5. During night reverse taxi operations without NVDs, the PIC and loadmaster will ensure the taxi area is sufficiently illuminated. **(T-3)**

5.16.4. After landing and clearing the runway, and with approval of the PIC, the loadmaster may open the aft cargo door and lower the ramp to no lower than the horizontal position to prepare for cargo off/onload provided equipment, cargo, and passengers remain secure in the cargo compartment. Careful attention must be given to the ramp position when taxiing on rough or unprepared surfaces.

5.16.5. During taxi operations, at least one aircrew member on the flight deck will have an airport diagram or airfield depiction (if published) readily available for reference and should be visible at unfamiliar airfields. **(T-3)**

5.17. Functional Check Flights (FCFs) and Acceptance Check Flights (ACFs). FCFs and ACFs will be accomplished IAW TO 1-1-300, *Maintenance Operational Checks and Check Flights*, TO 1C-130J-6CF-1, *Acceptance or Functional Check Flight Procedures,* and DAFI 21-101, *Aircraft and Equipment Maintenance Management*. **(T-2)** Crews should only perform tasks or functions contained in specific technical order guidance. If requested to perform a non-standard function, PICs should contact their OG/CC to see if an FCF applies.

5.17.1. FCF Restrictions. See TO 1-1-300 and DAFI 21-101.

5.17.2. Temporary waivers or permanent waivers to FCF procedures for aircrew qualification when operationally necessary may be authorized.

5.17.3. The OG/CC is responsible for the wing FCF program. Publish additional guidance in a local program guide or supplement to this manual. The OG/CC may authorize a partial FCF to check only those systems disturbed by maintenance, an inspection or modification.

5.17.4. Conduct check flights within the designated check flight airspace of the base from which the flight was launched except when the flight must be conducted under specific conditions, not compatible with local conditions and area restrictions. **(T-3)**

5.17.5. The decision to approve a combined FCF and ferry flight is the responsibility of the WG/CC.

5.17.6. The OG/CC will only certify highly experienced instructors as FCF crewmembers. The OG/CC will determine FCF crew complement after a thorough ORM assessment for that specific FCF flight. **(T-3)**

5.17.7. Ideally, conduct FCFs in daylight, VMC. OG/CCs may authorize a flight under a combination of VMC and IMC. Begin the flight in VMC. **(T-3)** If the aircraft and all systems are operating properly, the crew may proceed Instrument Flight Rules (IFR) through IMC to "Visual Flight Rules (VFR) on Top" for the altitude phase of the flight.

5.17.8. If a malfunction occurs during an FCF, the Maintenance Group Commander (MXG/CC) may subsequently release the aircraft for flight providing the malfunction is not related to the condition generating the FCF, and the original condition operationally checked good.

5.17.9. Only FCF crews will perform high-speed taxi checks. **(T-3)** Perform checks IAW the flight manual and maintenance technical orders. Prepare the aircraft with minimum fuel necessary to accomplish the check to limit brake/tire wear, (ensure fuel on board will permit a safe return to base should the aircraft unexpectedly become airborne) and turn on the anti-skid system. The PIC will calculate takeoff data for the highest speed planned and ensure runway available allows sufficient stopping distance for existing conditions without exceeding normal brake energy limits. **(T-2)**

5.18. Ground Collision Avoidance System (GCAS)/Terrain Awareness and Warning System (TAWS).

5.18.1. When a GCAS TERRAIN or TAWS TERRAIN / OBSTACLE AHEAD alert occurs and terrain/obstacle clearance cannot be assured visually, immediately change the flight path (within 3 to 5 seconds) by initiating a takeoff power climb. Continue the climb until a safe altitude is reached or until exiting the alert envelope. With terrain and obstacles clearly in sight, the PF will call terrain/obstacle in sight, state intentions and visually remain clear of terrain/obstacles. **(T-2)** If the situation degrades and a GCAS PULL UP or TAWS TERRAIN. When OBSTACLE PULL UP alert occurs, immediately execute the appropriate recovery in the flight manual. ***WARNING*:** Do not delay pull-up for diagnosis of the low altitude warning.

5.18.2. In TACTICAL mode, several GCAS alert envelopes are modified to allow for maneuvering in close proximity to terrain. Normally, this mode is most suitable for modified contour flight and VFR low-altitude arrivals but, at the AC's discretion, may be used for any tactical operation.

5.19. Traffic Alerting and Collision Avoidance System (TCAS). It is imperative to follow resolution advisories (RAs) to obtain aircraft separation computed by TCAS. Failure to follow the computed RA may increase the probability of a midair collision. Pilots who deviate from an ATC clearance in response to an RA will notify ATC of the deviation as soon as practical and promptly return to the ATC clearance when the traffic conflict is resolved or obtain a new clearance. **(T-0)**

5.19.1. Mission requirements may allow selection of "TA only" when operating from parallel runways, in the visual traffic pattern, or in formation since the proximity to aircraft may result in unwarranted RAs. Excessive climb and descent rates could lead to inadvertent "TA/RA". Reducing climb/descent rates near level off can limit inadvertent TCAS advisories.

5.19.2. TCAS event documentation. The PIC will document all pertinent information surrounding an RA event on an AF IMT 651, *Hazardous Air Traffic Report (HATR),* and submit to the nearest Air Force Safety Office. **(T-2)** The investigating Safety Office will

determine if the event is, in fact, reportable, and will notify the individual or unit submitting the HATR of this determination and/or pending actions. **(T-2)**

5.20. Radar Altimeter.

5.20.1. Instrument Approaches.

5.20.1.1. Precision and Localizer Performance with Vertical Guidance (LPV) Approaches.

5.20.1.1.1. Set RAD ALT reference to Height Above Touchdown (HAT) minus 50 feet. **(T-2)**

5.20.1.1.2. CAT II ILS. Set published RA minimums. **(T-2)**

5.20.1.2. Non-Precision, LNAV/VNAV, LNAV, and LP approaches. 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-Minimums" alert. Setting the RAD ALT to a higher setting than prescribed may result in premature/unexpected "Altitude-Altitude" advisories and prevent the GCAS "Minimums" alert. **(T-3)**

5.20.1.2.1. Straight-In Approaches. Normally set RAD ALT reference to 250 feet (minimum setting). **(T-3)**

5.20.1.2.2. Circling Approaches. Normally set RAD ALT reference to 300 feet (minimum setting). **(T-3)**

5.20.1.3. 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. Once terrain clearance is confirmed, resume normal operations. In day VMC, the aircrew will verbally acknowledge and evaluate the alert and determine the appropriate course of action (continue the approach or go-around). **(T-3)**

5.20.2. Tactical Operations. For modified contour flight, the RAD ALT should be set no lower than 80% of the planned contour (e.g., for 500 Above Ground Level (AGL) contours, set the RAD ALT no lower than 400 feet). Other settings may be briefed and used based on terrain and mission needs.

Chapter 6

AIRCREW PROCEDURES

Section 6A—Pre-Mission

6.1. Aircrew Uniform.

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

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

6.1.2.1. See TO 14-1-1, *U.S. Air Force Aircrew Flight Equipment Clothing and Equipment* and AFI 11-301 Vol 1, *Aircrew Flight Equipment (AFE) Program,* for authorized aircrew clothing and aircrew flight equipment (AFE) combinations as well as AFMAN 11-202V3 and DAFI 36-2903. All crewmembers will have Nomex gloves and dog tags in their possession. Only aircrew boots listed on the Air Force Life Cycle Management Center (AFLCMC) Air Force Safe-to-Fly list are authorized.

6.1.2.2. Crewmembers will remove rings and scarves before performing aircrew duties. **(T-3)**

6.2. Personal Requirements.

6.2.1. Helmets and Oxygen Masks. Crewmembers will carry a personal helmet:

6.2.1.1. Anytime parachutes are required to be carried by the mission directive. **(T-3)**

6.2.1.2. Whenever the aircrew requires Night Vision Device (NVD). **(T-3)**

6.2.1.3. When required for wear of the aircrew chemical, biological, nuclear, radiological (ACBRN) protective equipment. **(T-3)**

6.2.1.4. For unpressurized flight operations IAW AFMAN 11-202V3. **(T-3)**

6.2.1.5. Loadmasters will wear helmets for all airdrop operations. **(T-3) Exception:** Personnel seated with seat belts fastened are not required to don helmets.

6.2.2. Tool and Airdrop Kits. At least one loadmaster tool kit will be on board for all missions. **(T-3)** One airdrop kit will also be aboard the aircraft for aerial delivery missions. **(T-3)** Units will identify tool kit contents and inventory procedures in local supplements. As a minimum, the tool kit will contain the tools necessary to perform the emergency actions in section 3 of the flight manual and meet operational requirements. **(T-3)**

6.2.3. Night-Vision Operations. For night-vision operations, the PIC will preflight and carry a spare set of NVDs onboard the aircraft. **(T-3)** For local training, OG/CCs will determine spare NVD requirements. If a spare set is not available, NVD operations should cease if either pilot's NVDs fail or visual acuity deteriorates. Both pilots will wear the same model NVDs. **(T-3)** Each crewmember will preflight their own NVDs before flight and carry a spare set of batteries. Each crewmember will also carry an NVD-compatible light source. **(T-3)** See TO

12S10-2AVS9-2, *Technical Manual Image Intensifier Set, Night Vision Type AN/AVS-9,* for full NVD preflight procedures.

6.3. Aircrew Publications Requirements. All crew members will carry (or have in-flight access to) the publications specified in **Table 6.1**. **(T-3)** Recommended folders are listed in **Table 6.2**. Electronic aircrew publications are maintained at the AMC/A3V Publications webpage. Units may specify additional publications in their unit supplement. Units may establish a process to provide paper publications onboard the aircraft, but this does not change the Electronic Flight Bag (EFB) requirement for all crew members. The process will be described in the unit supplement. **(T-3)** Reference AFI 11-215, *Flight Manuals Program* for additional guidance on electronic publications.

Table 6.1. Required Aircrew Publications (EFB).

PUBLICATIONS
1C-130J-1, 1C-130J-1CL-1, 1C-130J-1CL-2, 1C-130J-9, 1C-130J-9CL-1
1C-130J-1-1 or 1C-130J(C)-1-1 (as applicable), 1C-130J-1-4, 1C-130J-1-5
AFMAN 11-202v3 (and SUP), AFMAN 11-2C-130Jv3, AFMAN 11-2C-130Jv3 ADDENDA A
Airdrop Ballistics Data, DAFMAN 13-217 (and SUP), AFMAN 11-231(airdrop qualified only)
AFTTP 3-3.C-130J, AFTTP 3-3.C-130J CMG and CPG, Long Range Navigation Checklists
Local folder(s), AMCI 11-208

Table 6.2. Recommended Aircrew Folders (EFB).

ePUBS FOLDERS
ALL GLOBAL folder
C-130J folder
DTR folder
FCG folder
FLIP folder
Tactics folder

Section 6B—Pre-Departure

6.4. Mission Kits. Carry mission kits on all operational missions. Publications should be maintained on the EFB. Forms may be maintained and carried electronically provided operable in-flight viewing and printing capability exists. If no such capability exists, paper copies must be available**. (T-3)** Suggested items include: **Note: *** Indicates mandatory for all 618 AOC or AMC missions away from home station and as directed by C2 authority.

6.4.1. Forms:

6.4.1.1. DD 1351-2, *Travel Voucher or Sub Voucher*.

6.4.1.2. DD 1351-2C, *Travel Voucher or Sub Voucher (Continuation Sheet).*

6.4.1.3. *CBP Form 6059B, *US Customs and Border Protection Declaration Form*.

6.4.1.4. DD 1748-2, *Airdrop Malfunction Report (Personnel-Cargo).*

6.4.1.5. *DD Form 2131, *Passenger Manifest*.

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

6.4.1.7. AF IMT 457, *Hazard Report*.

6.4.1.8. *AF IMT 651, *Hazardous Air Traffic Report (HATR).*

6.4.1.9. *AFTO Form 781, *ARMS Aircrew/Mission Flight Data Document*.

6.4.1.10. *AF IMT 1297, *Temporary Issue Receipt*.

6.4.1.11. AMC Form 43, *AMC Transient Aircrew Comments*.

6.4.1.12. AMC Form 54, *Aircraft Commander's Report on Services/Facilities*.

6.4.1.13. AF IMT 711B, *USAF Mishap Report*.

6.4.1.14. *AMC Form 4031, *CRM/TEM Skills Criteria Training/Evaluation*.

6.4.1.15. *AF IMT 4075, *Aircraft Load Data Worksheet*.

6.4.1.16. Japanese Customs Service Forms.

6.4.1.17. *AMC IMT 97, *AMC In-Flight Emergency and Unusual Occurrence Worksheet.*

6.4.1.18. *SF 44, *Purchase Order-Invoice-Voucher.*

6.4.2. Orders:

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

6.4.2.2. DAF Form 1631, *NATO Travel Orders* (when required).

6.4.2.3. *AF Form 4327a, *Crew Flight (FA) Authorization* (or MAJCOM prescribed according to DAFMAN 11-401, *Aviation Management)*.

6.4.3. Miscellaneous:

6.4.3.1. *Boxcar seals/padlock.

6.4.3.2. *Masking tape.

6.5. FLIP Requirements.

6.5.1. All crewmembers that require FLIP products for operations will have current data to cover the planned mission and global operations. **(T-3)** If required, topographical and sectional charts for areas of operation (GNC/OPC/TPC/JNC/JOG/Sectionals) and DoD Area Arrival Charts will be used. **(T-3)**

6.5.2. On local unit training sorties, aircrew will ensure they have the required FLIP products for the planned profile and contingencies (e.g., diverts). **(T-3)**

6.6. Briefing Requirements.

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

6.6.2. The PIC is responsible for necessary coordination with ground crew on taxi operations and marshalling plan prior to outbound taxi. Ensure all aircrew are briefed the taxi plan prior to outbound taxi, and inbound enroute descent**. (T-3)**

6.6.3. NVD Briefing Requirements. For missions conducting NVD operations, crews will review and coordinate NVD failure procedures for all phases of the mission. Any crewmember who experiences NVD problems will inform the rest of the crew. If unable to regain the use of NVDs, the PIC will consider crew experience, mission priority, and intel, tactics and threat briefings in determining if the mission can be completed safely. During cargo compartment emergencies, return to normal lighting until the emergency is resolved. Discuss actions for smoke and fumes in the aircraft. **(T-3)**

6.7. Flight Plan/Data Verification.

6.7.1. Computer Flight Plan (CFP). Use CFPs are the official sources of performance, navigation, and climatic data, including enroute wind information. If stand-alone, computer-based plans are used, each mission segment should utilize best wind data available. Use only MAJCOM-validated CFPs. **(T-3)**

6.7.1.1. Use CFPs to the maximum extent practical. Flight crews may manually compute flight plans. The PIC has final responsibility for flight plan accuracy and diplomatic clearance compliance. Verify CFPs for route of flight and fuel computation accuracy before departure. Pass any flight plan discrepancies to the C2 flight planning office. On flight-managed sorties, promptly notify the flight manager of any flight plan discrepancies to ensure the correct route of flight is filed with air traffic control. Identify inaccurate CFP winds to flight managers if the average wind for a route segment exceeds either 30° error in direction or 25 knots in speed. **(T-3)**

6.7.1.2. BLK 8 aircrew that receive flight plans via ACARS will ensure completeness and accuracy against the CFP IAW **paragraph 6.7.1.1**. **(T-3)**

6.7.1.3. CFPs are not required on local training sorties if the sortie will consist of solely pattern work or instrument approach procedures if accomplished in the local area.

6.7.2. All waypoint data retrieved from a database should be verified by one or more of the following methods:

6.7.2.1. Latitude/longitude from current FLIP.

6.7.2.2. Bearing/distance from a flight plan after latitude/longitude are verified for each waypoint.

6.7.2.3. Ground Based NAVAIDs.

6.7.3. When conducting Drop Zone (DZ)/Landing Zone (LZ) operations, both pilots will verify CNI-MU Computed Air Release Point (CARP)/LZ information with a valid DZ/LZ survey. Pilots will verify all Joint Mission Planning Software (JMPS)-generated DZ/LZ information before entering data into the CNI-MU. Refer to DAFMAN 13-217 for DZ/LZ survey information/requirements/applicability.

6.8. Departure Planning. Use AFMAN 11-202V3, this chapter, and appropriate MAJCOM supplements. Regardless of the type of departure flown (IFR/VFR), review the following (as appropriate): IFR departure procedure, instrument approach plate, NOTAMS, GDSS Giant Report, and suitable terrain charts. To verify CNI TOLD, both pilots will cross-check CNI TOLD INIT entries and the PM will compare CNI TOLD outputs (if required by flight manual) to the data obtained from the performance manual, tab data, C-130J preTOLD application or MAJCOM approved Flight Performance Module (FPM). The minimum outputs that must be checked and the allowable tolerances for those outputs are outlined in the performance manual.

6.8.1. One Engine Inoperative (OEI) climb performance.

6.8.1.1. For IFR departure, plan a contingency procedure to account for OEI in accordance with AFMAN 11-202V3 IFR Climb Performance to ensure that the departure and emergency return route provides obstacle and terrain avoidance.

6.8.1.1.1. If using non-standard takeoff minimums, PICs are responsible for sufficient planning to see and/or avoid applicable takeoff obstacles. This includes but is not limited to the following: a current obstacle avoidance tool will be available in flight, (e.g., ForeFlight with GPS position available to EFB, Digital Map with current VO or current printed chart), a review of applicable obstacles (including close-in obstacles) will be completed, and the PIC will review the departure plan with the crew. **(T-3)**

6.8.1.1.2. For all IFR departures, the applicable required climb gradient (standard, published, or reduced IAW AFMAN 11-202V3), and screen height will be entered into the CNI-MU TOLD pages. Aircraft weight must be less than or equal to the calculated maximum aircraft weight for the type of three-engine departure listed (normal or 50-flap at obstacle clearance speed). **(T-2)**

6.8.1.1.3. Special Departure Procedure (SDP). See AFMAN 11-202V3 and associated AMC Supplement.

6.8.1.1.3.1. For OEI contingencies, SDPs are authorized for use by aircrew who complete MAJCOM approved training.

6.8.1.1.3.2. Aircrews will plan IFR departure methods listed in AFMAN 11-202V3, paragraph 5.9. and only transition to an SDP in a OEI scenario after thorough pre-flight planning.

6.8.1.1.3.3. Commercial SDP products (e.g., Jeppesen's **www.milplanner.com**) with accurate C-130J performance data are authorized.

6.8.1.2. For VFR Departure, One Engine Inoperative (OEI) climb capability will ensure departure or emergency return route provides obstacle avoidance and at no time will be less than the required capability listed in **Table 6.3**. Unless a higher obstacle exists that is a factor for an emergency return, crews will ensure a climb to 500 feet above field elevation for Normal Takeoff Procedures. **(T-3)**

6.8.1.2.1. For AMAX Takeoffs utilizing Adjusted Minimum Field Length for Maximum Effort Takeoff (AMFLMETO), MC TOLD does not present usable weights for climb gradient calculations. Therefore, to maximize allowable cargo load (ACL), when airfield required climb gradient is less than or equal to 200 FT/NM, aircrews can use the following procedure: ensure gross weight is less than or equal to 3 ENG MAX GWT NORMAL or 50% FLAP on TAKEOFF DATA 4/4 after building a 200 FT/NM equivalent climb gradient IAW **Table 6.3** below.

Table 6.3. VFR Departure Required Capability.

CONDITION	PROCEDURE	MAX GWT
Normal Takeoff Procedures	TAKEOFF DATA 3/4 L1 = 200 FT/NM L2 = 152 FT/NM R1 = Departure End Elev (MSL) + 500 Feet (minimum)	TAKEOFF DATA 3/4 3 ENG MAX GWT NORMAL or 50% FLAP
AMAX Procedures	TAKEOFF DATA 4/4 L1 = Departure End Elev (MSL) + 200 Feet (minimum) L2 = RWY LENGTH + 6000 Feet	TAKEOFF DATA 4/4 3 ENG MAX GWT NORMAL or 50% FLAP

6.8.2. Runway Condition Reporting. Aircrew will continue to utilize the runway condition reading (RCR) provided at USAF airfields. When operating from **Part 139** and federally obligated airports reporting Takeoff and Landing Performance Assessment (TALPA):

6.8.2.1. Use the Runway Condition Assessment Matrix (RCAM) to convert the reported runway condition code (RwyCC) to the applicable RCR. The RCAM can be found in the FIH.

6.8.2.2. Use the pilot reported braking action terms when providing a PIREP (Good, Good to Medium, Medium, Medium to Poor, Poor, Nil).

6.8.2.3. At locations serviced by USAF airfield management, do not request RwyCC. If a RwyCC is requested, ATC will notify the aircrew the RwyCC is not available and provide any available RCR, braking action advisories, runway surface condition and PIREPs.

6.9. Adverse Weather.

6.9.1. Flight into areas of forecast or reported severe turbulence is prohibited, except when operating on a MAJCOM-approved mission specifically requiring thunderstorm penetration. **(T-2)** The C-130J turbulence sensitivity is Category II (IAW AFH 11-203V2, *Weather for Aircrews - Products and Services*). Wake Turbulence categories are defined in AFMAN 11-202V3. The C-130J is a LARGE (NAS) or MEDIUM (ICAO) aircraft for wake turbulence separation.

6.9.1.1. Anytime windshear may be encountered on departure or approach, aircrews should select weather mode on one NAV RADAR display and windshear mode on another NAV RADAR display.

6.9.1.2. If no RVR readout is available for the departure runway, visibility must be reported to be 1/2 SM (800 meters).

6.9.1.3. A departure alternate is required if weather is below landing minimums for the available approach (at departure aerodrome). Do not use CAT II ILS minimums to determine if a departure alternate is required. **(T-1)**

Section 6C—Preflight

6.10. Aircraft Servicing and Ground Operations.

6.10.1. Aircraft Refueling. Refer to **Chapter 10** for procedures.

6.10.2. Aircrew Dash One Preflight Inspection Requirements.

6.10.2.1. The aircrew dash one preflight inspection will remain valid until either:

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

6.10.2.1.2. Another maintenance dash six preflight is performed.

6.10.2.2. When an aircrew assumes a preflighted spare or quick turn, a thorough visual inspection will be performed. Ensure all mission specific equipment is inspected IAW TO 1C-130J-1. **(T-3)**

6.10.3. Fire Protection and Crash Rescue. See DAFMAN 13-217 and any MAJCOM-specific guidance (e.g., AMCI 11-208, *Mobility Air Forces Management*) for specific firefighting and rescue requirements. When required, the user will preposition suitable equipment at the LZ prior to conducting operations. **(T-3)** The aircraft engine fire extinguisher system fulfills the minimum requirements for fire protection during engine start.

6.10.4. Aircrew and Maintenance Engine Runs. Refer to **Chapter 10** for procedures.

6.10.5. Towing. Refer to **Chapter 10** for procedures.

6.10.6. Aircrew members are prohibited from climbing onto the upper fuselage or wing surfaces unless there is an operational or training necessity (preflight checks as described in the flight manual). **(T-3)** When conditions dictate that aircrew members must climb onto upper fuselage or wing surfaces, they will do so only when conditions are dry, wind speed is below 20 knots, and there is no observable lightning within 10 NMs. **(T-3)** Consider use of additional ground members, if available, to assist in identifying hazardous conditions.

6.11. Aircraft Recovery Away from Main Operating Base. Refer to **Chapter 10** for procedures.

6.12. Aircrew Flight Equipment (AFE) and Dash-21 Requirements.

6.12.1. AFE Requirements.

6.12.1.1. Oxygen. Oxygen onboard for takeoff must be 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-3)** Calculate crew requirements using the 100 percent Oxygen Duration Chart in the flight manual at 10,000 feet.

6.12.1.1.1. Aircrew oxygen and pressurization requirements are IAW AFMAN 11-202V3.

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

6.12.1.2. MA-1 Portable Oxygen Bottles.

6.12.1.2.1. There are three types of A-21 regulators on MA-1 portable oxygen bottles: unmodified, modified and modified-2. Except for fill times, operation of the bottles are identical. Refill valve type is determined by viewing the inside of the fill nozzle as specified below:

6.12.1.2.1.1. Unmodified: Refill valves have a push valve inside the nozzle resembling a standard tire valve stem.

6.12.1.2.1.2. Modified: Refill valves have a brass plate/filter covering inside of the nozzle and no valve stem is visible.

6.12.1.2.1.3. Modified-2 (Fast Fill): Refill valves have a brass plate/filter with a small hole in the middle covering inside the nozzle and no valve stem is visible. The filler valve also has a groove cut into the flat before the wrench flat.

6.12.1.2.2. Ensure a minimum of two unmodified/modified-2 bottles are installed on the aircraft, one in the cargo compartment and the other in the pilot position. Additional unmodified/modified-2 bottles should be installed in the cargo compartment first.

6.12.1.2.2.1. Home Station Departures. A waiver to the minimum number of required unmodified/modified-2 bottles may be granted on a case-by-case basis IAW **paragraph 5.3**.

6.12.1.2.2.2. Enroute Departures. Maintain minimum number of unmodified/modified-2 bottles. If unable, continue until reaching a location with replacement bottle(s). **(T-3)**

6.12.2. Dash-21 Requirements.

6.12.2.1. On missions carrying passengers, distribute Emergency Passenger Oxygen System (EPOS) within easy reach of each passenger regardless of planned flight altitude. EPOS will be distributed and their use demonstrated before departure. **(T-3)**

6.12.2.2. Flight deck crew members will not use the loadmaster's emergency equipment (e.g., cargo compartment quick dons). **(T-3)**

6.12.2.3. Rafts. On overwater flights, do not carry more than 138 personnel, to include crewmembers.

6.12.2.4. Life Preserver Units (LPUs). The loadmaster will place an LPU within easy reach of each passenger and aircrew member before takeoff on overwater flights. Crewmembers will fit and adjust LPUs for overwater flights and will wear them on overwater missions below 2,000 feet. **Exception:** LPUs need not be worn for takeoffs, landings, or approaches. Ensure the appropriate number and type of life preservers are aboard for overwater missions carrying children and infants. **(T-3)**

6.12.2.5. Parachutes.

6.12.2.5.1. 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)**

6.12.2.5.2. Either wear, or have prefit and prepositioned, parachutes and helmets during specified combat conditions. Loadmasters will wear a restraint harness instead of a parachute during airdrops below 800 feet AGL or when performing duties near an open exit above 25,000 MSL. **(T-3)**

6.12.3. NVD Departures.

6.12.3.1. NVD Departure Weather Minimums. Weather minimums for NVD departures for pilots who are non-current and/or unqualified is 1500/3. Current and qualified pilots, to include FTU instructor pilots conducting NVD departures with student pilots enrolled in an FTU syllabus, use standard takeoff weather minimum. Crews must give careful consideration to potential hazards during the critical phase of flight. Other weather limitations are IAW this AFMAN and AFMAN 11-202V3. NVDs have inherent limitations which can further be reduced by poor weather conditions. Crews will consider weather conditions, moon illumination and position, sky glow at dawn and dusk, cultural lighting, and weapon/expendable effects when planning NVD operations. **(T-3)**

6.12.3.2. NVD Malfunctions During Takeoff. NVD malfunctions will be briefed prior to takeoff. **(T-3)** Consideration should be given if the PF experiences NVD failure takeoff may be continued at the discretion of the PIC. If NVD malfunctions occur after the PM states “rotate,” consideration should be given to either continuing the takeoff as the PF transitions to an IMC takeoff or transferring control of the aircraft as the situation dictates. If either pilot‘s NVDs fail after takeoff, continue the climb out and follow the appropriate procedures for loss of NVDs. The PM will be ready to immediately assume aircraft control if the PF experiences spatial disorientation or an NVD malfunction. **(T-3)** Pilots must exercise sound and conservative judgment to continue NVD operations with aircraft malfunctions. See AFTTP 3-3.C-130J for additional NVD emergency information.

Section 6D—Enroute

6.13. Flight Progress. In-flight, use all available navigational aids to monitor Mission Computer performance. Immediately report malfunctions or any loss of navigation capability that degrades centerline navigation solution accuracy beyond the airspace/procedure requirements to the controlling Air Route Traffic Control Center (ARTCC). **(T-3)**

6.13.1. Another pilot will verify waypoint data inserted into the Flight Management System (FMS). Check both the coordinate information and the distances between waypoints against the flight plan. **(T-3)**

6.13.2. Operations in International/Territorial Airspace. See **Chapter 9**.

6.13.3. Oceanic Flight. See **Chapter 9**.

6.13.4. BLK 8 Operational C2 Reporting.

6.13.4.1. Utilize Civil and/or Tactical datalink as the primary method of communication for routine mission information. **(T-3)**

6.13.4.2. Utilize the Air Operation Center (AOC) datalink functions as the primary means for enroute and airborne calls. **(T-3)**

6.13.4.3. Crews should initiate an AOC datalink logon for all flight managed sorties. **(T-3)**

6.13.4.4. Worldwide C2 Network. Datalinks are the primary means of access to the worldwide C2 network. HF is the secondary means. **(T-3)**

6.13.4.5. Civil Satellite Communication (SATCOM) (CSAT). Crews are authorized to use the CSAT phone at cruise (normally above 10,000 feet AGL) altitude or during non-critical phases of flight.

6.13.4.6. Link 16. See TO 1C-130J-1 and Link 16 CONOPS for operating procedures and restrictions.

6.13.4.7. Swift Broadband Unit (SBU). Refer to MAJCOM guidance for SBU usage.

Section 6E—Arrival

6.14. Instrument Approach Procedures. Instrument approach procedures will be IAW AFMAN 11-202V3.

6.14.1. Aircraft Category. The C-130J is a category "C" aircraft. If approach speeds exceed 140 Knots Indicated Airspeed (KIAS), use category "D". Exceptions to the 140 KIAS/Category D transition may apply to some ICAO procedures (e.g., see AFMAN 11-202V3, **Table 15.2** etc)

6.14.2. Flight Instrumentation Requirements.

6.14.2.1. Full flight instrumentation for a CAT I ILS and precision approach radar (PAR) includes a HUD or PFD at each station, and no shared Central Air Data Computer or Inertial Navigation Unit (INU) attitude reference. **(T-2)**

6.14.2.2. 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. **(T-2)**

6.14.2.3. Aircraft are limited to a Decision Height (DH)/Minimum Descent Altitude (MDA) based on a HAT of 300 feet and RVR 4000 feet or 3/4 SM visibility (1220 meters) with no RVR if full flight instrumentation is not operational. **(T-2)**

6.14.3. ILS Precision Runway Monitor (PRM) Approaches. Both pilots must be certified to conduct an ILS PRM approach. **(T-2)** Comply with the following operational procedures:

6.14.3.1. Two operational VHF communication radios are required. **(T-2)**

6.14.3.2. The approach must be briefed as an ILS/PRM approach. **(T-3)**

6.14.3.3. Reference AFMAN 11-202V3 if unable to accept an ILS PRM approach clearance. **(T-2)**

6.14.3.4. All breakouts from the approach will be hand flown. Autopilots will be disengaged when a breakout is directed. **(T-3)**

6.14.4. Should a TCAS Resolution Advisory (RA) be received, the pilot must immediately respond to the RA. **(T-2)** If following an RA requires deviating from an ATC clearance, the pilot must advise ATC as soon as practical. **(T-2)** While following an RA, comply with the turn portion of the ATC breakout instruction unless the pilot determines safety to be a factor.

6.14.5. CAT II ILS Procedures. DH is based on radar altitude. Minimum HAT is 100 feet (30m). Minimum RVR is 1200 feet (350m). Maximum crosswind component limitation is 10 knots. A crosswind component of up to 15 knots may be used for training approaches (requires weather of 200-1/2 or greater).

6.14.5.1. Aircrews will not execute an IMC CAT II ILS below CAT I minimums unless both pilots are qualified and current in CAT II ILS. **(T-2)**

6.14.5.2. When performing CAT II ILS procedures on a CAT I ILS for training/evaluations, the DH is the HAT for the CAT I ILS. **(T-2)**

6.14.5.3. If an Approach Warning special alert is received prior to 300 feet AGL, the approach can be continued if the failure can be corrected prior to 300 feet AGL.

6.14.5.4. If an Approach Warning advisory is received below 300 feet AGL the PF will execute an immediate missed approach unless visual cues are sufficient to complete the approach and landing.

6.14.6. Continuous Descent Final Approach (CDFA) Procedures. If conducting a CDFA it will be flown to a derived decision altitude (DDA) which is calculated by adding 50 feet to the non-precision MDA line of minima. Reference FAA Advisory Circular (AC) 120-108, *Continuous Descent Final Approach,* for more information. **(T-2)**

6.14.7. Non-Directional Beacon (NDB) Procedures. The HUD alone is not sufficient for NDB approaches. A head-down display, which depicts a bearing pointer tuned to the NDB, must be used in conjunction with the HUD throughout the approach. **(T-2)** NDB approaches may be flown during day, night, or IMC conditions after compliance with any Terminal Instrument Procedures (TERPS) restrictions in GDSS/ASRR. Pilots should consider backing up each approach with available NAVAIDS/GPS to include loading the NDB coordinates in the FMS.

6.14.8. Self-Contained Approaches (SCA) (Independent Precision Radar Approach (IPRA) and LZ approaches). See **paragraph 14.2** and AFMAN 11-202V3.

6.14.8.1. IMC Restrictions: Approaches may only be accomplished from a SCA developed IAW AFMAN 11-202V3, paragraph 15.3.7, the ASRR, and the Approach Planning Tool (APT) Planning Guide in the AFTTP folder of the EFB. **(T-2)** Weather minimums for the SCA will be determined based upon using the APT in FalconView with a 300-foot minimum Required Obstacle Clearance. Ceiling will be no lower than 300 feet and visibility will be no lower than RVR 4800 feet or 1 SM (1600 meters). **(T-2)**

6.14.8.1.1. For BLK 6.0 aircraft, a Figure of Merit (FOM) of 4 or less on both Navigation Solutions is required. **(T-2)** For BLK 8.1.1 aircraft, the PIC will use Estimated Position Uncertainty (EPU) of 0.07 or less on both Navigation Solutions. During GPS-denied operations, or with GPS sources selected OFF on the NAV CONTROL 2/3 page, an EPU value will not be displayed and the crew must verify position visually or with an Offset Aimpoint (OAP). **(T-2)** Both Pilots must verify Runway Point of Intercept (RPI) or LZ coordinates. **(T-2)**

6.14.8.1.2. For BLK 6.0 aircraft, Pos Alert 1 and Alert 2 must be set to 0.03 and 0.05 respectively. **(T-2)** For BLK 8.1.1, crews will set CGPS POS LIM to 0.05/0.07 to provide continuous monitoring for degraded navigation solution and set the EGI POS LIM to 0.05/0.07 to provide initial indications of navigation solution uncertainty. The CGPS limit will ensure truth source comparison for training while the EGI comparison will only compare the unbiased EGI solutions.

6.14.8.1.3. For IPRA Approaches, the ship solution must be selected as INAV 2. **(T-2)**

6.14.9. If the aircraft has already begun an Enroute Descent or Approach, and the reported weather decreases below the lowest compatible approach minimums, the PIC may elect to continue the approach IAW AFMAN 11-202V3.

6.14.9.1. If the approach is continued, sufficient fuel must be available to complete the approach and missed approach and proceed to a suitable alternate with normal fuel reserve. **(T-2)**

6.14.9.2. The PIC has final responsibility for determining when the destination is below designated minimums, and for initiating proper clearance request.

6.14.10. Holding. An aircraft may hold at a destination that is below landing minimums, but forecast to improve to or above minimums provided:

6.14.10.1. The aircraft has more fuel remaining than that required to fly to the alternate and hold for the appropriate holding time, and the weather at the alternate is forecasted to remain at or above alternate filing minimums for the period, including the holding time.

6.14.10.2. Destination weather is forecasted to be at or above minimums before excess fuel will be consumed.

6.14.11. BLK 8 RNAV and RNP Instrument Approach Procedures. All terminal RNAV and RNP procedures must be retrieved from the navigation database. RNAV and RNP procedures will not be flown with an expired database.

6.14.11.1. C-130J BLK 8 aircrews are authorized to perform RNAV and RNP operations to include instrument departures, arrivals, and approaches, using LNAV, LNAV/VNAV, LP, and LPV lines of minima.

6.14.11.1.1. RNAV and RNP operations are only authorized in CIVIL mode.

6.14.11.1.2. RNAV (RNP) Authorization Required (AR) approaches are not authorized. **Note:** These approaches are charted as “RNAV (RNP)” in the U.S. and as “RNP APCH AR” by ICAO.

6.14.11.2. Lateral Navigation (LNAV) Approaches. LNAV approaches are non-precision approaches and may be flown IMC to a LNAV minimum descent altitude (MDA). If conducting a Continuous Descent Final Approach (CDFA) it will be flown using VNAV procedures to a derived decision altitude (DDA) which is calculated by adding 50 feet to the LNAV MDA line of minima. **(T-2)** During non-localizer-based approaches where the FMS is used for final approach course guidance (VOR, TACAN, NDB), pilots will tune, identify, monitor, and display the appropriate ground-based (raw) NAVAID.

6.14.11.3. VNAV Approaches (LNAV/VNAV line of minima). VNAV procedures are classified as approaches with vertical guidance (APV).

6.14.11.3.1. APVs provide course and glide path deviation information not designed to meet stringent standards of a precision approach. VNAV approaches may be flown IMC to a LNAV/VNAV DA.

6.14.11.3.2. Baro-VNAV. VNAV is barometric aided, but the FMS-generated vertical path is not compensated for temperature. Instrument approach procedure (IAP) temperature restrictions for uncompensated Baro-VNAV systems must be complied with. Crews will apply temperature corrections from the FIH to altitudes (as required) to comply with the aircraft's non-compensated Baro-VNAV system.

6.14.11.4. LP Approaches. LP approaches provide LNAV guidance only but the aircraft will continue to indicate LPV in applicable HUD and HDD blocks. In order to activate LP logic the APPR FD mode must be selected. If LPV is not indicated the crew will not utilize LP minimums. LP is not a fail-down mode for LPV. A CDFA cannot be conducted utilizing an LP approach.

6.14.11.5. LPV Approaches. LPV approaches are APVs which take advantage of space-based augmentation system (SBAS). The SBAS generated angular guidance allows the use of the same TERPS approach criteria used for ILS approaches.

6.14.11.5.1. LPV minima may have a decision altitude as low as 200 feet height above touchdown with visibility minimums as low as 1/2 SM (IAW Aeronautical Information Manual (AIM) 1-1-32).

6.14.11.5.2. When SBAS is available and within 100 NM of the destination, "LPV XX" (where XX is the selected runway identifier) is displayed in the bottom right of the HUD indicating LPV guidance is available (if desired) for the approach loaded. If LPV is not indicated the crew will not use LPV minimums. **(T-2)**

6.14.11.6. Reference Altitude for APVs (LNAV/DDA, LNAV/VNAV). Prior to glide path intercept, the reference altitude will be set to at or below the DA. When past the Final Approach Fix (FAF) and more than 300 feet. below the missed approach altitude, the reference altitude will be set to the missed approach altitude.

6.14.11.7. Vectors to An Approach. If a 700NM white line is desired off of the FAF, aircrews must refer to the legs-calculated course for input into the INTC CRS TO function at LSK R6.

6.14.11.7.1. The input of the charted course could place the aircraft on the incorrect ground track.

6.14.11.7.2. Situational awareness on preceding step-downs and courses will be lost when direct to the FAF.

6.14.11.8. Receiver Autonomous Integrity Monitoring (RAIM). RAIM alerting is not required/available when the aircraft is RNP capable or when SBAS coverage is available. CNI-MU Predictive RAIM results are used for planning purposes only.

6.14.11.9. Radius-to-Fix (RF). The BLK 8 FMS does support RF legs. An RF leg is defined as a constant radius circular path, around a defined turn center, that starts and terminates at a fix. An RF leg may be published as part of a procedure (IAW AC 90-101A, *Approval Guidance for Required Navigation Performance Procedures with Authorization Required*).

6.14.11.10. WGS-84 compliance. Individual country compliance with the WGS-84 means that the country's NAVAID and obstacle database conforms to the same U.S. grid standard that today's updated avionics use to determine position. U.S. National Airspace System (NAS)/Canadian Domestic Airspace is WGS-84 compliant. WGS-84 compliance is one of several items which are monitored to determine if a country's published RNAV/RNP terminal procedures are authorized for use by USAF aircrews. PICs will check **www.jeppesen.com** to determine country compliance. On the Jeppesen home page, type "WGS-84 Status" in the search field to access the compliance list. Only those countries that are WGS-84 compliant may be flown using FMS guidance in the terminal environment.

6.14.12. ILS Special Authorization (SA) CAT I Approach. CAT II qualified and current C-130J crews are authorized to fly SA Cat 1 Approaches to as low as 150 feet (50m) radar altimeter (RA) decision height (DH) and 1400 RVR (450m) at runways with reduced lighting (no touchdown zone or centerline lighting). Procedurally, the crew will fly a SA CAT I ILS approach the same as a CAT II ILS approach. **(T-1)** All CAT II limitations (crosswinds, autopilot status, required equipment, etc.) must be met. **(T-1)** If the crew receives a CAT II unsafe annunciation above 300 feet, they may elect to continue to the normal CAT I minimums to the same runway (no lower than 200 feet DH). If a CAT II unsafe annunciation is received below 300 feet, the crew will immediately commence a go-around, unless visual cues are sufficient to complete the approach to landing. **(T-1)** Use of the HUD to DH is mandatory. SA CAT II ILS approaches are not authorized.

6.14.13. Performance Based Navigation (PBN) Segmented Approach guidance.

6.14.13.1. **(BLK 8)** Approaches with PBN initial, intermediate and/or missed approach segments extracted from current and certified navigation databases may be flown as long as the aircraft and crew is currently permitted to fly RNAV (GPS) approaches. PBN transitions to conventional final approach segments (ILS) are normally designed under RNAV 1 or RNP 1 navigation specification criteria. Caution should be used as some approaches also include RF (Radius to Fix) legs, which require A-RNP function. While BLK 8 aircraft are capable of performing A-RNP functions such as RF legs, these are typically associated with approaches and/or RNP criteria that exceed BLK 8's certification. These Instrument Approach Procedures are to be extracted in their entirety (to include the missed approach segment) from a certified aircraft navigation database without alteration and follow the same operational practices/procedures/approvals as RNAV (GPS) Approaches. If aircraft/aircrew are not capable of flying RNAV (GPS) approaches the crew is still able to fly PBN segmented approaches, but will have to coordinate for vectors to final or alternate missed approach instructions, as authorized by the approach procedure.

6.15. NVD Approach and Landing.

6.15.1. NVD Approach Weather Minimums. Weather minimums for NVD visual approaches, NVD visual pattern work, and pilots who are non-current and/or unqualified is 1500/3. **(T-3)** Current and qualified NVD aircrews, to include FTU instructor pilots conducting NVD approaches with student pilots enrolled in an FTU syllabus, may fly IFR approaches with weather at approach minimums. Crews must give careful consideration to the potential hazards during these critical phases of flight. Other weather limitations are IAW this AFMAN and AFMAN 11-202V3.

6.15.2. NVD Malfunction during Approach and Landing. If one of the pilots experiences NVD failure on short final, it will be at the discretion of the PIC whether or not to transition to normal lights or perform a go-around. The PM will be ready to immediately assume aircraft control if the PF experiences spatial disorientation or an NVD malfunction. **(T-3)** Pilots must exercise sound and conservative judgment to continue NVD operations with aircraft malfunctions. Tactical and safety considerations will dictate the final course of action. See AFTTP 3-3.C-130J for additional NVD emergency information.

6.16. Insect and Pest Control. Insect and pest control mitigation will be IAW Armed Forces Pest Management Board (AFPMB) Technical Guide No. 4, **https://www.acq.osd.mil/eie/afpmb/docs/techguides/tg4.pdf** and the procedures below.

6.16.1. When spraying is required, use the listed Callington insecticide sprays (or equivalent), to spray the aircraft. Wear leather or Nomex® gloves while spraying. **(T-1)** Spray inside the aircraft according to Appendix E of the Technical Guide.

6.16.2. Procedure at Aerial Port of Disembarkation (APOD). On arrival at an APOD, do not open cargo doors or hatches except to enplane officials required to inspect the aircraft for insect or rodent infestation. **(T-1)** Do not onload or offload cargo or passengers until the inspection is satisfactorily completed. **(T-1)** This procedure may be altered to satisfy mission or local requirements, as arranged by the base air terminal manager or the local C2 organization**.**

Section 6F—Miscellaneous

6.17. Cockpit Voice Recorder (CVR). If involved in a mishap or incident, after landing and terminating the emergency, pull the CVR power circuit breaker (ECB #464) and the Flight Data Recorder (ECB #461). **(T-3)**

6.18. Passenger Restrictions. No-show passenger baggage or baggage of passengers removed from flight will be downloaded prior to departure. See exceptions in applicable AFMAN 11-202V3 supplements. **(T-2)**

6.19. Cockpit Congestion and Loose Objects.

6.19.1. The maximum number of persons on the flight deck should be the minimum commensurate with the mission requirements. At no time should this exceed six. **(T-3)**

6.19.2. No items (checklists, charts, etc.) will be placed on the power lever quadrant during critical phases of flight. **(T-3)**

6.19.3. Ensure no items impede flight control movement. **(T-3)**

6.19.4. Place only soft items on the top bunk. **(T-3)**

6.19.5. Store only the minimum amount of professional gear required to accomplish the mission on the flight deck. Additional items will be secured in the cargo compartment. All items will be secured before passing the combat entry point through the combat exit point. **(T-3)**

6.19.6. Reference **paragraph 5.3** for additional personnel restrictions. **(T-3)**

6.20. Ordnance Expenditure Procedures. Conduct the following procedures after the live firing of chaff/flares or if the crew suspects aircraft battle damage:

6.20.1. After landing, taxi to the de-arm area or another suitable safe location to check for hung ordnance utilizing the After Landing Checklist. **(T-3)**

6.20.2. The loadmaster or another qualified crewmember will deplane the aircraft and check all chaff/flare dispensers for hung ordnance or damage. **(T-3) Note:** ALE-47 flare squibs that fail to fire are not considered hung ordnance.

6.20.3. If hung ordnance is found, identified by a protruding or partially ejected flare cartridge, the aircraft will remain in a de-arm area until Explosive Ordnance Disposal (EOD) personnel meet the aircraft. The aircraft must remain in the designated safe area until EOD personnel can clear all hung ordnance. **(T-3)**

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

6.20.5. Ensure ordnance expenditure is reflected in maintenance forms (AFTO Form 781A).

Chapter 7

AIRCRAFT SECURITY

7.1. General. This chapter provides guidance on aircraft security and preventing and resisting aircraft piracy (hijacking). AFI 13-207-O, *Preventing and Resisting Aircraft Piracy (Hijacking) (CUI)*, DAFI 31-101, *Integrated Defense (ID)*, and specific MAJCOM security publications contain additional guidance. Aircrews will not release information concerning hijacking attempts or identify armed aircrew members or missions to the public.

7.2. Security. The C-130J is a "Protection Level 3" resource. Aircraft security at non-United States military installations is the responsibility of the controlling agency.

7.3. Integrated Defense. The following security procedures for C-130J aircraft were developed IAW DAFI 31-101.

7.3.1. The aircraft will be 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 IAW DAFI 31-101.

7.3.2. 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. Portable security lighting will be provided during the hours of darkness if sufficient permanent lighting is not available. Post security forces IAW DAFI 31-101.

7.3.3. At non-United States military installations, the PIC determines the adequacy of local security capabilities to provide aircraft security commensurate with this chapter. If the PIC determines security to be inadequate, the aircraft should be flown to a station where adequate security is available.

7.3.4. The security force must be made aware of all visits to the aircraft. The security force POC must be identified to the PIC.

7.3.5. 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.

7.3.6. Locking and Sealing. Lock or seal the aircraft during a "Remain Over Night" (RON) on non-secure ramps.

7.4. Arming of Crewmembers. Crew arming is IAW mission directives (Mission Detail, SPINS, OPORD, etc.). Crews armed for anti-hijacking normally arm with hollow-point ammunition. Crews armed for force protection normally arm with ball-type ammunition. If a crewmember leaves the aircraft, they must use only ammunition approved/directed per regional guidance (SPINS, OPORD, FCG, etc.). **(T-1)** When arming for Anti-Hijacking, at least one aircrew member on the flight deck and in the cargo compartment will be armed. **(T-1)**

Chapter 8

TRAINING AND OPERATING LIMITATIONS

8.1. Passengers on Training Missions. Passengers on training missions will be IAW DAFMAN 11-401.

8.1.1. Passengers are not authorized during initial qualification or requalification training. **(T-2)**

8.1.2. Mission qualification training, evaluations, off station trainers, and Joint Airborne/Air Transportability Training (JA/ATT) may carry passengers only if the aircrew in training is qualified (AF Form 8, *Certificate of Aircrew Qualification* on file documenting successful completion of an aircraft checkride). **(T-2)**

8.1.3. Multiple practice approaches, touch-and-go landings, stop-and-go landings, simulated emergency training, modified contour low level routes and airdrops are prohibited with passengers onboard. **(T-2) Exception:** Personnel scheduled to jump following a heavy equipment/CDS airdrop, safeties, MEP (defined in DAFMAN 11-401), exercise participants that will be offloaded by airland procedures following the airdrop, identified base orientation flight personnel (may fly on local training missions) or any personnel authorized by the JA/ATT tasking order may be transported on airdrop training missions.

8.2. Touch-and-Go Landing Limitations. Touch-and-go landings will only be accomplished under the direct supervision of an IP or AC certified to perform touch-and-go landings. (T-2)

8.2.1. Ground idle touch-and-go landings may be performed by any pilot from either seat, when a flight examiner pilot, instructor pilot, or an instructor pilot candidate during upgrade training/evaluation occupies a pilot's seat.

8.2.2. Limitations:

8.2.2.1. Minimum runway length for 50% flap flight idle touch-and-go landings is 5,000 feet. Minimum runway length for all other touch-and-go landings is 6,000 feet. **(T-3)**

8.2.2.2. Minimum ceiling/visibility: 300 feet and RVR 4000 feet (3/4 SM visibility) with an IP, 600 feet ceiling and 2 SM visibility for ACs. **(T-3)**

8.2.2.3. Authorized when crosswind component corrected for RCR is within the recommended zone of the Performance Manual Crosswind Chart for takeoff and landing.

8.2.2.4. Do not accomplish touch-and-go landings on slush-covered runways. **(T-3)**

8.2.2.5. Authorized when normal wake turbulence criterion are met.

8.2.2.6. Do not perform no-flap ground-idle touch-and-go landings. **(T-3)**

8.2.2.7. Touch-and-go landings may be performed with cargo onboard provided the PIC and LM determine suitability of cargo. Touch-and-go landings with hazardous cargo on board are prohibited. **(T-3)**

8.2.3. Include type of touch-and-go as part of the briefing, (e.g., ground-idle or flight-idle). **(T-3)**

8.2.4. The PIC will brief a go/no-go decision point during touch & go procedures (e.g., the "power set" call). **(T-3)** Consideration should be given to runway available, planned touchdown point, distance travelled during configuration time (normally 5 to 7.5 seconds), and required stopping distance. For relatively minor malfunctions it is more risky to try to abort a takeoff at high speed than to continue the takeoff. For emergencies where the takeoff cannot be safely continued, the PIC will also brief a commit point by which the abort decision must be made in order to safely stop within the remaining runway. Reference runway distance remaining markers, other runway markings or adjacent landmarks. **(T-3)**

8.3. Simulated Emergency Flight Procedures. Simulated emergency flight procedures will be conducted IAW AFMAN 11-202V3, the aircraft flight manual, and this AFMAN.

8.3.1. Simulated Engine Failure. Direct IP supervision required except for IP candidates under the supervision of flight examiner during initial or requalification upgrade evaluations to IP. One power lever may be retarded by the IP to FLIGHT IDLE at not less than V_{MCA} (one-engine inoperative, out of ground effect) nor less than 300 feet AGL. **(T-3)**

8.3.2. Weather. Simulated engine failure is authorized in daylight IMC if the weather is at or above circling minimums and at night with weather at or above 1,000-foot ceiling and 2 SM visibility or circling minimums whichever is higher. Crosswind component corrected for RCR must be within the recommended zone of the Performance Manual Crosswind Chart for landing. **(T-3)**

8.3.3. Restrictions:

8.3.3.1. Engine out no-flap landings are restricted to AC candidates and above. **(T-3)**

8.3.3.2. Planned go-arounds from simulated engine-out no-flap approaches are not authorized. Required go-arounds from engine out no-flap approaches require setting the flaps to 50% and using all four engines. **(T-3)**

8.3.3.3. Do not compound engine out circling approaches with any other simulated malfunctions. **(T-3)**

8.3.3.4. Engine out go-arounds must be initiated by 300 feet AGL.

8.4. Flight Maneuvers.

8.4.1. Practice of the following maneuvers are prohibited in flight:

8.4.1.1. Full stalls. **(T-2)**

8.4.1.2. Rudder force reversals. **(T-2)**

8.4.1.3. Spins. **(T-2)**

8.4.1.4. Simulated runaway trim malfunctions. **(T-2)**

8.4.1.5. Simulated hydraulic system loss by turning engine driven hydraulic pumps off. **(T-2)**

8.4.1.6. Simulated two-engine approaches or landings. **(T-2)**

8.4.1.7. Simulated engine-out takeoffs. **(T-2)**

8.4.2. Permissible in-flight maneuvers. The maneuvers listed below are authorized for qualification and continuation training. They are applicable to all C-130J aircraft except when prohibited or restricted by the flight manual or other current directives. The pilot or IP will alert all crew members prior to accomplishing the following:

8.4.2.1. Approach to Stalls: Direct IP supervision required, authorized during day VMC. Follow restrictions in TO 1C-130J-1 for practice stalls. Additionally, the maneuver will be accomplished at a minimum of 5,000 feet above any cloud deck. Apply the Stall Recovery Procedure at the first indication of stall. **(T-3)**

8.4.2.2. Slow Flight: Direct IP supervision required. Authorized at or above 5,000 feet AGL. Fly at approach and no slower than threshold speed with gear down and flaps 0%, 50%, or 100%. Do not exceed 15 degrees of bank. **(T-3)**

8.5. Operating Limitations.

8.5.1. Unless specifically authorized elsewhere, do not practice emergency procedures that degrade aircraft performance or flight control capabilities. **(T-3)** In an actual emergency, terminate all training and flight maneuvers practice. **(T-3)**

8.5.2. Low/Missed Approaches. Initiate a planned missed approach no lower than:

8.5.2.1. Precision approach - DH (or 300-feet HAT, whichever is higher for practice emergency involving a simulated engine shutdown). **(T-3)**

8.5.2.2. Non-precision approach - Minimum altitude depicted on approach plate. **(T-3)**

8.5.2.3. Visual Approach - 200 feet AGL for simulated emergencies (no minimum for non-emergency). **(T-3)**

8.5.2.4. Restricted Low Approach (aircraft, equipment, or personnel are on the runway) - 500 feet AGL. **(T-3)**

8.6. Night Vision Device Training.

8.6.1. Crews will accomplish aircrew training according to AFMAN 11-2C-130JV1 and MAJCOM-approved training guides before performing NVD operations. **(T-3)**

8.6.2. Pilots who are both Touch-and-Go certified and NVD Airland Certified may perform NVD Touch-and-Go landings IAW **paragraph 8.2** to include FTU instructor pilots conducting NVD departures with student pilots enrolled in an FTU syllabus. ***WARNING:*** Crews must be thoroughly familiar with the visual cues required to identify the amount of runway remaining when performing Touch-and-Go operations.

8.7. Landing Limitations.

8.7.1. No-Flap Approach Limitations:

8.7.1.1. Direct IP supervision required. **(T-3)**

8.7.1.2. Do not combine no-flap circling approaches with any other simulated emergencies. **(T-3)**

8.7.1.3. Maximum gross weight is 120,000 lbs. **(T-3)**

8.7.1.4. Authorized in daylight IMC if the weather is at or above circling minimums and at night with weather at or above 1,000-foot ceiling and 2 SM visibility or circling minimums whichever is higher. **(T-3)**

8.7.1.5. Use 50% flaps for a go-around. **(T-3) Note:** Check no-flap landing distance with runway available. **(T-3)**

8.7.2. No-Flap Landing Limitations:

8.7.2.1. Authorized in short-body aircraft only. **(T-3)**

8.7.2.2. Crosswind component must be within the recommended range on the crosswind chart and within the crosswind component corrected for RCR. **(T-3)**

8.7.3. Stop-and-Go Landing Criteria:

8.7.3.1. Authorized only on designated training, evaluation, or currency missions. **(T-3)**

8.7.3.2. Authorized to be performed by any C-130J qualified pilot.

8.7.3.3. Runway remaining for takeoff must be sufficient to allow rotation and refusal speeds to be equal. **(T-3)**

8.7.3.4. Crosswind component corrected for RCR must be in the recommended zone of the landing crosswind chart. **(T-3)**

8.7.3.5. Ceiling and visibility must be at least 300 feet and 3/4 SM (RVR 4,000 feet). **(T- 3)**

8.7.4. Do not perform Stop-and-Go landings:

8.7.4.1. In conjunction with no-flap landings. **(T-3)**

8.7.4.2. When normal wake turbulence criterion are not met. **(T-3)**

8.7.4.3. When intercepting or crossing the flight path of a wide-bodied aircraft while performing an approach or landing. **(T-3)**

8.7.5. Crews should not terminate or conduct operations requiring extended brake applications (i.e., Engine Running Offload (ERO), seat swap, etc.) following a landing with "full anti-skid braking" unless they have confirmed their brake energy using the performance manual charts. On normal landings, crews should consider extending rollout to minimize the use of the brakes.

8.8. Actual Engine Shutdown and Airstart. Direct IP supervision required. One engine may be shutdown at not lower than 2,500 feet AGL in daylight VMC. **(T-3)**

8.9. Aborted Normal Takeoff. Direct IP supervision required. Authorized during training in daylight. Crosswind component must be within the recommended zone of the takeoff crosswind chart corrected for RCR. Runway must be dry, hard-surfaced, and long enough to allow refusal and takeoff speeds to be equal. **(T-3)** Initiate the abort by stating "REJECT" before refusal speed. Do not practice aborts from touch-and-go or stop-and-go landings. Do not shut down an engine due to simulated malfunctions.

8.10. Aborted Maximum Effort Takeoff. Direct IP supervision required. Authorized for AC upgrades and above during formal upgrade training. Restricted to the main runway during daylight. Crosswind component must be within the recommended zone of the takeoff crosswind chart corrected for RCR. Runway must be dry, hard-surfaced and long enough to allow refusal and takeoff speeds to be equal. Simulate a runway length less than CFL. Initiate the abort by stating

"REJECT" at or below a refusal speed based on simulated runway length. Compare distance traveled to runway length and point out the ramifications of operating with less than critical field length. Subsequent aborted takeoffs can lead to excessive brake heating. Brakes must be allowed to cool between aborted takeoffs. Do not shut down an engine due to simulated malfunctions. Do not practice aborted maximum effort takeoffs from stop-and-go landings. Requires OG/CC approval. **(T-3)**

Table 8.1. Training Restriction Summary.

Simulated Engine Failure	Prohibited during tactical operations. **(T-3)** IP may retard one throttle to flight idle at not less than V_{MCA} (one-engine inoperative, out of ground effect) nor less than 300 feet AGL. **(T-3)** Authorized day IMC if WX at or above circling minimums or night if weather is at or above 1,000-foot ceiling and 2 SM visibility or circling minimums, whichever is higher. **(T-3)** Crosswind component must be in the recommended zone corrected for RCR**. (T-3)** Engine out no-flap landings are restricted to MPD pilots and above, and planned go-arounds are not authorized. **(T-3)** Engine out circling approaches will not be compounded with any other simulated malfunctions. **(T-3)** Go-Arounds must be initiated by 300 feet AGL.
No-Flap	Prohibited during tactical operations. **(T-3)** No-flap circling approaches are authorized and will not be combined with any other simulated emergencies. **(T-3)** Maximum gross weight is 120,000 lbs. and crosswind component corrected for RCR must be within the recommended range. **(T-3)** Authorized day IMC if WX at or above circling minimums or night if weather is at or above 1,000-foot ceiling and 2 SM visibility or circling minimums, whichever is higher. **(T-3)** No-flap landings are authorized in short-body aircraft only. **(T-3)**
Touch-and-Go Landings	Requires certification. **(T-3)** MPs restricted to flight idle touch-and-go landings. **(T-3)** Ground-idle performed by any pilot from any seat when a flight evaluator, IP, or IP candidate during upgrade/evaluation occupies a pilot's seat. **(T-3)** No-flap ground-idle touch-and-go landings not authorized. **(T-3)** Minimum runway length: flaps 50 percent Flight idle, 5,000 feet - for all other, 6,000 feet. **(T-3)** Crosswind component corrected for RCR is within recommended zone. **(T-3)** Minimum ceiling of 600 feet and minimum visibility of 2 SM (300 feet and RVR 4000 feet (3/4 SM visibility) if an IP is in either seat). **(T-3)**

Go-around, Missed Approaches	Minimum altitude is 500 feet AGL when aircraft, equipment, or personnel are on the runway. **(T-3)** VFR - No lower than 200 feet AGL when practicing simulated emergencies. **(T-3)** Practice instrument approaches - no lower than minimum altitude for the approach. **(T-3)**
Slow Flight	At or above 5,000 feet AGL. **(T-3)** Fly at approach, threshold, and 1.2 times stall speed with gear down and flaps 0, 50, or 100 percent. **(T-3)** Do not exceed 15 degrees of bank. **(T-3)**
Approach to Stalls	Requires day VMC at a minimum of 10,000 feet AGL and 5,000 feet above cloud deck. **(T-3)**

Chapter 9

NAVIGATION PROCEDURES

9.1. Navigations Procedures. Navigation procedures will be IAW AFMAN 11-202V3, FLIP area planning documents, and applicable MAJCOM guidance.

9.2. Long Range Navigation and Oceanic Planning. For general planning and oceanic flight information, aircrews should reference AFMAN 11-202V3, specific region procedures, and applicable NOTAMS for unique or temporary applications and resources.

9.2.1. First Suitable Airfield (FSAF) and Last Suitable Airfield (LSAF). Utilized in the equal time point (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. They are airports closest to the coast-out and coast-in waypoints that meet applicable criteria for C-130J operations.

9.2.2. Refer to **Chapter 12** to accomplish fuel planning.

9.2.3. Equal Time Point (ETP). Point along a route at which an aircraft may either proceed to FSAF or return to LSAF in the same amount of time based on all engines operating. FSAF/LSAF are the airports closest to the coast-out and coast-in route of flight that meet applicable destination alternate requirements except weather. Forecast weather conditions for LSAF/FSAF (Estimated Time of Arrival (ETA) +/- 1 Hour) will meet or exceed minimums for the lowest compatible approach or 500/1, whichever is greater.

9.2.3.1. ETPs must be annotated and plotted on the Master Plotting Chart (MPC) and Master Flight Plan (MFP) prior to the coast-out waypoint. **(T-3)** For BLK 6.0 aircraft enter ETP information into the CNI PROGRESS page during preflight, as long as flight is contained within the same navigation database. CNI-computed ETPs only become accurate upon reaching the PERF CRUISE altitude. CNI-computed ETPs can be obtained for different airspeeds (e.g., 260 Knots True Airspeed (KTAS) for a 3-engine scenario). Refer to TO 1C-130J-1-5 for additional BLK 8 ETP information.

9.2.3.2. The blocks provided on top of the C-130J High PFPS CFP should be used to record information needed by the CNI to compute an ETP. These blocks and provided formulas also serve as a worksheet for crews to do manual ETP computations. The Mobility Air Force Planning System (MAFPS) has information on the bottom of the flight plan for manual ETP calculations. If using the computer programs or the CNI, annotate applicable information on the MFP. If the CNI is used, annotate "CNI" in the master flight plan blocks for which the CNI does not present a number.

9.2.3.3. To compute a manual ETP and verify MAFPS calculations refer to AFMAN 11-202V3 AMC Supplement.

9.2.3.4. The INDEX FROM/TO and PROGRESS pages may also be utilized in flight to update times and distances to diversion bases along the route of flight. For BLK 6.0 aircraft, an accurate ground speed must be entered in order to obtain correct Estimated Time Enroute (ETE) calculations. For BLK 8 aircraft, the PROGRESS 5/5 page will automatically update the five nearest database airports to your present position and can be utilized to gain situational awareness on potential diversion options.

9.2.3.5. For BLK 8 aircraft the ETP page does not utilize standard Wind Factor (WF) values but instead a wind vector & velocity entry. The crew can utilize the WF value by matching the velocity with a corresponding vector to reflect a positive or negative value. For example: a crew given a -30 WF for an ETP to FSAF with a bearing of 246 displayed on PROGRESS ETP 3/5 would input 246/30 for that legs wind input. See Note 2 in the Blk 8 Long Range Navigation Checklist for additional WF information.

9.3. Long Range Navigation and Oceanic Procedures. Crews will use the Long Range Navigation Checklist in the ePubs C-130J Folder when operating in RNAV-10 (RNP-10), North Atlantic Region, or Remote Continental (no reliable fix at least once each hour from ICAO ground-based NAVAIDs) airspace, in addition to current guidance for the operating airspace. **(T-3)** For North Atlantic Region operations, requirements are annotated as North Atlantic High Level Airspace (NAT HLA) in Long Range Navigation Checklist in the ePubs C-130J Folder**.** For unique mission requirements, units may augment the Long Range Navigation Checklist with local supplements such as altitude reservation, formation, but in no case will they substitute for this checklist. **(T-3)**

9.4. Aircraft Specific Procedures. This section and the Long Range Navigation Checklist provide C-130J specific guidance for applying long range navigation or oceanic procedures in addition to operations in the North Atlantic Region and other oceanic airspace. Specific aircraft procedures for RNP RNAV airspace are addressed in subsequent sections.

9.4.1. For long range navigation operations in oceanic airspace, crews should refer to TO 1C-130J-1 Chapter 18B. Refer to **Chapter 4** for the navigation Minimum Equipment List (MEL) for specific airspace requirements.

9.4.2. One CFP and one plotting chart (e.g., OPC, GNC, Jeppesen, or digital charting product) will be used as master copies for each flight utilizing long range navigation or oceanic procedures. Both will be labeled “MASTER COPY” and will be referred to as Master Flight Plan (MFP) and Master Plotting Chart (MPC). Both will be retained applicable IAW AFMAN 11-202V3 supplements and Air Force Records Disposition Schedule. **(T-3)**

9.4.3. Route Programming.

9.4.3.1. One pilot will load the route of flight directly from the filed flight plan, MFP or data transfer card into the CNI and verify both the magnetic course and the leg distance for each waypoint with the MFP. **(T-3)** Loading the route directly from the filed flight plan may minimize pilot/controller clearance loop (misinterpretation) errors. Label waypoints so they can be readily identified for subsequent position reporting. If the courses differ by more than 2° or the distances differ by more than 2 NM, the pilot will resolve the discrepancy prior to flight. **(T-2)** Completion of this step will be annotated with a check-mark (√) next to the waypoint. **(T-3)**

9.4.3.1.1. Verify the total distance to the destination on the CNI PROGRESS page. **(T-3)** Any significant disparity (more than 25 NM) in the total distance between the CNI and MFP should require a recheck of the ramp position and waypoint coordinates.

9.4.3.1.2. For BLK 8 aircraft, oceanic latitude/longitude points will be named in the worldwide database using the convention in corresponding examples below. CPDLC transmissions will be discernible by controlling agencies as the following are ARINC 424 standard nomenclature **Table 9.1**.:

Table 9.1. BLK 8 Standard Nomenclature.

N latitude/W longitude	N52 00/W075 00 = 5275N
N latitude/E longitude	N50 00/E020 00 = 5020E
S latitude/W longitude	S52 00/W075 00 = 5275W
S latitude/E longitude	S50 00/E020 00 = 5020S
Half-Degree Latitude	52 30'N/050W = 5250H

9.4.3.2. The other pilot will verify the waypoint coordinates and course and distance information from the opposite side CNI to the MFP. **(T-3)** Completion of this step will be annotated with the check-mark being circled on the MFP. **(T-3)** If the planned route of flight is a stored route or one loaded during a data transfer, verification of waypoint coordinates must be accomplished by both pilots in the same manner. **(T-3)**

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

9.4.4. Ground Speed Check. Before taxiing the aircraft, check INS/INAV ground speed by checking each pilot's ground speed on the CNI-MUs or HDDs/HUDs. Ground speeds in excess of 0 knots while the aircraft is stationary may indicate a faulty INS. While taxiing, check ground speed for reasonable indication.

9.4.5. Communication/Navigation/Identification Management System (CNI-MS).

9.4.5.1. In addition to **Chapter 6** requirements, when configuring for long range navigation operations, both pilots will:

9.4.5.1.1. For BLK 6.0 aircraft, verify INAV Position Alert 1 and INAV Position Alert 2 are set appropriately for the airspace in which the aircraft is operating and IAW TO 1-C-130J-1 Chapter 18B. For operations in RNAV-10 (RNP-10), North Atlantic Region, or Remote Continental airspace it is recommended to set INAV Position Alert 1 to 5.0 NM on the CNI PROGRESS page to give early indication of the EGI/GPS position being questionable. **(T-3)**

9.4.5.1.2. For BLK 8 aircraft, verify Civil/FMS is selected on NAV CONTROL 1/3 page and ensure the RNP value on PROGRESS RNP 4/5 page reflects correct RNAV value. **(T-3)**

9.4.6. Navigation Accuracy Check.

9.4.6.1. Before oceanic entry:

9.4.6.1.1. For BLK 6.0 aircraft, check accuracy of EGI/GPS position and INS position, versus a ground-based NAVAID (e.g., the chosen NAVAID checkpoint reference position (REF POS)). **(T-3)** If discrepancies greater than 5 NM exist, immediate action may be required. It is not advisable for crews to attempt to correct an error by doing an in-flight alignment or manually updating the INS since this has often contributed to a Gross Navigation Error. If cause of the discrepancy cannot be detected and corrected, crews should not enter oceanic airspace.

9.4.6.1.2. For BLK 8 aircraft, check the accuracy of the CIVIL/FMS position versus a ground-based NAVAID and ensure UNABLE RNP MASTER CAUTION is not displayed. **(T-3)**

9.4.7. Oceanic Clearance. The PIC will designate the duties of flying the aircraft and copying/monitoring clearances so that they are clearly understood by all crewmembers. The PM will normally receive and record the oceanic clearance on the MFP. Both pilots will monitor and crosscheck to ensure that it has been copied correctly and clearly understood. **(T-3)** If the oceanic clearance received is different from the planned clearance, or if the crew receives a reclearance, use the following procedures:

9.4.7.1. Enter the new waypoints into the CNI IAW the NAT HLA/ Minimum Navigation Performance Specifications (MNPS) checklist. **(T-3)**

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

9.4.7.3. Ensure fuel will be sufficient to arrive at destination waypoint with required reserves. **(T-3)**

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

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

9.4.8. Compass Deviation Check. Perform a compass deviation check using both INSs and the standby compass prior to oceanic entry. Record the deviation in the appropriate block of the MFP. Apply this correction to headings to be flown whenever it is necessary to use the standby compass as the sole source for navigation.

9.4.9. Strategic Lateral Offset Procedures (SLOP). The C-130J is considered to have automatic offset capability and should apply SLOP IAW airspace requirements.

9.4.10. BIU Backup. For BLK 6.0 aircraft only, 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. The other pilot should select VHF 2 for the same reason. VHF 1 will be available on the Get Home Control and crew can attempt to relay transmissions to other aircraft on 121.5 until within VHF range of ATC.

9.4.11. When flying in RVSM airspace, hourly altimeter checks are required. **(T-2)**

9.4.12. Overhead Waypoint. In addition to NAT HLA/MNPS procedures, 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 MFP (See **Chapter 12** for additional guidance).

9.4.12.1. Record actual in-flight conditions (altitude, wind, and static air temperature (SAT)) above the forecast conditions on the next line of the MFP. Update these conditions as well as fuel flow as needed on the PERF CRUISE and LEGS pages in the CNI-MU.

9.4.12.2. Position Reporting.

9.4.12.2.1. For BLK 6.0 aircraft use FIH standard position report format.

9.4.12.2.2. For BLK 8 aircraft use CPDLC. BLK 8 Initial Check-In: “Gander, Reach 1234, CPDLC, negative SELCAL, Shanwick next.”

9.4.12.2.2.1. All usage of CPDLC should be IAW the Global Operational Datalink (GOLD) Manual. **(T-2)** Area specific information should be referenced within the GOLD and complied with.

9.4.12.2.2.2. Prior to flight, the PIC will ensure accuracy of the REG and CODE of the assigned aircraft within section 18 of the DD Form 1801, *DoD International Flight Plan*. **(T-3)** CPDLC log-on does not occur if errors exist.

9.4.12.2.2.3. To ensure ADS-C reporting is enabled, ensure ADS ARM is selected on ATC LOGON/STATUS page L5.

9.4.12.2.2.4. The PF and PM will read each ATC Message individually to ensure message integrity and compliance. **(T-3)** If a follow-on message is required following a clearance (example: REPORT WHEN LEVEL AT FLXXX) it is recommended to leave the REPORT page up as a reminder to the crew, and to ensure compliance when extended periods of time exist prior to executing a report.

9.4.13. Ten Minute Plot. Approximately 10 minutes after passing each oceanic/Class II waypoint, or every 500 miles, whichever is shorter, record and plot the aircraft full Latitude/Longitude position, Flight Level/Altitude and UTC time on the MPC and ensure compliance with courses and ETA tolerances. MARK the aircraft position using the offside INS solution and plot the position on the MPC.

9.4.13.1. For BLK 6.0 aircraft, MARK the aircraft position using the offside INS solution and plot the position on the MPC.

9.4.13.2. For BLK 8 aircraft, MARK the aircraft position using the CIVIL/FMS solution.

9.4.14. Coast-In. Use the radar to help identify the coast-in position. For BLK 6.0, if coast-in is made at a radial/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. Remove SLOP automatic offset, if entered, prior to oceanic exit. For BLK 6.0 aircraft, reset Navigation system (RNAV) and IFF Mode 3 as appropriate.

9.5. Special Certification Airspace Requirements and Procedures.

9.5.1. The CNI-MS installed in the BLK 6.0 navigation suite meets FAA certification requirements for IFR navigation using Aircraft Autonomous Integrity Monitoring (AAIM) as defined in FAA AC 90-108, *Use of Suitable RNAV System on Conventional Routes and Procedures*. The MAJCOM has approved the BLK 6.0 GPS with AAIM to be used as the primary means of navigation for enroute instrument navigation using procedures outlined in TO 1-C-130J-1. Refer to **Table 9.2** for consolidated BLK 6.0 capabilities.

9.5.2. The CNI-MS installed on BLK 8 aircraft supports worldwide operations in oceanic, enroute, and terminal areas that require RNAV and RNP capabilities when utilizing the CIVIL Airspace mode on the NAV CONTROL 1/3 page. The system can also provide guidance on published RNAV and RNP routes and qualifies as a suitable RNAV system (as defined in FAA AC 90-108) to provide alternate/substitute means of navigation on conventional routes. Refer to **Table 9.2** for consolidated BLK 8.1.1 capabilities.

9.5.3. NAT HLA formerly known as MNPS Airspace.

9.5.3.1. The BLK 6.0 aircraft is approved for NAT HLA with a 10.3 hour time limit after the INSn/RAD DEGRADED CNI message is received. The C-130J must comply with all NAT HLA equipment requirements when flying within the lateral dimensions of this airspace. Both INSs must be fully operational to meet the NAT HLA requirement of having two fully serviceable LRNSs (Long Range Navigation System). **(T-0)**

9.5.3.2. The BLK 6.0 navigation system is certified to meet the requirements of RNP-10 airspace for up to 10.3 hours from the time the INSn/RAD DEGRADED CNI message is received.

9.5.3.3. The BLK 6.0 navigation system is approved for RNAV5/BRNAV with no time limits as long as one INS is receiving radio updates.

9.5.3.4. The BLK 8 aircraft is approved for NAT HLA with no time limitations.

9.5.4. Flight Plans.

9.5.4.1. For flight plan purposes, BLK 6.0 aircraft are PBN approved with RNAV specification RNAV 10, RNAV 5 GNSS, RNAV 5 INS, RNAV 2 GNSS, RNAV 2

DME/DME/IRU, RNAV 1 GNSS, and RNAV 1 DME/DME/IRU. Annotate in appropriate blocks of the DD Form 1801 per the GP. Refer to **Table 9.3** for consolidated BLK 6.0 1801 codes.

9.5.4.2. For flight plan purposes, BLK 8 aircraft are approved for RNAV 10, RNAV 5, RNAV 2, RNAV 1, RNAV APPR, LP APPR, LPV APPR, RNP4, RNP 2, RNP 1, RNP 0.3, and RNP

APPR categories. BLK 8 is not certified to execute RNP APPR AR (Authorization Required) approaches. Annotate in appropriate blocks of the DD Form 1801 per the GP. Refer to **Table 9.3** for consolidated BLK 8.1.1 1801 codes.

9.5.5. RVSM Airspace.

9.5.5.1. Both primary altimeters, at least one autopilot, the altitude advisory system, and the transponder, must be fully operational. The AC will request a new clearance to avoid this airspace should any of this equipment fail.

9.5.5.2. Have the autopilot engaged during level cruise, except when circumstances such as the need to re-trim the aircraft or turbulence require disengagement.

9.5.5.3. Crosscheck altimeters before or immediately upon coast-out. Record readings of both altimeters.

9.5.5.4. Continuously crosscheck the primary altimeters to ensure they agree within ± 200 feet.

9.5.5.5. Limit climb and descent rates to 1,000 feet per minute when operating near other aircraft to reduce potential TCAS advisories.

9.5.5.6. Immediately notify ATC if any of the required equipment fails after entry into RVSM airspace and coordinate a plan of action.

9.5.5.7. Document malfunctions or failures of RVSM required equipment in the AFTO Form 781A.

9.6. Navigation Malfunctions and Failures. Should INAV solutions noticeably separate and exceed the limit for the operating airspace, crews will follow procedures outlined in TO 1C-130J-1. If unable to identify the navigation malfunction, determine and use the INS solution considered most accurate by evaluating both INSs using available radio aids, ground mapping radar, and GPS. 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. Two agreeing GPSs and one agreeing INS indicate 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.

9.6.1. Situations may arise when crews cannot identify the faulty navigation system by simple comparison of positions between navigation solutions. Fly the aircraft halfway between the disagreeing INS solutions. Plot both CNI-SP solutions at least once every 30 minutes on MPC, labeling the pilot CNI-SP navigation solution MPP1 and co-pilot's MPP2. Continue to evaluate outputs from each INS and try to use plotted position information to identify adverse trends.

Table 9.2. C-130J CNS and PBN Operational Approvals.

Airspace/Equipment Type	Block 6 Certified & Approved	Block 8.1.1 (Civil) Certified & Approved	Notes
SATCOM Voice	Yes	Yes	
SATCOM (INMARSAT)	No	Yes	
CPDLC	No	Yes	
ACARS	No	Yes	
High Frequency Datalink (HFDL)	No	No	
FANS 1/A	No	Yes	
FANS 2 (FANS 1+ATN)	No	No	
ADS-A/C	No	Yes	
ADS-B Out	Yes	Yes	
VDL Mode 2	No	Yes	
RVSM	Yes	Yes	
RNP 1	No	Yes	
RNP 2	No	Yes	
RNAV (GPS) – NAS RNP APCH – ICAO	No	Yes	
RNAV (RNP) – NAS RNP AR APCH – ICAO	No	No	Non-Authorization Required Approaches may be permissible, but none are currently fielded
RNP 4	No	Yes	
RNAV 1	Yes	Yes	

RNAV 2 (Q & T Routes)	Yes	Yes	
RNAV 5 (BRNAV)	Yes	Yes	BLK 6.0 has no time limit as long as one INS is receiving radio updates
RNAV 10 (RNP 10)	Yes	Yes	BLK 6.0 has a 10.3-hour time limit after receiving INSn/RAD DEGRADED CNI message
PRNAV	Yes	Yes	
LNAV	No	Yes	
LNAV/VNAV	No	Yes	
Baro-VNAV	No	Yes	System is uncompensated, temperature restrictions apply.
LPV	No	Yes	
LP	No	Yes	Crews must use APPR Mode for execution
GLS Cat I (GBAS)	No	No	
SBAS (WAAS, EGNOS)	No	Yes	
NAT HLA (Formerly MNPS)	Yes	Yes	BLK 6.0 has a 10.3-hour time limit after receiving INSn/RAD DEGRADED CNI message
Note: Both BLK 6.0 and BLK 8 aircraft are suitable RNAV systems IAW FAA Advisory Circular (AC) 90-108, *Use of Suitable Area Navigation (RNAV) Systems on Conventional Routes and Procedures*. Alternate and substitute means are authorized on conventional routes where the aircraft is approved for operations at a performance level equivalent to the airspace. For example, the default performance specification for SIDs and STARs is RNAV 1. If the aircraft is approved for RNAV 1 operations, then aircrews may utilize alternate and substitute means on a conventional SID or STAR. The restrictions in AFMAN 11-202V3 paragraph 4.13.13. still apply. Additionally, per the TO 1C-130J-1, page 18B-13, approaches based on ground NAVAIDs (TAC, VOR, NDB, etc.) must have the underlying ground-based NAVAID displayed in the cockpit for monitoring purposes. Conventional routes are those enroute, arrival, departure, and terminal area procedures that are based on conventional NAVAIDs.			

Table 9.3. 1801. Code Table for BLK 6.0 and BLK 8.1.1.

Entry Field	C-130J Block 6	C-130J Block 8.1.1
Aircraft Type	C30J	C30J
Block 10 – FAA Equipment		/L
Block 10 – ICAO Equipment	SDFGHIRTUWXY	SBDE2FGHIJ4J5M1RTUWXYZ
Block 10 – ICAO Surveillance	B1L H* if ADS-B off	B1D1L HD1* if ADS-B off
Block 18 – PBN/	A1B2B5C2C4D2D4	A1B1C1D1L1O1S2

Block 18 – CODE/		<HEXADCML CODE>
Block 18 – DAT/		1FANSE
Block 18 – NAV/		SBAS M1M2P1Z1Z2Z5 (1)
Block 18 – OPR/	DOD	DOD
Block 18 – PER/	C	C
Block 18 – RVR/	370	370
Block 18 – SUR/	EUADSBX* if ADS-B off	260B RSP180 EUADSBX* if ADS-B off
Block 18 – RMK/	TCAS *DIPS & PPR as required	TCAS *DIPS & PPR as required
Block 18 – STS/	STATE HAZMAT* as required	STATE HAZMAT* as required
Block 18 – REG/	<XXXXXT>* tail number	<XXXXXT>* tail number

NOTES:
(1) Block 18 - NAV/ codes have yet to be incorporated into FLIP GP. The A-RNP is allowed IAW TO 1C-130J-1, page 18B-13. (ref. FAA Flight Plan Quick Guide Nov 2022)
M1 = RNP 2 Continental
M2 = RNP 2 Oceanic/Remote
P1 = Advanced RNP (A-RNP)
Z1 = Radius to Fix (RF)
Z2 = Fixed Radius Transitions (FRT)
Z5 = Time of Arrival Control (TOAC)

Chapter 10

AIRCREW MAINTENANCE SUPPORT PROCEDURES

10.1. General. This chapter contains aircrew procedures not contained in the flight manual or other publications.

10.2. Responsibilities. Aircrew may assist the normal maintenance function when critical contingency taskings dictate their use, provided this action does not impact crew duty and crew rest limits specified in AFMAN 11-202V3 and applicable supplements.

10.3. Authority to Clear a Red X/Sign an Exceptional Release. IAW DAFI 21-101 and TO 00-20-1.

10.4. Aircraft Servicing. Aircrews are authorized to perform those aircrew maintenance support tasks found in this volume. The aircrew performs these tasks only in the absence of qualified maintenance personnel and is designed for support of the aircraft and its mission while away from home station. Without exception, the applicable checklists will be used during all refueling and de-fueling operations**.**

10.4.1. Crew members acting as refueling supervisors and panel operators refer to TO 00-25-172, *Ground Servicing Aircrew* and refueling job guide. Aircrews should only refuel in cases when maintenance support is not readily available and the mission would be delayed. Aircrew may also conduct ground refueling at home station to satisfy training requirements. Crew members may augment maintenance refueling teams at enroute stops.

10.4.2. Concurrent Ground Operations. The PIC and chief servicing supervisor (CSS) must ensure aircrew members and servicing personnel accomplish concurrent servicing (CS) in accordance with TO 00-25-172 and servicing technical orders. Aircrews performing Dash-1 preflight inspections or cargo loading concurrent with servicing must have cooperation and close coordination with the CSS. The CSS will remain in continuous intercom contact with fuel servicing team members during the entire servicing operation. When the aircrew is at the aircraft, the PIC is responsible for all aspects of aircraft operations and will inform the CSS how aircrew members will participate in passenger evacuation/safety. In keeping with the guidelines in TO 00-25-172, CSS has authority over all phases of CS operations to include personnel participating in the refuel. **(T-3)**

10.4.2.1. Use the following guidelines when CS operations are conducted with passengers on board:

10.4.2.1.1. A current and qualified crew member will be designated the passenger compartment monitor (PCM) and will continuously monitor passengers during CS. PCMs will not perform other duties during servicing. **(T-3)**

10.4.2.1.2. The AC will designate a current and qualified crew member to remain on the flight deck to monitor interphone and 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 PA may be used to direct passenger evacuation in an emergency.

10.4.2.1.3. The PCM will brief passengers on emergency egress, exits, prohibitions, and hazards. Passengers will remain seated but will not wear seat belts during CS.

Passengers will turn off all portable electronic devices, except medically required devices, prior to servicing. **(T-3)**

10.4.2.1.4. When authorized by the PIC, passengers may board or exit the aircraft when loading for departure or offloading upon arrival. Boarding or exiting must be opposite of servicing operations. **(T-2)** Once onboard, except for emergencies, passengers will not deplane once servicing commences. **(T-2)**

10.4.2.1.5. Passengers are not required to ground themselves.

10.4.2.1.6. Passenger representatives will 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 feet from fuel vents during servicing. **(T-3)**

10.4.2.1.7. The AC, or designated aircrew representative, or CSS will advise PCMs when to evacuate passengers. **(T-3)**

10.4.2.1.8. 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. **(T-3)**

10.4.2.1.9. The PCM will set the interior lighting as bright as possible to suit the combat environment. **(T-3)**

10.4.2.1.10. The loadmaster must ensure cargo loading or unloading does not jeopardize passenger safety. **(T-2)** Winching is prohibited. Do not load/unload cargo containing explosives, oxygen, flammable gases or liquids during CS.

10.4.2.2. Simultaneous fuel and oxygen servicing is not authorized IAW TO 00-25-172.

10.4.2.3. Winching of rolling stock and non-spark-producing (e.g., wooden) pallets is authorized. Driving vehicles equipped with spark arresters is authorized during fuel servicing. When loading vehicles without spark arresters, the vehicles must be either completely inside the cargo compartment, or outside of the established fuel servicing safety zone, before fuel servicing lines can be pressurized. **Exception:** Diesel and turbo-charged (without waste gates) gasoline-powered vehicles can be onloaded or offloaded without having to stop fuel flow.

10.4.3. Special Fueling Operations (SFO). SFO events are defined in AFI 11-235, *Specialized Refueling Operations*. SFO (e.g., Hot Refueling, Wet Wing Defueling, Aerial Bulk Fuel Delivery System (ABFDS), etc.) will only be conducted by aircrew that have been authorized and trained IAW MAJCOM SFO guidance. **(T-2)**

10.5. Aircraft Recovery Away from Main Operating Base (MOB). The PIC is responsible for ensuring the aircraft is turned to meet subsequent mission taskings, even when qualified maintenance specialists are unavailable. **(T-2)**

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

10.5.1.1. Parking and receiving. **(T-2)**

10.5.1.2. Aircraft servicing, including Aircraft Ground Equipment (AGE) usage. **(T-2)**

10.5.1.3. Supervision of minor maintenance within local capability. **(T-2)**

10.5.1.4. Minor configuration changes to meet mission tasking. **(T-2)**

10.5.1.5. Securing the aircraft before entering crew rest. **(T-2)**

10.5.1.6. Coordinating aircraft security requirements. **(T-2)**

10.5.1.7. Documenting AFTO 781-series forms. **(T-2)**

10.5.2. In all cases where aircrews must service the aircraft without qualified maintenance specialist assistance, comply with the appropriate maintenance TO.

10.5.3. Aircrews are not qualified to accomplish the required ground inspections. In those instances where maintenance personnel are not available, the aircrew will enter a red dash symbol in the AFTO Form 781H, *Aerospace Vehicle Flight Status and Maintenance Document*, updating current status and enter a red dash symbol and a discrepancy that reflects that the applicable maintenance inspection (e.g., preflight, thru-flight, basic post-flight) is overdue. **(T-1)**

10.6. Aircrew and Maintenance Engine Runs.

10.6.1. A mixture of aircrew and maintenance personnel will not normally accomplish engine runs. When an aircrew member is required to start or run up engines for maintenance purposes, the following procedures apply:

10.6.1.1. Maintenance personnel will accomplish all necessary inspections and preparations for the engine run. These actions include but are not limited to: intake/exhaust inspections, access panel security servicing, and AFTO Form 781 documentation. **(T-3)**

10.6.1.2. Use the pilot and loadmaster checklists. Begin with the POWER UP checklist, and complete all appropriate checklists through the BEFORE LEAVING AIRPLANE checklist. **(T-3)**

10.6.1.3. Only deviate from the flight crew checklist when maintenance requires less than four engines to be started. **(T-3)**

10.6.1.4. Operate symmetrical engines when power settings above ground idle are required. **(T-3)**

10.7. Towing Operations. Aircrew members normally will not participate in towing operations. If required to occupy cockpit positions during towing operations conducted by personnel not familiar with C-130 towing procedures, the PIC will coordinate with the tow team supervisor to brief all personnel on their duties and associated hazards. Aircrews and tow team members will comply with TO 1C-130J-2-09JG-10-1, *Ground Handling* and all applicable guidance. Under no circumstances will any aircrew member act as the towing supervisor.

10.7.1. Pushback Procedures. At locations where reverse taxiing from parking is not an option due to the potential for propeller wash damage, aerodrome restrictions, etc., the use of pushback procedures with qualified ground personnel is appropriate. These procedures allow aircrew to occupy crew stations with the APU operating (for electrical power and auxiliary hydraulic pressure for emergency braking) during pushback/tow to a startup location and then immediately start engines for continued operations.

10.7.1.1. Perform the Before Starting Engines checklist, but prior to checklist completion, accomplish the following additional items prior to pushback:

10.7.1.1.1. Brief all parties on hand signals to be used.

10.7.1.1.2. Keep the crew entrance door close during pushback/tow.

10.7.1.1.3. Release the parking brake prior to starting pushback.

10.7.1.2. Upon completion of pushback/tow, ensure the parking brake is set prior to ground personnel disconnecting the tow bar and complete Before Starting Engines checklist.

Chapter 11

CARGO AND PASSENGER HANDLING PROCEDURES

11.1. General. Reference AFMAN 11-202V3, applicable supplements, and this chapter for all cargo and passenger handling procedures. The loadmaster coordinates and supervises loading and offloading with air terminal operations or shipping agencies. Loadmasters also perform preflight and post-flight inspections of aircraft systems, plan loads, and compute aircraft weight and balance. In addition, loadmasters provide for the safety and security of passengers, troops, cargo, mail, and baggage during flight. During airdrop operations, the loadmaster prepares and rigs equipment, and participates in the aerial delivery of equipment, supplies, and personnel. To ensure effective CRM/TEM, the primary loadmaster will assume overall responsibility for completion of all checklists and ensure no confusion exists about what duties have been or need to be accomplished when multiple loadmasters are on the crew.

11.2. Responsibilities of Aircraft Loading.

11.2.1. AMC-Designated Stations.

11.2.1.1. Aerial port personnel are responsible for selecting cargo and mail for airlift, promptly completing documentation, palletizing cargo, load planning, computing load distribution, and moving cargo to and from the aircraft to meet scheduled departure. They will advise the loadmaster of destination, size, weight, and type of cargo (classified, hazardous, etc.) before starting loading operations to permit proper positioning. **(T-3)** They will also coordinate traffic activities affecting loading and offloading and assign sufficient aerial port loading personnel for cargo handling. **(T-3)** Aerial port personnel are responsible for safe positioning of material handling equipment (MHE) and cargo to or from the aircraft cargo door, ramp, or auxiliary ground loading ramps. Under supervision of the loadmaster, aerial port personnel may assist with the following: preparing the aircraft for loading, stowing loading/tiedown equipment if the aircraft is not to be reloaded, physically loading the aircraft and tying down cargo and equipment, as well as releasing cargo that is tied down and physically offloading it.

11.2.1.2. The loadmaster is responsible for aircraft preflight, load planning, certifying load plans, operating aircraft equipment, supervising and directing loading and offloading operations, and cargo tie down. Loadmasters are also responsible for entering weight and balance data into the CNI-MU Weight and Balance pages and completing weight and balance documentation IAW AFMAN 11-2C-130J Addenda A, *C-130J Operations Configuration/Mission Planning*. Loadmasters may accomplish weight and balance documentation IAW Air Mobility Command Director of Operations (AMC/A3)-approved All Electronic (paperless) Form F guidance. The loadmaster coordinates with the load team chief to verify cargo against manifests, supervises and directs loading operations, and is responsible for safe movement of cargo into and out of the aircraft. The loadmaster will notify the PIC, command post, or terminal operations officer if loading personnel are injured or cargo, aircraft equipment, or aircraft structure is damaged during loading or offloading. **(T-3)** The loadmaster will brief the PIC on any hazardous cargo and cargo jettisonability prior to engine start. **(T-3)**

11.2.1.3. Loads planned by qualified load planners will be accepted by the aircraft loadmaster and loaded aboard the aircraft as planned, unless the load or any portion of it will compromise flight safety or does not comply with applicable aircraft technical orders or USAF and MAJCOM publications. **(T-3)** If cargo is refused for these reasons, forward all applicable information, including a copy of the load plan, to MAJCOM Stan/Eval. AMC personnel attach an AMC Form 54, *Aircraft Commander's Report on Services/Facilities*. **(T-3) Exception:** The aircraft loadmaster may deviate from load plans to facilitate ease of onload or offload of cargo and to alleviate unnecessary aircraft reconfiguration without submitting documentation. The aircraft loadmaster must take into consideration the next station's cargo configuration requirements and will ensure the aircraft is in proper weight and balance limits. **(T-3)** A new load plan is not required if cargo is not refused.

11.2.1.4. The loadmaster is the on-scene expert for load planning and accepting cargo for airlift. Some loads are not specifically detailed in applicable directives and require the loadmaster to use his/her best judgment, based on training, experience, and knowledge, to determine the best and safest method of loading the cargo. When difficulties arise, they should seek advice of other personnel (e.g., available loadmasters and squadron, group, wing, NAF, or MAJCOM Stan/Eval personnel).

11.3. Emergency Exits and Safety Aisles. In addition to AFMAN 11-202V3 and applicable supplements, reference AFMAN 11-2C-130JV3, Addenda A.

11.3.1. When passengers are seated inside facing seats, the loadmaster will ensure there is sufficient space between the cargo and the seats to permit passenger leg room. **(T-3)**

11.3.2. Passengers/ambulatory patients may not be seated closer than 30 inches in front of palletized netted cargo or cargo secured with straps. **(T-3)** When the cargo, either palletized or non-palletized, is secured with chains, the 30-inch spacing is not required. **Exception:** Maintain 30-inch spacing on AE missions, when carrying occupied litters. **(T-3)**

11.4. Pre-mission Duties.

11.4.1. Cargo Missions.

11.4.1.1. Loadmasters in coordination with aerial port personnel establish loading times. Loading times that differ from the normal pre-departure sequence will be established, with PIC coordination, before the loadmaster enters crew rest. **(T-3)** Loading time is governed by the type of load and complexity of loading procedures (bulk, palletized, etc.) -- not by port saturation or management of aerial port workload levels. When reporting for duty, the loadmaster checks in with the air terminal operation center (ATOC) or other designated location to obtain load breakdown and assist in load planning as required.

11.4.1.2. Fleet Service Checklist. Loadmasters will make every effort to ensure that the AMC Form 4128, *Fleet Service Checklist*, is signed by the fleet service representative and placed aboard the aircraft prior to departure if this service is provided.

11.4.1.3. Known tiedown equipment deficiencies.

11.4.1.3.1. Davis 08/08 CGU-3/E 25K tiedown device. Prior to use, ensure tiedown devices with manufacture date of "08/08" have a repair kit installed. **(T-2)** Repair kits consist of a keeper plate on top side of release handle attached with three Philips head screws.

11.4.1.3.1.1. Upgrade kits are needed to correct the locking interface operation for these devices. **(T-2)** Any devices that have not been repaired with these kits are not authorized for use. **(T-2)** If found, remove the device from service.

11.4.1.3.1.2. The following information can be located on the release handle of the affected devices: NSN 1670-00-212-1150, manufactured by Davis Aircraft Products Incorporated under contract SPM4A7-08-D-0160, with a manufacture date of 08/08.

11.4.2. Passenger Missions.

11.4.2.1. All passenger briefing(s) contained in Flight Manual(s)/checklist(s) will be accomplished for any mission with passengers aboard regardless of passenger category (e.g., DV, Duty passenger, Space Required passenger, Space available passenger, MEP, etc.) or manifest documenting method (passenger manifest, flight orders, etc.). **(T-2)**

11.4.2.2. The design of the sidewall seat belt makes it difficult to remove enough slack to secure the Infant Child Seat. Crewmembers may need to reroute the seat belt by crossing the belt, between the sidewall and the seatback webbing, routing the belt back through the webbing and through the securing point on the Infant Child Seat. When removing slack from the seat belt ensure the buckle remains on one side or the other so that it can be easily accessed for release. The PIC is the final authority for determining whether the Infant Child Seat is adequately secured.

11.5. Enroute and Postflight Duties.

11.5.1. At stations where a crew change is made and loading or offloading is required, the inbound loadmaster is responsible for offloading the aircraft. The outbound loadmaster is responsible for planning and loading the outbound load. When no crew change occurs, the inbound loadmaster is responsible for onloading or offloading cargo.

11.6. Weight and Balance. Accomplish weight and balance for this aircraft according to TO 1-1B-50, *Weight and Balance*, TO 1C-130(C)J-5-1/TO 1C-130J-5-1, *Sample Basic Weight Checklist*, TO 1C-130(C)J-5-2/TO 1C-130J-5-2, *Loading Data Manual* and AFMAN 11-2C-130JV3, Addenda A. The unit possessing the aircraft maintains the primary weight and balance handbook containing the current aircraft status and provides a supplemental weight and balance handbook for each aircraft. Enclose the supplemental handbook in a wear-resistant binder (preferably metal), stenciled “Weight and Balance” with the airplane model and complete serial number on the cover or spine. **(T-3)**

11.6.1. The supplemental handbook will include the Chart C, which includes the aircraft's basic weight, basic moment, and center of gravity. **(T-3)**

11.6.2. The loadmaster will complete the weight and balance IAW AFMAN 11-2C-130JV3, Addenda A. **(T-3)**

11.6.3. Loadmasters in units who authorize the use of Standardized Loading DD Form 365-4, *Weight and Balance Clearance Form F - Transport/Tactical*, Forms F will still ensure all weight and balance data is correct in the CNI-MU. **(T-3)**

11.7. Senior Leader In-transit Conference Capsule (SLICC).

11.7.1. C-130J specific loading and aircraft preparation requirements for the SLICC are listed on the Air Transportability Test Loading Agency (ATTLA) Internal Air Transport Certification memo.

11.7.2. Only qualified SLICC maintenance personnel will install/remove the SLICC vestibule and connect disconnect SLICC electrical power. **(T-2)**

11.7.3. ADS palletized seats or other cargo will not be loaded immediately forward of the SLICC. **(T-2)** Maintain a clear forward exit path from the Conference Capsule's forward exit door. **(T-2)**

11.7.4. The SLICC is powered by the cargo winch AC electrical system. The aircraft must have an operational cargo winch AC electrical system and a minimum of two (2) spare fuses. A C-130J Crew Chief will accompany the mission to replace fuses if necessary. **(T-2)** However, C-130 Crew Chiefs are not qualified, trained or authorized to perform maintenance on the SLICC.

11.7.5. All seats in the conference capsule may be occupied during takeoff or landing. If passenger restraint is required during turbulence, only 5 passengers are permitted in the conference capsule due to availability of seat belts. **(T-2)** The berthing capsule must not be occupied during critical phases of flight. **(T-2)** Carry-on items must be properly secured for during critical phases of flight. **(T-2)**

11.7.6. Each seat will be equipped with an EPOS and a life vest (when required for overwater flights). **(T-2)** Loadmaster will brief passengers on location and use of emergency equipment. **(T-2)**

11.7.7. SLICC conference, berthing module, and Viper power can be shut off immediately in the event of an emergency by pressing the red emergency shutdown switch on either the external power distribution panel or internal operator control panel of each module (Viper is powered from the conference capsule). Aircrews will familiarize themselves with the location of these emergency shutdown switches prior to transporting passengers in the SLICC modules. **(T-2)**

11.7.8. An emergency key located in a pouch by each entry door is available for use by aircrew in the event that an emergency situation would require immediate access to a locked module.

11.8. Viper Communication System.

11.8.1. The AMC Viper Systems are transit-cased Roll-on Communications Platforms that provide INMARSAT High Speed Data and voice capabilities, as well as, ground-based operations. The equipment can be secured to the cargo floor or palletized. A hatch mount INMARSAT antenna is used for communications and is connected to the INS to maintain orientation. Max power draw of the Viper is 7.7 amps. **Note:** When the Hatch Mounted International Marine/Maritime Satellite Antenna (HMIA) and Ku band Spread Spectrum (KuSS) radome is requested/required, an approved TO 00-25-107 Technical Advisory Request (TAR) is required. After mission termination, the following must be put in the AFTO Form 781A, "INFO NOTE*:* Cumulative HMIA or KuSS flight time for MSN# XXX is X.X hrs, TAR# XXX."

11.8.2. Viper SATCOM personnel are required to install/route the required equipment after the on-load and will accompany the mission as a crew member(s). **(T-2)** A hatch must be available for the installation of the hatch mount INMARSAT antenna. The INMARSAT antenna can only be installed in the Flight Deck Overhead Escape Hatch location. **(T-2)**

11.8.3. Coordination between the aircrew and Viper operator is required to ensure SLICC/Viper systems are powered down prior to changing generators/power sources. **(T-2)**

11.9. Emergency Airlift of Personnel. Refer to procedures in **Chapter 14**.

Chapter 12

FUEL PLANNING AND CONSERVATION

12.1. General. This chapter is designed to assist planners and pilots in fuel planning airland and airdrop missions, with or without low-level segments. A fuel plan is required for all flights except local area training flights with established standard fuel loads. The Joint Mission Planning Software (JMPS) and TOs 1C-130J-1-1 and 1C-130(C)J-1-1 Performance Manuals are the primary preflight references. All preflight planning must be verified with aircraft mission computer (MC) performance prior to departure. Missions should be planned at altitudes, routes, and airspeeds to minimize fuel usage.

12.2. Fuel Conservation. Fuel conservation procedures will be IAW applicable AFMAN 11-202V3 supplements and AMCPAM 11-3, *Birds Fly Free, AMC Doesn't*.

12.3. Fuel Planning Procedures. Aircrew should employ the following fuel optimization measures without compromising flight safety or jeopardizing mission/training accomplishment:

12.3.1. Plan fuel to an alternate only when AFMAN 11-202V3 and applicable supplements or **Chapter 6** of this AFMAN require the filing of an alternate.

12.3.1.1. 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.

12.3.1.2. 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.

12.3.1.3. When selecting an alternate, suitable military airfields are preferred if within 75 NMs of destination.

12.3.2. Using all available planning tools (including MAFPS) and guidance in this chapter, PICs will determine the Required Ramp Fuel Load (RRFL). When actual fuel load exceeds the RRFL by more than 2,200 lbs consideration should be given to defuel the aircraft to the RRFL.

12.3.3. Minimum landing fuel is 3,000 lbs. This fuel accounts for gauge errors. Do not include this 3,000 lbs of fuel in the 45-minute fuel reserve and 15-minute contingency fuel calculations**.**

12.3.4. Routes will be planned at 320 KTAS (260 KTAS below 10,000 MSL), except for oceanic crossings. For oceanic crossings, routes will be planned at 300 KTAS or 290 KTAS, optimized for gross weight.

12.4. Fuel Requirements and Definitions. The following definitions apply to fuel planning and take precedence over similar definitions published elsewhere. Refer to **Table 12.1** for definitions of C-130J fuel load components. This section augments AFMAN 11-202V3 fuel requirements.

12.4.1. Required Ramp Fuel Load (RRFL): Minimum fuel required at engine start to complete tasked mission.

12.4.2. Contingency Fuel: An identified extra to compensate for unforeseen circumstances during any phase of flight (e.g., unforecasted weather, launch delay, etc.)

12.4.3. Wing Relieving Fuel: Additional fuel kept in the main tanks intended to counter wing bending moments and keep the aircraft within flight manual weight limitations.

12.4.3.1. Calculate Wing Relieving Fuel using the flight manual weight limitations chart for the aircraft's planned cargo load. This is only required when aircraft zero fuel weight exceeds 130,000 lbs. Enter the chart with the aircraft empty weight and cargo weight, then read across to determine the fuel required to remain within limits. Add enough Wing Relieving Fuel, if required, to ensure that Recovery Fuel does not fall below the fuel required to remain within limits. **(T-3)**

12.4.3.2. All local and JA/ATT missions flying low-level should initially takeoff with main tanks full to reduce the effects of wing upbending and increase the center wingbox service life. **(T-3)** Decreased takeoff fuel in the main tanks can decrease the center wingbox service life as much as 47 percent.

12.4.4. Weather Avoidance Fuel: Additional fuel required for avoidance of known or forecast thunderstorms or icing conditions. When weather conditions dictate, add the following fuel corrections:

12.4.4.1. 1,500 lbs if forecast thunderstorms are scattered or numerous along the route of flight. **(T-3)**

12.4.4.2. 1,000 lbs if the route of flight has known or forecast icing conditions. **(T-3)**

12.5. Fuel Planning Profiles. Enroute cruise airspeed normally should be planned at a constant true airspeed (TAS) IAW 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 ATC cruise ceiling per the performance manual.

12.5.1. JMPS CFP Planning Profile.

12.5.1.1. The C-130J performance module of JMPS is certified to calculate accurate fuel planning information. Crews should use the C130JHI.frm form 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 and **Table 12.1** for fuel planning. **(T-3)** Enroute and Minimum Landing Fuel will be automatically printed. Pilots will ensure an accurate Recovery Fuel is input on the JMPS Pre-mission/Configuration/Fuel screen so calculated Continuation Fuels used during in-flight fuel monitoring are valid. **(T-3)**

12.5.1.2. When alternates are required, pilots 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 enroute 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. 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. **(T- 3)**

12.5.2. Aircrew will receive an MAFPS when on an flight managed (FM) mission from C2. **(T-3)** MAFPS will produce a .jrt file. The flight plan .jrt file can be opened in JMPS, and an accurate fuel plan can be obtained. This will also allow the C130JHI form to be printed if

desired, and a mission card can be cut from this flight plan. The JMPS flight plan may be easier for aircrews to log required entries when in Remote Continental airspace.

12.5.3. Manual AF Form 70, *Pilot's Flight Plan and Flight Log,* Profile. In the event pilots must rely on a manually-calculated AF Form 70 (or equivalent), the C-130J Fuel Planning Worksheet found on **Figure 12.1** should be used for fuel planning. Enroute fuel is manually calculated by adding the required components supplied as standard or derived from charts or tabulated data in the applicable Performance Manual. *Fuel To Climb* charts are used to manually calculate climb fuel. *Range Summary* or *Specific Range* charts are used to manually calculate cruise fuel from Top-of-Climb (TOC) to overhead destination using an average gross weight. Continuation Fuel for each leg will be calculated using the following formula: ***Continuation Fuel = Fuel Remaining (beginning of leg) – Landing Fuel + Recovery Fuel.*** **(T-3)**

12.5.4. C-130J Mission Computer Profile.

12.5.4.1. The C-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 MC, are dependent on pilots 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, pilots must use good judgment when inputting forecast/planned information versus actual performance and conditions. During preflight and at each waypoint, the 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)**

12.5.4.2. Once airborne, the FOB on the PERF INIT WEIGHT page is calculated (not sensed) using sensed Fuel Flow versus Time. Update the FOB on the PERF INIT WEIGHT page to the amount indicated by the totalizer only when the totalizer amount is less than the calculated FOB. **(T-3)** Use the most conservative of the FOB or totalizer readings when recording fuel remaining during in-flight fuel monitoring. **(T-3)** The CNI will provide a FUEL QTY ERROR advisory when the PERF INIT WEIGHT FOB and totalizer readings differ by more than 2500 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 is required and/or extensive weather avoidance routing is required. **(T-3)**

12.6. 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 within 2,000 feet of planned altitude and airspeed within +/- 10 KTAS of planned airspeed. If initial cruise conditions do not fall within these parameters, the PIC should strive to reach them as soon as possible.

12.6.1. Fuel consumption will be monitored by comparing the FOB to predicted Fuel Remaining and the required Continuation Fuel on the flight plan. At a minimum, consumption comparisons will be accomplished and recorded on the Master Flight Plan (MFP):

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

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

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

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

12.6.2. The fuel recording portion of the master flight plan may be discontinued at the discretion of the PIC when ALL of the following conditions have been met:

12.6.2.1. The Equal Time Point (ETP) has been crossed.

12.6.2.2. Fuel systems and quantity indicators are functioning normally.

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

12.6.3. Prior to the ETP, if the EXCESS fuel becomes negative the PIC will consider and accomplish one of the following recommended actions:

12.6.3.1. Change the flight profile to ensure planned performance is reacquired and Fuel Reserves at destination will be met or exceeded. **(T-3)**

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

12.6.3.3. Return to the departure base or the Last Suitable Airfield (LSAF). **(T-3)**

12.6.4. Flight Plan Changes and Diversion. When mission requirements or ATC dictates a change to the planned mission or route, the fuel must be recalculated to ensure safe completion of the flight. **(T-3)** 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.

12.6.4.1. For an unplanned or directed enroute divert, the FROM/TO page, with an associated cruise ground speed, can be used to determine an ETE. Using TO 1C-130J-1-1 or TO 1C-130(c)J-1-1 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. **(T-3)**

12.6.4.2. If the enroute 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 crosscheck fuel status.

12.6.5. Declare “Emergency Fuel” when it is determined that the aircraft may land with less than 3000 lbs. Declare “Minimum Fuel” to ATC when it is determined that the aircraft may land with less than 3000 lbs. plus the Required Reserve.

Table 12.1. Fuel Load Components.

FUEL PLANNING	
RECOVERY FUEL	The minimum planned landing fuel at intended destination. This is the sum of the Minimum Landing Fuel, Required-Reserve, Wing Relieving Fuel (if required) and Alternate Fuel (if-required). This fuel is critical to calculating accurate Continuation Fuels for each leg; it must be updated in the Pre-mission Configuration screen of JMPS, if using a computerized flight plan. **(T-3)**
CONTINUATION FUEL	Fuel required at the beginning of each leg to be able to proceed to the intended destination and land with the Required Fuel
TANKERED FUEL	Fuel for succeeding legs without refueling
UNIDENTIFIED EXTRA	The difference between RRFL and actual ramp fuel load. This figure should not exceed 2,200 lbs of RRFL
WING RELIEVING FUEL	Additional fuel kept in the main tanks intended to counter wing bending moments and keep the aircraft within flight manual weight limitations
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.
KNOWN HOLDING DELAYS	Fuel for planned/anticipated holding, including remote destinations. Compute at Four Engine Maximum Endurance Fuel Flow
ENROUTE	Fuel required from engine start through landing at the intended destination. Components include engine start taxi/takeoff. (STTO), climb, cruise approach· fuel. Enroute Fuel will be obtained from the JMPS-CFP or Performance Manual
STTO	A component of enroute fuel. Fuel required for start, taxi and takeoff. Normally 800 lbs. For known taxi delays or additional ground time in excess of 30 minutes, add 30 lbs/min. **(T-3)**
CLIMB	A component of enroute fuel. Fuel required from takeoff through climb to initial cruise altitude. If a manual calculation is required, the applicable performance manual will be referenced. **(T-3)** Unless required for mission accomplishment plan to climb no higher than ATC Cruise Ceiling per the Performance Manual
CRUISE	A component of enroute fuel. Fuel required from TOC to overhead intended destination. If a manual calculation is required, the applicable performance manual will be referenced. **(T-3)**
APPR	A component of enroute fuel. Fuel required for approach and landing from overhead destination. Normally 700 lbs, which

	accounts for 1 instrument approach of no longer than 10 minutes. For longer approaches, follow on visual, and/or radar pattern work, compute fuel burn at 85 lbs/min. **(T-3)**
ALTERNATE	Fuel required from intended destination to alternate or most distant alternate when two are required. Flown at optimum cruise altitude using direct routing to the alternate at LRC airspeed. Fuel for a missed approach (2,000 lbs) and second approach at the alternate airfield is required when the visibility only weather criteria is used to determine the suitability of the original destination
REQUIRED RESERVE	45 minute reserve, using maximum endurance airspeed at 10,000 feet MSL (20,000 feet for remote fields). Required overhead destination or alternate (If alternate is needed).
CONTINGENCY FUEL	15 minute reserve, using maximum endurance airspeed at 10,000 feet MSL (20,000 feet for remote fields).
DEPRESSURIZATION FUEL	Fuel from ETP to a recovery airfield, with 30 minute reserve. Calculated at LRC airspeed and 10,000 feet MSL. Plan on burning all other fuel. Compare with RRFL to see if additional fuel is required before flight. **(T-3)**
MINIMUM LANDING FUEL	3,000 lbs. 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 required reserve and contingency fuel. **(T-3)**

Figure 12.1. C-130J Fuel Planning Worksheet.

Instructions:
Manual Flight Plan - begin at Step 1.
Computer Flight Plan - begin at Step 5 and insert Enroute fuel.

Ramp Gross Weight	
Initial Cruise Altitude	
Temperature Deviation	

Required Ramp Fuel Load (RRFL) Calculation			**Depressurization Fuel Calculation**		
1	Min Landing: 3000 lbs.		A	Min Landing (3000 lbs.)	
2	Required Reserve: 0+45		B	Depressurization Reserve (0+30)	

3	Alternate (see **Table 8.1**) **- or-**		C	Wing Relieving Fuel (if required)	
	Holding in Lieu of Altn: 1+15 (at remote destinations)				
4	Wing Relieving Fuel (if required)		D	High Altitude Fuel Burn (Takeoff to ETP)	
5	Recovery Fuel (1+2+3+4)		E	Low Altitude Fuel Burn (ETP to FSAF, 10K'MSL, 260 KTAS)	
6	Contingency: 0+15		F	Total Required (A+B+C+D+E)	
7	Tankered Fuel (if required for next sortie)		G	Mission Fuel (from Block 12)	
8	Approach (if not included in Enroute)		H	Depressurization Fuel (F minus G) (Zero if negative). Go to Block 13	
9	Icing: 1000 lbs (if known/forecast)				
10	Thunderstorms: 1500 lbs (if scattered or numerous)		**Manual Flight Plan Enroute Fuel Calculation**		
11	Enroute (from CFP or Block 11.5)		11.1	STTO: 800 lbs (normally)	
12	Mission Fuel (Total of 1 through 11)		11.2	Climb	
13	Depressurization Fuel (from Block H)		11.3	Cruise: ETE x Fuel Flow [ ] x [ ] =	
14	Required Ramp Fuel Load (RRFL) (12+13)		11.4	Approach: 700 lbs. (normally)	
15	Actual Ramp Fuel Load		11.5	Enroute Fuel (11.1+11.2+11.3+11.4)	
16	Unidentified Extra (15 - 14) (not more than 2200 lbs.)				

Chapter 13

COMBAT MISSION PLANNING

13.1. General. This chapter provides mission planning guidance for general C-130J tactical operations. Airdrop planning guidance is contained in **Chapter 16**. It provides parameters used to employ the techniques and procedures of AFTTP 3-3.C-130J. Mission planning is normally conducted the day before the mission. The OG/CC or SQ/CC may elect to use a same day mission plan option. Planners and aircrews should reference AFTTP 3-3.C-130J for detailed planning guidance. The aircraft commander is ultimately responsible for the accuracy of the mission materials. Unit mission planning facilities should possess essential mission planning material.

13.2. Airdrop and Drop Zone (DZ) Restrictions.

13.2.1. Authorized DZ types and restrictions are listed in DAFMAN 13-217. Ensure DZs have adequate dimensions. Both pilots will verify CNI-MU CARP information with a valid DZ survey. **(T-3)** Refer to DAFMAN 13-217 for DZ survey information/requirements/applicability.

13.2.2. Use of Unmarked DZs. Unmarked DZs are normally only used for contingency operations. **(T-2)** Reference DAFMAN 13-217, Chapter 3 for unmarked DZ use.

13.2.3. Area DZs are not authorized for mission computer directed airdrops. **(T-3)**

13.2.4. Multiple Points of Impact (MPI). See DAFMAN 13-217.

13.2.5. Multiple passes should be coordinated with the user during planning when necessary. If multiple passes are likely, they should be annotated on the chart. Unplanned racetracks may be performed provided crews have verified obstruction clearance.

13.2.6. Airdrop Damage Estimate (ADE). An ADE is required for all JPADS/ICDS airdrops, and may be appropriate for other drop types depending upon terrain, proximity to habitation, etc. **(T-3)** Refer to **Chapter 16** of this AFMAN and AFTTP 3-3.C-130J.

13.2.7. All airdrop missions must comply with appropriate FAA or Host Nation airspace restrictions. For all airdrops in uncontrolled FAA airspace, ensure a NOTAM is filed with the Flight Service Station nearest the objective area at least 48 hours in advance of the intended activity, regardless of actual or forecast weather. **(T-3)** NOTAM information will include:

13.2.7.1. Name of the nearest city or town and state.

13.2.7.2. Date and time period of intended activity.

13.2.7.3. Number and type of aircraft.

13.2.7.4. Altitudes.

13.2.7.5. When IMC operations are planned, include IFR Drop Corridor Ingress and Egress points of the route segment expressed in radial and DME from a NAVAID. **(T-3)** See **paragraph 13.7.5** for IFR Drop Corridor.

13.3. Landing Zone (LZ) Restrictions.

13.3.1. Landing Zone (LZ) Selection. Detailed assault zone criteria and illustrations can be found in DAFMAN 13-217. Both pilots will verify CNI-MU information with a valid LZ

survey, as applicable. **(T-3)** Refer to DAFMAN 13-217 for LZ operations or applicable waivers.

13.3.2. Aircraft Performance Planning. Aircrews must plan for aircraft performance limitations. Consider determining the maximum takeoff gross weight for worst-case conditions to simplify decision making during mission execution. **(T-3)**

13.3.3. During the turn to final, do not slow below the approach speed for the aircraft configuration. For maximum effort landings, the pilot will not slow to maximum effort approach speed prior to initiating the roll out on final. Roll out on final no lower than 150 feet AGL. **(T-3)**

13.4. Route Planning. Low-level flights, or flights below MSA as defined in **paragraph 13.6.3** for the planned route of flight, will be planned using tactical corridors. **(T-3)** Tactical corridors should be planned as wide as possible, to provide maximum situational awareness and flexibility. The standard width for a tactical corridor is 3 NM. Tactical corridor width can vary from 1 NM minimum either side of centerline, to as wide as desired (10 NM either side is the maximum recommended). Corridors do not have to be symmetrical but must be annotated when different from the standard. **(T-3)** Tactical corridors should be wide over flat terrain and narrow in mountainous terrain.

13.5. Peacetime Route Restrictions. In addition to restrictions in AFMAN 11-202V3, specific country or theater of operations publications, and FLIP area planning, routes will not be planned or flown:

13.5.1. With less than 1 NM separation (3 NM in excess of 250 Knots Indicated Airspeed (KIAS)) when below 2,000 feet AGL from known sensitive environmental areas such as hospitals, fish hatcheries, ostrich and emu farms, large poultry complexes, recreation areas, institutions, and similar locations. **(T-3)**

13.5.2. With less than 3 NM separation from prohibited airspace. **(T-3)**

13.5.3. Less than 3 NM separation from nuclear power plants. **(T-3)**

13.5.4. Through restricted airspace, except transition or termination in such areas where the planning unit is a primary using agency or has approval of the controlling agency. **(T-3)**

13.5.5. In weather conditions less than those specified in this AFMAN and AFMAN 11-202V3. **(T-3)**

13.5.6. Below 1000 feet AGL within a 2000-foot radius over cities or towns shown as magenta shaded areas on 1:500,000 (TPC) scale charts. **(T-3)**

13.5.7. Over or through active live fire or impact areas that may not be specifically designated as prohibited or restricted areas. **(T-3)**

13.5.8. Below 500 feet AGL unless: **(T-3)**

13.5.8.1. Host nation rules specifically allow such VFR operations.

13.5.8.2. Routes or training areas have been environmentally assessed and surveyed for 300-foot AGL operations. **Note:** This restriction does not apply to one-time-use routes. Consult FLIP AP/1B for published Military Training Route restrictions.

13.6. Altitude Planning. ***WARNING:*** Aeronautical charts do not depict man-made obstacles less than 200 feet AGL or a change in terrain until it exceeds the chart contour interval. The worst situation would occur if a 199-foot tower sat on terrain with an elevation just below the next higher contour. For a TPC (1:500,000) with a contour interval of 500 feet, this results in an uncharted obstacle existing 698 feet 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. Planners must ensure accurate terrain analysis evaluates both spot elevations and the highest contour level. Refer to **Figure 13.1**. ***CAUTION:*** Some charts may depict terrain and obstacle altitudes in meters versus feet (e.g., JOG and TLM charts in some areas of the world). **Note:** The use of the vertical profile planning tool in FalconView, combined with Digital Terrain Elevation Data (DTED) data, is authorized for use to determine spot elevations on route segments with VO turned off. When VO is on, the vertical profile planning tool will determine the highest obstacle along the route segments and is authorized to determine MSA driving obstacles.

13.6.1. Low-Level Altitude Restrictions. The following minimum altitudes are established for C-130J operations. Higher altitudes may be dictated by FLIP/ICAO procedures, training considerations, terrain, or operational directives. **Note:** If planning low-level flight in areas where barometric altimeter settings will not be available, plan altimeter check points along the route to determine more accurate altimeter settings. **(T-3)**

13.6.1.1. Day VMC Enroute. Fly no lower than 500 feet AGL (or 300 AGL IAW **paragraph 13.5.8**) modified contour altitude above the terrain using visual references and radar altimeter. **(T-2)**

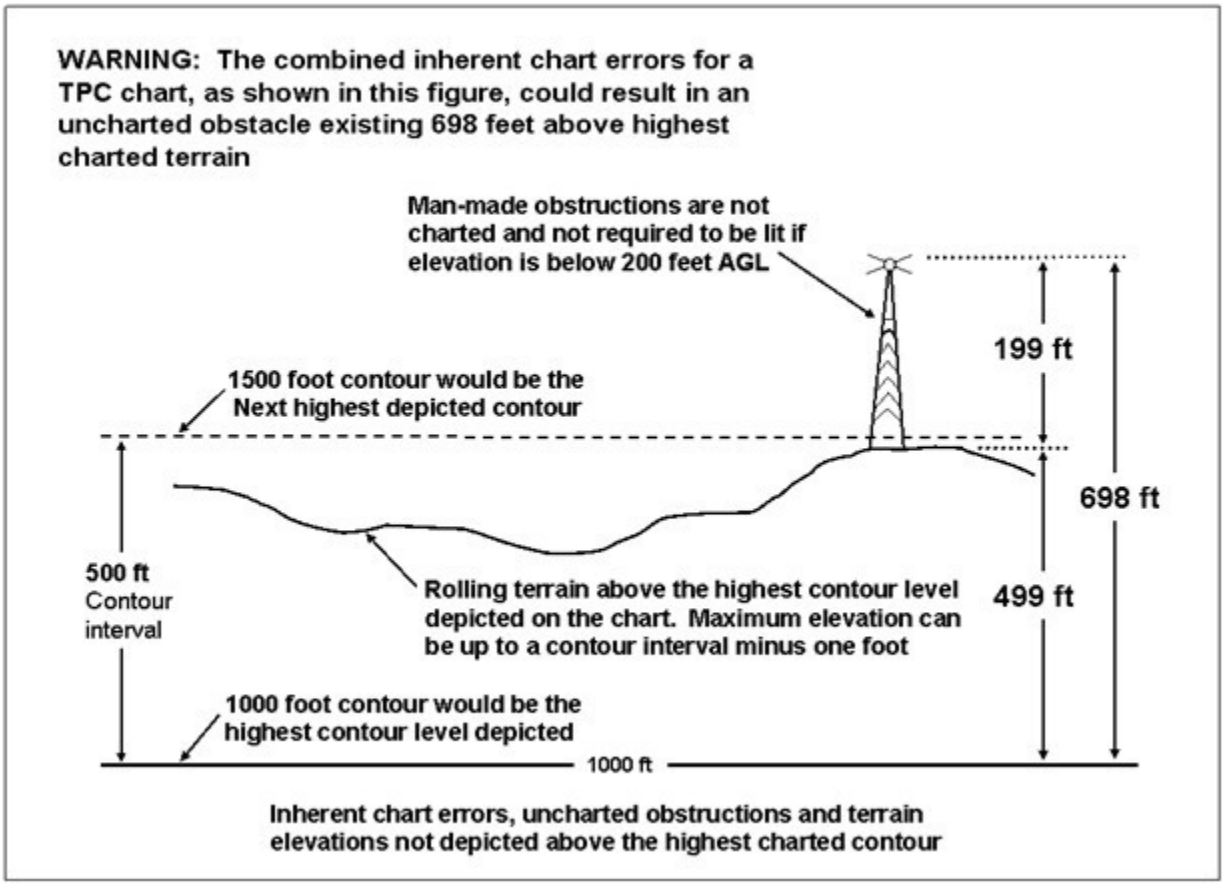
13.6.1.2. NVD Enroute Altitude. Fly no lower than an indicated altitude of 500 feet above the highest charted or SRTM/DTED spot terrain elevation, rounded up to the nearest 100-foot increment within the tactical corridor. **Note:** If SRTM/DTED is not available, NVD enroute altitudes will also be calculated using 400 feet plus one chart contour interval above the highest depicted terrain contour, if higher. If the altitude for the next segment is higher than the current segment altitude, complete the climb prior to the segmentation point. If the altitude for the next segment is lower than the current segment, do not initiate descent until over the segmentation point. Once the controlling obstacle or terrain feature is visually identified or the aircraft is confirmed well clear, the crew may descend to the next segmented altitude. Fly with reference to the pressure altimeter, using the radar altimeter as a backup. **(T-2)**

13.6.1.3. Night (Non-NVD) Enroute Altitude. Fly no lower than Minimum Safe Altitude as defined in **paragraph 13.6.3**. If the altitude for the next leg is lower than the current leg, do not initiate descent until over the turn point. Legs may be divided into segments for night altitude computations, depending on terrain differential or threats in order to allow flight closer to the ground. Once the obstacle or terrain feature is visually identified or the aircraft is confirmed well clear, the crew may descend to the next segmented altitude, if lower. Fly with reference to the pressure altimeter, using the radar altimeter as a backup. **(T-2)**

13.6.1.4. Man-Made Obstacles. All man-made obstacles must be avoided by 1 NM laterally, or 500 feet vertically, unless visually identified. This applies for both day and night flights, and also includes obstacles outside of the planned tactical corridor. **(T-2)** **Note:** If the planned altitude for a leg is more than 500 feet above a man-made obstacle,

this obstacle is not a factor. When flying at 500 feet AGL or below, all obstacles are a factor.

Figure 13.1. Inherent Chart Error.



13.6.2. IMC Enroute Altitude. Fly no lower than 1,000 feet (2,000 feet in mountainous terrain) above the highest obstruction to flight [man-made obstruction, terrain feature, spot elevation or SRTM/DTED spot elevation (if elevation data is available)] within 5 NM of route centerline. Round this altitude to the next 100-foot increment. If the altitude for the next leg is higher than the current leg altitude, climb will be completed before the turn point. If the altitude for the next leg is lower, do not initiate descent until over the turn point.

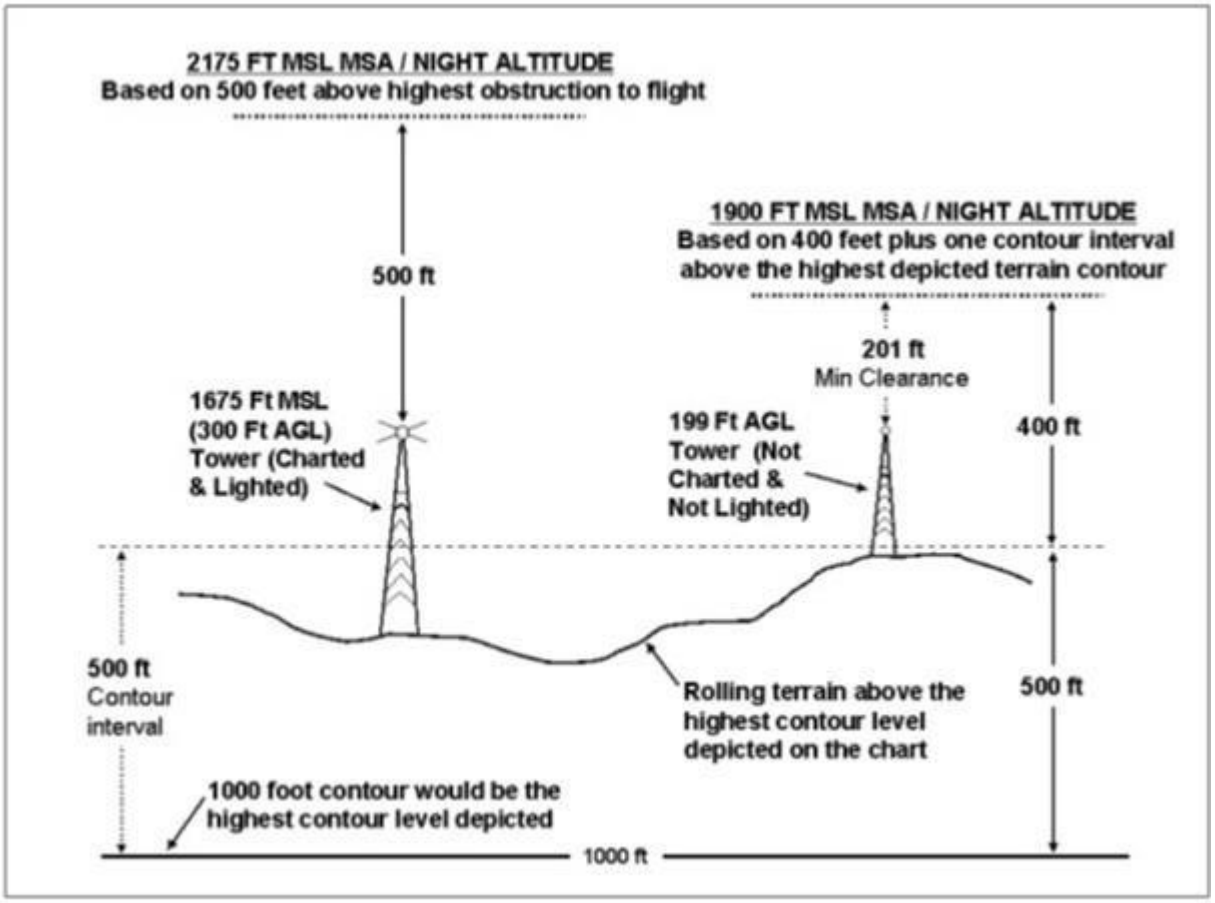
13.6.2.1. Minimum altitudes for IFR operations within published Military Training Routes (MTRs) in US sovereign airspace will be the computed leg MSAs unless a higher altitude is required by FLIP AP/1B. **(T-2)**

13.6.2.2. Assembly Altitude. Assembly altitude under IFR will be at or above the MEA or MOCA on published airways. **(T-2)** On direct flights off airways, assembly altitude will be no lower than OROCA, ORTCA, or an altitude that provides 1,000 feet (2,000 feet in mountainous terrain) above the highest obstacle within a radius of 5 NM of the course. **(T- 2)** Under all conditions, aircrews ensure assembly altitude provides terrain and obstacle clearance for the formation. **(T-2)**

13.6.3. Minimum Safe Altitude (MSA). MSA is an initial VFR altitude that provides additional terrain and obstacle clearance while the aircrew analyzes situations that require interruption of low-level operations (route disorientation and equipment malfunctions or when either pilot must leave the seat during low-level operations, etc.). Plan MSA at an indicated altitude of 500 feet above the highest obstruction to flight [man-made obstacle, terrain feature, charted spot elevation, or SRTM/DTED spot elevation (if elevation data is available)], within 5 NM of route centerline to include turn radius. **Note:** If SRTM/DTED is not available, an MSA will also be calculated using 400 feet plus one chart contour interval above the highest depicted terrain contour, if higher. If the tactical corridor is > 5 NM of centerline, the MSA will be calculated for the tactical corridor width. An MSA will be computed for each leg, route segment, or entire low-level route. **(T-2)** See **Figure 13.2**.

13.6.4. Emergency Route Abort Altitude (ERAA). 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, and annotate on the chart. To compute ERAA, add 1,000 feet (2,000 feet in mountainous terrain) to the elevation of the highest obstruction to flight within 22 NMs of planned route centerline. **Note:** Climbing to ERAA may put the aircraft in a controlled altitude structure requiring coordination with air traffic control agencies. **Note:** Pressure altimeters are calibrated to indicate true altitudes under international standard atmospheric (ISA) conditions. Any deviation from these standard conditions will result in erroneous readings on the altimeter. This error becomes important when considering obstacle clearances in temperatures lower than standard since the aircraft's altitude is below the figure indicated by the altimeter. Refer to the flight information handbook to determine correction.

Figure 13.2. Minimum Safe Altitude.



13.7. Airdrop Altitudes. ***WARNING:*** DZ surveys do not assure terrain and obstruction clearance. Planners and aircrew are responsible for ensuring clearance through mission planning/chart preparation.

13.7.1. Day VMC Drop Altitude. Fly minimum airdrop altitudes as specified in AFMAN 11-231 airdrop ballistics data or CONEMP/Tac Bulletin whichever has the most current date. Aircrew will visually avoid high terrain and obstacles in the vicinity of the DZ. **(T-2)**

13.7.2. NVD Drop Altitude. Fly NVD Enroute Altitude through slowdown. After slowdown, when the DZ is in sight and will remain in sight, or when a positive position is identified and adequate terrain and obstacle clearance is assured, the aircraft may descend to the specified minimum drop altitude in AFMAN 11-231 airdrop ballistics data or CONEMP/Tac Bulletin whichever has the most current date. **(T-2)**

13.7.3. Night (Non-NVD) Drop Altitude. Fly no lower than an indicated altitude of 500-feet above the highest obstruction to flight [man-made obstacle, terrain feature, charted spot elevation, or SRTM/DTED spot elevation (if elevation data is available)] rounded up to the nearest 100-foot increment, within 3 NM of run-in centerline from slowdown through escape, or as specified in AFMAN 11-231. **Note:** If SRTM/DTED is not available, non-NVD drop altitude will also be calculated using 400 feet plus one chart contour interval above the highest depicted terrain contour, if higher. After slowdown, when the drop zone is in sight and will

remain in sight, or when a positive position is identified and adequate terrain and obstacle clearance is assured, the aircraft may descend from night (non-NVD) enroute altitude to night (non-NVD) drop altitude.

13.7.4. IMC Drop Altitude. Fly minimum IMC drop altitudes at 500 feet above the highest obstruction to flight [man-made obstacle, terrain feature, charted spot elevation, or SRTM/DTED spot elevation (if elevation data is available)] rounded up to the nearest 100-foot increment, within 3 NM of the run-in centerline from DZ entry point to DZ exit point, or as specified in AFMAN 11-231, whichever is higher. **Note:** If SRTM/DTED is not available, IMC drop altitudes will also be calculated using 400 feet plus one contour interval above the highest depicted terrain contour, if higher. During a parallel descent, do not descend to IMC drop altitude until the last aircraft of the element or formation is at or past the DZ entry point and all aircraft are within 3 NM of the run-in centerline. **(T-2)**

13.7.5. IFR Drop Corridor. The IFR Drop corridor is where aircraft may transition between IMC enroute altitude and IMC drop altitude to perform airdrop operations. The beginning of the corridor, the IFR Drop Corridor Ingress Point, is a maximum of 240 NM from the IFR Drop Corridor Egress Point (co-located with the DZ Exit Point). Plan segmented corridor altitudes not lower than 500 feet above the highest obstruction to flight [man-made obstacle, terrain feature, charted spot elevation, or SRTM/DTED spot elevation (if elevation data is available)] rounded up to the nearest 100-foot increment, within 3 NM either side of centerline. In the NAS for IMC drop operations outside of special use airspace, Federal Aviation Regulation (FAR) Exemption 4371 is required to descend below minimum IFR enroute altitude. **Note:** If SRTM/DTED is not available, segmented corridor altitudes will also be planned using 400 feet plus one chart contour interval above the highest depicted terrain contour, if higher.

13.7.6. IMC Letdown Corridor. Develop IAW AFTTP 3-3.C-130J.

13.7.7. LCLA airdrops: For night LCLA airdrops aircrew will abide by restrictions in **paragraph 13.7.2**. Minimum night NVD LCLA drop altitude is 300ft AGL. Aircrews are responsible for thorough objective area analysis to ensure aircraft safety. Situation permitting, notify the user if airdropping above the expected LCLA altitude (above 300ft AGL). LCLA training airdrops are authorized with SATBs and may be conducted at LCLA altitudes (no lower than 300ft AGL day or night (on NVDs)). **(T-2)**

13.8. Navigation Chart Preparation. Mission planners will construct a master chart for mission briefings and aircrew reference. **(T-3)** Planners should construct the chart using computerized mission planning systems if available. Digital Map displays are the primary reference for low-level navigation; however, the crew will carry a tactical navigation chart (paper or electronic). At a minimum, tactical navigation charts and DIGITAL MAP will be annotated/updated with any added, deleted, or changed information in the most recent VO or supplement. In no case will VO coverage be less than 22 NMs either side of the entire planned route of flight. Crews may trim charts to no less than 10 NMs of centerline after establishing the ERAA. **(T-3)** Color copies, if available, of a master chart reduce the probability of missing or misplotted data on aircrew charts.

13.8.1. Chart Annotation. Annotate the master chart IAW AFTTP 3-3.C-130J annotation symbology. Aircrews and planners may also refer to AFPAM 11-216, *Air Navigation* for detailed chart annotation symbology. Chart annotations will have as a minimum: turn points, initial point, DZ, course line, course data, VO and date, ERAA and chart series/date. **(T-3)**

13.8.2. Digital Map displays may incorporate enhanced overlays and custom maps generated from computerized mission planning systems. Handle PCMCIA cards containing classified information via standard COMSEC measures. Placing classified PCMCIA cards into the C-130J External Mass Memory Unit (EMMU) does not classify the Digital Map Unit system.

13.8.3. The Digital Map display meets AFMAN 11-202V3 requirements for appropriate navigational and plotting charts to meet mission-specific needs.

13.8.4. VO Crews will select the following settings when utilizing VO to ensure completeness of coverage:

13.8.4.1. Hide above: 1:500K

13.8.4.2. Hide Text: Never

13.8.4.3. Basic Settings:

13.8.4.4. Red/Blue: User desired

13.8.4.5. Hide towers less than: 200 AGL – this is the maximum allowable setting, user can define any level they desire below 200 AGL as mission requirements dictate.

13.8.4.6. Short Tower height definition: 1,000

13.8.4.7. De-Clutter level: A/R **Note:** applying any de-clutter level may hide factor obstacles that are required to be identified during NVD low level flights. Crews will Plan with de-clutter off, then compare the desired de-clutter level with de-clutter off to ensure factor obstacles are identifiable, and chart readability/usability is maintained. Crews will not use a de-clutter level that combines obstacles more than 1/2 mile apart.

13.9. Mission Forms and Logs. The crew will carry an approved flight log (AF Form 70, etc). **(T- 2)**

13.10. Navigation System.

13.10.1. Verification. Visual references and radar Offset Aim Points (OAPs) can be used to verify/update navigation systems according to airland or airdrop mission requirements. The following solutions are acceptable for verifying/updating the navigation system, listed in order of preference:

13.10.1.1. OAPs are generated during planning, with precision coordinate and elevation information, including those listed in PFPS. Advance coordination with a targeteer is normally required. If targeteer information is not available, mission planners and aircrew may generate OAPs. Ideally OAPs should be 5-10 miles apart and approximately 45 degrees off of plotted course, if able.

13.10.1.2. Visual Reference Points (VRPs) generated during planning, which include any identifiable point with precision latitude/longitude and elevation information. This includes turn points, or identifiable structures such as an ECHUM tower.

13.10.1.3. Ad hoc references derived from a navigation chart, such as a road intersection or powerline crossing.

13.10.2. Required Navigation Accuracy. The navigation accuracy required for a given mission will vary depending on the type of mission and other considerations. For all airdrops and Self-

Contained Approaches (SCA) plan to verify navigation accuracy within 10 minutes of slowdown/Final Approach Fix (FAF). For IMC routes, navigation accuracy will be verified at least hourly. **(T-3)**

13.11. Route Study. Crew route study is mandatory before accomplishing flight in the low-level environment. At a minimum, discuss aircrew coordination, division of duties, and threat avoidance. **(T-3)**

13.12. Mission Debriefing. Conduct immediately after the mission, if practical, using the Mobility Air Force (MAF) Debrief Guide (located in EFB ePubs-All_Global). When specific mission variables dictate, e.g., tactics, formation, airdrop, etc., the PIC or MC may use the Debrief Guides in the AFTTP 3-3.C-130J CMG to augment the MAF Debrief Guide.

Chapter 14

AIRLAND EMPLOYMENT

14.1. General. Detailed airland employment guidance can be found in AFTTP 3-3.C-130J Chapter 6, *Airland Operations*.

14.2. Self-Contained Approaches (SCA).

14.2.1. The C-130J mission computer can derive approach course guidance using the LZ approach or IPRA functions. The approach course guidance does not ensure obstacle clearance. The mission computer only mathematically derives a final approach course and glide path from pilot input data.

14.2.2. VMC SCAs. Aircrew may build and fly a SCA as necessary. The PM will visually ensure obstacle and terrain clearance. **(T-3)**

14.2.3. IMC SCAs. IMC SCAs will be flown with the following restrictions:

14.2.3.1. SCAs will only be flown from a published SCA approach as defined in AFMAN 11-202V3. **(T-2)**

14.2.3.2. Required navigation accuracy for an SCA is:

14.2.3.2.1. For BLK 6.0 aircraft, to provide an early indication of degraded navigation accuracy, set the POS ALERT(s) at 0.03 NM (~ 55 yards; FOM 2) and 0.05 NM (~ 110 yards; FOM 4). If both INAV solution FOMs are less than or equal to 4 and no POS ALERTS (INAV Pos Miscompare ACAWS/INAV Pos Difference ACAWS) are indicated, navigation accuracy (300 yd. Circular Error Probable (CEP)) is verified. If these conditions are not met a radar or visual update is necessary to verify/improve navigation accuracy prior to performing SCAs. **Note:** For BLK 6.0 aircraft, anytime a position bias (update) has been added to the EGI INAV solution, displayed FOM values do not reflect the result of the bias.

14.2.3.2.2. For BLK 6.0 aircraft flying a SCA, verify navigation accuracy within 10 minutes of the FAF. Do not descend from FAF altitude without verifying the active ship solution if any of the following conditions exists: either FOM greater than 4, INAV Pos Miscompare ACAWS, or INAV Pos Difference ACAWS. **(T-2)**

14.2.3.2.3. For BLK 8.1.1 aircraft, EPU should be the primary reference for navigation accuracy and should be verified within 10 minutes of the FAF. Reference **paragraph 6.14.8** for proper setup of the CNI-MU for both CIVIL and MISSION modes. In either mode an EPU of less than 0.07 indicates adequate navigation accuracy to conduct a SCA. **Note:** During GPS Degraded Operations with all sources removed from the EGI no EPU will be present and the crew must verify position visually or with an OAP.

14.2.3.3. Both pilots will verify all SCA data entered in the MC using the published SCA approach (e.g., IPRA). **(T-2)**

14.2.3.4. WX minimums will be IAW the published procedure, but no lower than 300-1. **(T-2)**

14.3. Tactical Visual Flight Rules (VFR) Approaches and Landings.

14.3.1. Operations to unmarked/unlit LZ are IAW AFMAN 11-202V3 and DAFMAN 13-217.

14.3.2. Approaches. Plan approaches to the LZ IAW AFTTP 3-3.C-130J and airfield identification procedures published in the OPORD or SPINS. Brief any deviations from approaches described in AFTTP 3-3.C-130J. **(T-3)**

14.3.3. Airfields with a valid Giant Report not categorized as a landing zone may be operated at without standard markings so long as there are visible means to discern landing distance. **(T-3)**

14.3.4. AMP-4 Airland Operations. C-130J Airfield Marking Pattern-4 (AMP-4) operations are authorized. Reference AFTTP 3-3.C-130J for additional information.

14.3.4.1. Minimum requirements.

14.3.4.1.1. Minimum Equipment.

14.3.4.1.1.1. Fully operable Low Power Color Radar. **(T-3)**

14.3.4.1.1.2. Operational IR landing or taxi lights. **(T-3)**

14.3.4.1.1.3. Operational NVGs for both pilots. **(T-3)**

14.3.4.1.1.4. One operational HUD for training missions. **(T-3)**

14.3.4.1.2. If forecast lunar illumination is less than 0.008 lux, AMP-4 operations require SQ/DO approval prior to execution.

14.3.4.1.3. Minimum runway and touchdown zone distance will be in accordance with **paragraph 5.15**. For training and operational use, add 500 feet to minimum runway length. **(T-3)**

14.3.4.2. Mission planning requirements and considerations.

14.3.4.2.1. Aircrew will accomplish a thorough analysis of the landing environment during premission planning. Minimum items will include prebriefed earliest touchdown and latest touchdown/go-around point identification (to include applicable timing, parameters, and takeoff and landing data (TOLD)), go-around criteria, lateral runway/LZ edge identification, weight limitations, taxi routes/plan, and airfield obstacle identification. **(T-2)** Consideration should be given to the difference in overt or covert lighting schemes and its effect on landing zone acquisition.

14.3.4.2.2. Coordinates for use on a mission computer approach (LZ function or Self Contained Approach), must be either: (1) taken from a valid LZ survey, (2) be known runway end coordinates from Joint Mission Planning Software (JMPS), or (3) provided from a C2 agency. **(T-2)** Coordinates may be acquired through alternate means of mission planning if required during exercise or contingency operations. Consideration should be given to coordinate selection since approach end selection aids in assault procedures but reduces safety buffer.

14.3.4.2.3. Special consideration should be given to arrival and departure alternates for AMP-4 locations.

14.3.4.2.4. Aircrew should accomplish a thorough analysis of the departure environment during pre-mission planning. Minimum items will include pre-briefed lateral runway/LZ edge identification, runway end identification, planned takeoff distances, rejected takeoff procedures, taxi routes/plan, departure plan, and airfield obstacle identification. **(T-2)**

14.3.4.2.5. Crews should consider performing an acceleration time check for AMP-4 takeoffs.

14.3.4.2.6. To aid in LZ acquisition, planners will obtain coordinates for the beginning of the touchdown zone, the end of the touchdown zone, and the end of the landing surface at a minimum. **(T-2)** These points can then be used for generating self-contained approaches (SCA) (i.e., IPRA) to supplement visual and radar acquisition of the landing surface.

14.3.4.2.7. For training, aircrews must ensure airspace is approved for covert lighting or lights out operations prior to transitioning from overt lighting. **(T-3)**

14.3.4.3. Procedures.

14.3.4.3.1. To perform AMP-4 operations, the Aircraft Commander will ensure all requirements from the AMP-4 Operations Guide in the C-130J CMG are met. Techniques from the AMP-4 Operations Guide are considered procedure for AMP-4 operations. **(T-3)** The Aircraft Commander will brief which techniques from the applicable AMP-4 Operations Guide will be used on each approach. **(T-3)**

14.3.4.3.2. Determine and brief a latest touchdown/go-around point that can be identified visually and will be backed up by timing. Aircrew will use timing as the primary backup method to determine the go-around point. Timing is primary if a visual point isn't identifiable. **(T-2)** In addition to timing, crews may consider using an offset aimpoint (OAP), tac plot, or waypoints to supplement the visual determination of the go-around point.

14.3.4.3.3. Crews will brief when they anticipate glide slope intercept, when they expect to start seeing funneling features based on forecast illumination, and when they will perform their final slow down and configuration. **(T-2)**

14.3.4.3.4. Crews will thoroughly pre-brief all departures/arrivals to include emergency procedures, abort calls, light discipline, and runway markings if applicable. **(T-2)**

14.3.4.3.5. Crews will build or utilize either an IPRA, IAP, or LZ function. **(T-3)**

14.3.4.4. Approach.

14.3.4.4.1. Prior to commencing approach to an AMP-4 landing both pilots will verify the final approach course, planned slowdown point, descent point, and desired VVI. The pilot monitoring (PM) will verify CNI-MU LZ/IPRA info, the go-around point, and TOLD calculations and will begin to monitor VVI. The PM will calculate go-around timing, confirm visual go-around point, and begin to monitor above/below glideslope indications on IPRA/LZ Progress 2/4. Crews will round ground speed up to the nearest 5 knots and will round the timing data down to the nearest second. **(T-2)**

14.3.4.4.2. 500 feet AGL. No later than 500 AGL, the pilot flying should slow to threshold speed. The PM will state the ground speed and update the PF on go-around timing as required. **(T-2)**

14.3.4.4.3. 300 feet AGL. No later than 300 AGL, both pilots will visually acquire the runway environment and state "runway environment in sight" or "go around." **(T-2)**

14.3.4.4.4. 150 feet AGL. No later than 150 AGL, both pilots will acquire the touchdown zone and landing zone lateral limits and state "touchdown zone in sight," or "go-around." **(T-2)**

14.3.4.4.5. Once the aircraft crosses the threshold or start of touchdown zone, the PM will state "timing" and start a clock. **(T-2)**

14.3.4.4.6. Go-around. Crews will direct a go-around if:

14.3.4.4.6.1. Either pilot fails to identify the runway environment by 300 feet AGL. **(T-2)**

14.3.4.4.6.2. Either pilot fails to identify the briefed touchdown zone or landing zone lateral limits by 150 feet AGL. **(T-2)**

14.3.4.4.6.3. Either pilot experiences NVG failure under 300 feet AGL. **(T-2)**

14.3.4.4.6.4. The aircraft has not touched down prior to the visual or timed go-around point. **(T-2)**

14.4. Engine Running Offload and Onload (ERO) Procedures.

14.4.1. Use ERO procedures when necessary to expedite aircraft or cargo movement, meet time requirements of unit moves, joint training exercises, contingencies, or to enhance the crew duty day. The PIC is responsible for prior coordination with mission execution authority for approval of ERO operations as well as early takeoffs. The loadmaster will direct all on and offload operations using hand signals pre-briefed with personnel on the aircraft**.** This does not preclude the necessity of performing a load team briefing before commencing loading/unloading operations. **(T-3)** Other qualified loadmasters (CRG, aerial port) may perform these duties; however, the aircraft loadmaster retains overall responsibility for the operation.

14.4.2. With the exception of small arms ammunition (Hazardous Class/Division 1.4), do not use ERO procedures when explosive cargo is involved unless authorized in the JA/ATT, exercise, operation or contingency air tasking order, or SPINS. **(T-2)**

14.4.3. ERO procedures may be used for any mix of personnel or cargo. Material handling equipment should be used if palletized cargo is to be onloaded or offloaded. Passengers will be escorted by a crewmember or qualified CRG, aerial port, or airfield control (e.g., STT) personnel, and auxiliary ground loading ramps should be used when emplaning or deplaning through the aft door and ramp. Unless mission requirements dictate otherwise, deplane passengers before cargo, and enplane after cargo. PICs must assess prevailing weather, lighting and parking location to ensure safe operations. **(T-3)**

14.4.3.1. If ground crews are not NVD qualified, EROs must be accomplished with lighting in the cargo compartment sufficient to permit MHE drivers to see marshaller's signals, safely position MHE and maneuver the load behind the aircraft without use of

NVDs. **(T-3)** LMs may use NVDs 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. ***WARNING:*** Do not onload or offload through the crew entrance door and cargo ramp and door at the same time. **(T-3)** Paratroop doors will not normally be used.

14.4.4. General Procedures.

14.4.4.1. PICs will brief crewmembers on the intended ERO operation.

14.4.4.2. The parking brake will be set and at least one pilot in the seat will monitor brakes, interphone, and radio. **(T-3)**

14.4.4.3. Use wing leading edge and taxi lights to enhance safety at night as the situation dictates.

14.4.4.4. Station another crew member (if available) on interphone or public address (PA) in the cargo compartment as safety observer. Safety observers will remain clear of all cargo. **(T-3)**

14.4.5. 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)**

14.4.5.1. Brief drivers offloading vehicles on the following items:

14.4.5.1.1. Exact offload procedures and applicable signals to be followed.

14.4.5.1.2. 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.

14.4.5.1.3. 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)**

14.4.5.1.4. Vehicle parking brakes will not be released until all restraint is removed and cleared by the loadmaster. **(T-3)**

14.4.5.2. Brief troops on the following items:

14.4.5.2.1. Secure baggage aboard vehicles, if applicable.

14.4.5.2.2. Deplane when directed by the loadmaster.

14.4.5.3. 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:** Loadmasters will ensure vehicles and troops proceed directly aft of the aircraft at least 50 feet before turning and/or 300 feet before stopping. **(T-3)**

14.4.5.4. Personnel on/offload through the crew entrance door.

14.4.5.4.1. Station a crewmember (normally the loadmaster) on interphone with cord held taut at approximately 20 feet from the crew door at an angle of approximately 45 degrees from the aircraft axis.

14.4.5.4.2. Brief deplaning personnel to secure loose articles and remain forward of the interphone cord.

14.4.5.4.3. No enplaning personnel will approach the aircraft until the loadmaster is in place. **(T-3)**

14.4.6. 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, a DD Form 365-4 is not required. Ensure the PERF WT and WT and BALANCE pages of the CNI-MU are updated prior to takeoff**.**

14.5. Combat Offload Procedures.

14.5.1. Combat offload provides a means of offloading single, multiple, and married pallets, airdrop platforms, or CDS bundles without the use of material handling equipment. The method of combat offload will be determined by the aircrew based on the conditions at the offload site. Crews conducting operational missions within AORs with approved and published SPINS will use the approval authority within the SPINS for combat offload operations.

14.5.2. Combat Offload Method A.

14.5.2.1. Combat Offload Method A requires controlling C2 commander, MAJCOM/A3, or Director of Mobility Forces (DIRMOBFOR) authorization for other than training. Unit OG/CC may approve unilateral combat offload training.

14.5.2.2. A taxiway or ramp at least 500 feet long is required, however, 1,000 feet is desired to provide a margin of safety. When pallets, platforms, or containers are offloaded one at a time, use a longer taxiway based on the number to be offloaded. ***WARNING*:** Many explosive items have specific "drop" criteria that, if exceeded, render the item useless or dangerous to the user. Explosives and munitions will not be combat offloaded. **(T-2) Exception:** Small arms ammunition (hazard class and division 1.4) and explosives/munitions rigged for airdrop may be combat offloaded. ***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 will permit the offload operation to be conducted without damage to the aircraft or equipment.

14.5.2.3. Combat offload of fragile and sensitive cargo items (e.g., computers) that might be damaged by standard Method A combat offload procedures will not be attempted without user concurrence. If the nature of the mission dictates that cargo must be offloaded, aircrews may lower the ramp to approximately 18 inches above the ground. ***CAUTION:*** Do not attempt to lower the ramp below horizontal unless the UNRESTRICTED RAMP TRAVEL light is illuminated. **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 loadmaster must release the locks using either the PLCUs or RECP Jettison switches.

14.5.2.4. Pallets may be offloaded, without ballast, using this method provided their total weight does not exceed 12,000 pounds, and the height of the pallets fall within cargo height jettison limit in Section III of the flight manual or Section V of the cargo loading manual.

14.5.2.5. Airdrop rigged platforms up to 24 feet in length may be offloaded, without ballast, using this method provided their weight does not exceed 12,000lbs. **Note:** Pallets and airdrop rigged platforms over 12,000lbs total weight may be offloaded using this method, provided ballast or cargo equal to the difference between 12,000lbs and the weight of the pallets or platforms (to be offloaded) remains in C through F compartments during offload (Example: A 17,000lb married pallet or airdrop platform requires 5,000lbs of ballast or cargo to remain in C through F compartments during the offload).

14.5.2.6. CDS may be combat offloaded using this method. The static line retriever may be used via manual activation if the WGRS is not available. Manual gate cut may be done if Wireless Gate Release (WGRS) is not available and the retriever is inoperative. With Centerline Vertical Restraint (CVR), offload will be accomplished one side at a time if the total bundle weight exceeds 12,000lbs. **(T-3)** Non-CVR sticks may be offloaded if the total weight is less than 12,000lbs. Without the CVR, if the total weight of the bundles exceeds 12,000lbs 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.

14.5.3. Combat Offload Method B.

14.5.3.1. Combat Offload Method B may be authorized by the Aircraft Commander (AC).

14.5.3.2. Use this method to offload married pallets that do not fit the criteria for Method A or for which no ballast is available for married pallets weighing between 12,000 to 15,000lbs. Use four serviceable steel 55-gallon drums under each pallet to be offloaded. 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. ***WARNING*:** The maximum weight for pallets to be offloaded across the ramp at any one time when using Method B is 15,000lbs. Do not use Method B for airdrop-rigged platforms to prevent binding the platform under the vertical restraint rails. **(T-3)** ***CAUTION*:** Aircrews will ensure that the aircraft CG will not fall aft of 39.9% MAC (Load Station (LS) 753/Flight Station (FS) 553) at any time during the offload to preclude raising the aircraft nose wheel off the ground. This is accomplished by considering the entire weight of the pallet to be combat offloaded to be resting at the aft edge of the cargo ramp (LS 1141/FS 861) and calculating the resulting aircraft Center of Gravity (CG). **(T-3)** The Aircraft Commander will verify all CNI Weight and Balance Page data entries, actual fuel, actual cargo weight and cargo position are accurate, prior to commencing Method B offload operations.

14.5.4. Combat Offload Method C.

14.5.4.1. Combat Offload Method C may be authorized by the Aircraft Commander (AC).

14.5.4.2. Taxiway or ramp requirements will vary based on number of pallets, method used, and experience of the crew. Crews should plan for a minimum of 10 feet per pallet to be offloaded.

14.5.4.3. Use Method C to offload pallets less than 90 inches in height and less than 8,500lbs. When using two symmetrically installed drift straps to control pallet movement, the maximum pallet weight is 5,000lbs. Do not use Method C for airdrop platforms or married pallets. These items may bind under the vertical restraint rails. **Exception:** During training, units may use Type V platforms without an extraction force transfer coupling (EFTC) installed as long as the platform does not exceed 8 feet in length. The use of the winch or drift strap is required for hazard class 1 explosives and munitions when authorized in the JA/AAT, exercise, operation or contingency air tasking order, or SPINS. **(T-2) Exception:** Small arms ammunition (hazard class and division 1.4) do not need additional authorization. All other hazardous materials can be off-loaded using Method C.

14.5.4.4. Auxiliary ground loading ramps will be symmetrically installed. Ground loading ramp protectors (GLRPs) will be used for all training missions. **(T-3)** ***CAUTION:*** GLRP create a potential clearance hazard for the aircraft cargo door when installed in the ramp. Do not close the cargo door with the ground loading ramps installed, if GLRP are affixed. After any Method C operation, loadmasters will inspect the rivets on the top and bottom of the ramps and the condition of the anti-skid coating. If damage or excessive wear is discovered, an entry in the AFTO Form 781A will be made and the ramp will be turned over to maintenance personnel.

14.5.4.5. Method C's process is: stop, preload the ramp to the ground, lower auxiliary ramps to the ground, place dunnage (if available), download pallet, raise the ramp, taxi forward, stop and repeat the process for each pallet to be downloaded. The Loadmaster will maintain constant interphone contact with the PIC. ***WARNING:*** No one is permitted behind or beside the load unless the loadmaster ensures the pallets are secure.

14.6. Emergency Airlift of Personnel. Use these procedures for noncombatant evacuation and combat loading of personnel when directed by the controlling combatant commander, MAJCOM/A3 or DIRMOBFOR. Apply the following procedures to ensure a safe, efficient loading method for the emergency airlift of personnel and aeromedical evacuation (AE) of litter patients from areas faced with enemy siege, hostile fire, for humanitarian evacuations, or when directed by the execution authority.

14.6.1. Emergency airlift normally is accomplished without the use of individual seats or safety belts. The number of personnel that fit on the cargo floor will depend on individual size. Consider loading in groups of 12 to 16 (depending on size) to control loading operations. If available, pallets may be installed to create a subfloor in the aircraft to provide additional insulation from the aircraft floor. If pallets are unavailable, ensure all applicable roller conveyors are stowed.

14.6.1.1. When available, use mattresses or other cushioning material for seating.

14.6.1.2. Seat troops, passengers, and ambulatory patients facing forward**.**

14.6.1.3. Attach a tiedown strap for each row of personnel to provide forward restraint and body stability.

14.6.1.4. Secure baggage on the cargo ramp/floor**.** Excess baggage and cargo secured on the cargo ramp/floor will decrease the number of troops, passengers, and patients proportionately.

14.6.1.5. Swiss seats are also an acceptable form of restraint. Individuals utilizing this method will wear a rigger's belt connected to the cargo floor (or a pallet tie down ring) with a lanyard and carabineer. **(T-3)**

14.6.2. AFMAN 11-202V3 dictates flight altitude limitations based on oxygen availability for passengers.

Chapter 15

AIRCRAFT FORMATION

15.1. General. This chapter covers basic formation procedures and operations. All procedures described apply to all C-130J aircraft. The broad term formation as used does not differentiate between specific tactics of enroute formation or visual formation. Specific references to each tactic must be made to ensure complete understanding. The standard formation building block is a two-ship element. Procedures and techniques to fly C-130J formation are outlined in AFTTP 3-3.C-130J.

15.1.1. All formation flights will be planned, briefed, conducted, and critiqued in accordance with this chapter, AFTTP 3-3.C-130J, and TO 1C-130J-1. **(T-3)** Consider safety, aircrew capability, proficiency, survivability and user needs when planning any formation tactic.

15.2. Specified Times. The mission commander determines the sequence of events and mission times based on mission requirements. Local sequence of events (SOEs) for formation training missions may be established for use at home station. Relay changes in briefing or mission timing to all formation members at the earliest opportunity**.**

15.3. Weather Minimums. Formation takeoff and landing minimums are the minimums for the lowest suitable approach at the airfield, but not lower than 200 feet and 1 SM visibility (RVR 5000 ft). During IFR formation operations, adhere to both ceiling and visibility minimums. If departure ceiling or visibility is below published landing minimums, but above 200 feet and 1 SM visibility (RVR 5000 ft), the formation may takeoff if the requirements for a departure alternate as prescribed in **Chapter 6**, are met. If the runway has dual RVR readouts (approach and departure end of the runway) both ends must be at least RVR 5000 ft. **(T-3)**

15.4. Ground Operations. Minimum taxi interval is one aircraft length with four engines operating and two aircraft lengths with two engines operating (or two in HOTEL mode). Lead will obtain taxi and takeoff clearance. **(T-3)**

15.5. Communications and Radio Procedures. Radio and interphone discipline are critical factors in maintaining formation integrity. The mission commander will ensure all formation members have a complete understanding of the radio monitoring plan. **(T-3)** Refer to AFTTP 3-3.C-130J for specific formation communication procedures.

15.6. Launch, Departure, and Level-Off.

15.6.1. The minimum takeoff interval between aircraft is 15 seconds. **(T-3)** Takeoff intervals may be increased, or sequence may be varied as necessary, depending on aircraft acceleration and performance, training requirements, weather, airfield conditions, and mission requirements.

15.6.2. For aborts during takeoff, the pilot monitoring immediately transmits an abort call (three times using formation position number) on interplane. The PM will repeat the call on primary ATC frequency when the situation allows. Clear the runway as quickly as safety allows. Succeeding aircraft will acknowledge abort callout and sympathetically abort their takeoff roll. Succeeding aircraft not on takeoff roll will hold until the runway is clear. **(T-3)** PIC may brief alternate crew radio responsibilities as required. Avoid using HAVE QUICK or secure voice as this may hinder interplane communication during formation takeoffs.

15.6.3. To prevent damage to succeeding aircraft, do not advance power above flight idle until takeoff roll is started. **(T-3)** Use a judicious and smooth application to achieve takeoff power.

15.6.4. Formation leaders ensure all aircraft use the same altimeter setting.

15.6.5. Airborne Aborts. Any aborting aircraft should clear the planned departure path and take appropriate actions dictated by the reason for abort. Aborting aircraft should plan to obtain ATC clearance prior to altering their route, or declare an emergency and deviate as necessary**.** In all cases, notify formation lead of intentions.

15.7. Enroute.

15.7.1. At no time will MAF aircraft be operated within 500 feet of another MAF aircraft. **(T-3)**

15.7.2. Lead will announce airspeed changes of 15 knots or greater at night. **(T-3)**

15.7.3. Inadvertent weather penetration procedures will be briefed to the formation IAW AFTTP 3-3.C-130J. At a minimum, formation lead will direct the formation to a safe altitude, heading, airspeed, and aircraft spacing. **(T-3)**

15.8. No-Drop Decisions. When a situation requires a formation no-drop, lead will notify the flight over interplane and all aircraft will acknowledge. **(T-3)** If radio silence is necessary, lead will pass a SKE no-drop command. Do not transmit individual aircraft no-drops outside the aircraft. **(T-3)**

15.9. Visual Procedures.

15.9.1. Departure and Assembly. After crossing the runway departure end, wingmen adhere to ATC requirements and assume the pre-briefed position**.**

15.9.2. Visual Rejoins.

15.9.2.1. The rejoining aircraft will establish a minimum of 500 feet altitude separation until the formation is in sight and clearance to rejoin is granted. **(T-3)**

15.9.2.2. Rejoining aircraft must be in position, at formation altitude, by the “5 second” advisory or “standby drogue” to accomplish the drop. **(T-3)**

15.9.3. Tactical Formation Maneuvering (TFM). Both pilots must be on NVDs to fly TFM at night. **(T-3)**

15.9.4. Visual Run-In and Slow Down. Unless tactically unsound, night slowdowns will include an aural or visual signal. **(T-3)**

15.9.5. Drop Execution. Regardless of the type of drop spacing being used (In-Trail, pre-briefed, etc.), the minimum drop spacing is 2,000 feet from the preceding aircraft.

15.9.5.1. Wingmen will notify lead if they see any situation which may result in an unsafe or inaccurate airdrop. **(T-3)** ***WARNING:*** Dropping at a lower altitude than the preceding aircraft may cause loads or personnel to impact the lower aircraft, causing damage or fatalities. ***WARNING:*** When aircraft in formation are dropping loads with significantly different rates of fall additional mission planning is required to ensure adequate spacing prevents the possibility of load impact.

15.9.5.2. CDS Airdrop. Minimum spacing to drop CDS (excluding ExCDS due to increased stall margins) in formation is 6,000 feet. **(T-3)** Aircraft not dropping CDS and using 50 percent flaps may establish normal spacing following a CDS aircraft. ***WARNING:*** Attempting to regain position by only reducing power or airspeed places the aircraft in a nose high, low-power situation and may lead to a stall.

15.9.6. Visual Recovery.

15.9.6.1. For formation recoveries roll out on final at no less than 150 feet AGL. **(T-3)**

15.9.6.2. Desired landing interval is 20 seconds; minimum is 15 seconds. **(T-3)**

15.9.6.3. Do not perform touch-and-go landings during formation recoveries. **(T-3)**

15.10. Coordinated Airplane Positioning System/Station Keeping Equipment (CAPS/SKE) Procedures.

15.10.1. Accomplish a SKE flight command check prior to takeoff by passing a single command. **(T-3)**

15.10.2. Priority of maneuvers/signals is (1) altitude, (2) heading, and (3) airspeed. Element leads immediately relay acceleration, deceleration, climb, and descent CAPS commands. **(T-3)**

15.10.2.1. All altitude changes will be signaled. **(T-3)**

15.10.2.2. Lead will signal unplanned heading changes of more than 10 degrees. **(T-3)**

15.10.2.3. Lead will signal accelerations and decelerations of greater than 10 knots. **(T-3)** ***CAUTION:*** With autothrottle engaged in CAPS mode, commanded speeds may be above aircraft configuration limiting speeds.

15.10.2.4. In CAPS mode, do not couple the autothrottle until in formation position and at assembly altitude. **(T-3)**

15.10.3. SKE Orbit/Rejoin Procedures.

15.10.3.1. Maintain 1,000 feet above or below the formation until in position and permission to rejoin is granted. **(T-3)**

15.10.3.2. The rejoining aircraft must be stabilized in position at formation altitude by the Initial Point (IP) (IMC) or by one-minute prior to Time Over Target (TOT) (VMC) to accomplish the drop. **(T-3)**

15.10.4. SKE Enroute Procedures. Normally, spacing for CAPS/SKE formation is 4,000 feet for wingman and 8,000 feet for element leads. Minimum spacing between aircraft will be 4,000 feet. **(T-3)** The cross-path distance for enroute navigation is 700 feet in the most appropriate direction for the wingman aircraft and 0 cross-path for element leads. **(T-3) Note:** During long missions, mission commanders may extend enroute spacing and/or cross- track to reduce fatigue, as required.

15.10.5. Loss of SKE. Notify lead in all cases. Reference AFTTP 3-3.C-130J for additional information. **(T-3)**

15.10.5.1. Loss of all SKE indications in IMC will require a breakout. Use the following procedure if an alternate plan was not briefed:

15.10.5.2. If the formation is in straight and level flight, climb 500 feet, turn 30 degrees in the safest direction from the base heading for 30 seconds, and then return to base heading. If the formation is in a turn, roll out and climb 500 feet. Lead will contact (or direct contact to) ATC for a separate clearance. **(T-3)** ***CAUTION:*** Performing the above maneuvers in a radar pattern may place an aircraft outside of protected airspace.

15.10.6. Inadvertent weather penetration (IWP) actions are for emergency use and do not constitute authority to violate AFMAN 11-202V3, *Flight Operations*, FAR, or host nation procedures. Exercising these procedures under actual weather conditions may constitute a flight violation subject to appropriate action by the USAF and FAA or host nation aviation authorities. Individual aircraft should remain VMC if there is sufficient warning to take evasive action. Take all practical measures to avoid entering controlled airspace without ATC clearance.

15.10.6.1. Inadvertent Weather Penetration with SKE. These procedures can be modified by formation leaders based upon airspace, terrain, or situational requirements.

15.10.6.1.1. Lead commands "EXECUTE INADVERTANT WEATHER PENETRATION WITH SKE" and then states base altitude, base heading and base airspeed at a minimum. Base altitude will be at or above ERAA.

15.10.6.1.2. All aircraft immediately turn to base heading while beginning a climb to base altitude using 4 FPA (approximately 1,500 fpm) and capturing base airspeed.

15.10.6.1.3. Once established in the climb, all aircraft display CAPS. Element wingmen set X-PATH to 1,000 feet left or right in the safest direction.

15.10.6.1.4. When level at the base altitude, Lead commands the formation to "ESTABLISH SKE SPACING." On this command, wingmen reduce airspeed 15 knots, drift back until established at 4,000-foot along path (A-PATH).

15.10.6.1.5. When established at 4,000-foot A-PATH, reset and intercept appropriate X-PATH. Do not couple both the autopilot and autothrottles to CAPs until established in formation position.

15.10.6.1.6. If the formation is unable to reestablish visual conditions, Lead contacts ATC for a clearance.

15.10.6.2. Inadvertent Weather Penetration without SKE.

15.10.6.2.1. Lead commands "EXECUTE INADVERTANT WEATHER PENETRATION WITHOUT SKE" and then states base altitude, base heading and base airspeed at a minimum. Base altitude will be at or above emergency safe altitude (ESA).

15.10.6.2.2. All aircraft immediately turn to base heading while beginning a climb to base altitude using 4 FPA (approximately 1,500 fpm) and capturing base airspeed.

15.10.6.2.3. Once established in the climb, element wingmen turn 30 degrees away from the base heading in the safest direction for 1 minute, and then return to base heading. At 210 KIAS, this establishes approximately a 0.5 NM in-trail separation and 1.8 NM lateral separation.

15.10.6.2.4. The last element in the formation levels at the base altitude; preceding elements stack at 500-foot intervals, with the first element occupying the highest altitude.

15.10.6.2.5. Set TCAS to TA and squawk 1200C (or as directed by SPINS or host nation guidance); Lead may consider squawking EMERGENCY if the situation dictates.

15.10.6.2.6. Avoid changing the base heading while in IMC.

15.10.6.2.7. If the formation is unable to reestablish visual conditions, Lead contacts ATC for a clearance.

15.10.7. Run-In and Slowdown. Do not initiate descent from the last enroute altitude until the following conditions are met:

15.10.7.1. Own position is positively known. **(T-3)**

15.10.7.2. Within 3 NM of DZ run-in course centerline, to include CAPS/SKE timing only wingmen. **(T-3)**

15.10.7.3. At or past the DZ entry point; to include wingmen for parallel descents. **(T-3)**

15.10.8. Drop Execution.

15.10.8.1. Overrunning aircraft must regain position by one minute prior to TOT, or a no drop will be executed. **(T-3)**

15.10.8.2. CDS Airdrop. Minimum spacing to drop CDS in formation is 6,000 feet. **(T-3)** Aircraft not dropping CDS and using 50 percent flaps may establish normal spacing following a CDS aircraft. ***WARNING:*** Attempting to regain position by only reducing power or airspeed places the aircraft in a nose high, low-power situation and may lead to a stall.

15.10.9. DZ Escape. Assembly altitude after the drop will comply with normal IFR enroute altitude restrictions. **(T-3)**

15.10.9.1. DZ Exit. A fixed point on the DZ escape flight path centerline, established during pre-mission planning, at which the formation will be at the minimum IFR enroute altitude.

15.10.9.2. Calculate the exit point based upon three-engine performance at airdrop gross weight. This point will be planned no less than 4 NMs track distance beyond the DZ trailing edge.

15.10.10. SKE Recovery.

15.10.10.1. At least one pilot will not be in CAPS mode once established on the final approach segment for SKE instrument approaches. This does not preclude CAPS information from being displayed via the AMU.

15.10.10.2. The interval between aircraft on final is 6,000 feet desired, 5,000 feet minimum. **(T-3)**

15.10.10.3. International Civil Aviation Organization (ICAO) Approaches. There are no procedures for executing ICAO 45/180 and 80/260 procedure turn approaches, so these are flown single-ship only. **(T-3)**

15.10.11. Do not perform touch-and-go landings during formation recoveries. **(T-3)**

15.11. ICDS Formation Airdrop. All aircraft will fly to an individual JPADS-MP derived CARP. **(T-3)** If an aircraft is unable to calculate its own CARP using the JPADS-MP, a separate aircraft can pass CARP coordinates provided that the load's flight station and weights are the same. Otherwise, the aircraft must build (or have ready) the other aircraft's load information in order to calculate an individual CARP and pass it back. **(T-3)**

15.12. Guided Container Formation Airdrop. All aircraft will fly to an individual JPADS-MP derived CARP or be within the Launch Acceptability Range (LAR). **(T-3)** In addition, formation spacing must provide a minimum of 3 seconds spacing between the last bundle dropped from the previous aircraft and the first bundle dropped from subsequent aircraft. **(T-3)** This is to prevent any bundles entangling as the bundles attempt to fly to the same point in space. Instead of flying formation to the JPADS- MP derived CARP, consider sending aircraft on different routing within the LAR.

15.13. C-130H/J Interfly Procedures. C-130H/J aircraft interfly procedures will be IAW AFTTP 3- 3.C-130J **Attachment 9**.

15.14. Mission Debriefing and Critique. A complete mission debriefing will be conducted following the mission IAW the MAF Debriefing Guide.

Chapter 16

AIRDROP

16.1. General. This chapter provides general guidance for C-130J airdrop operations. For additional airdrop guidance not covered in this AFMAN, reference AFTTP 3-3.C-130J, technical order guidance and applicable tactics bulletins.

16.2. Identification of Airdrop Items. It may be necessary to identify items that are not dropped or land off the DZ in unsecured areas.

16.2.1. Identify supplies or equipment by the following class numbering system:

16.2.1.1. Class I - Subsistence.

16.2.1.2. Class II - Individual equipment.

16.2.1.3. Class III - POL.

16.2.1.4. Class IV - Construction materials.

16.2.1.5. Class V - Ammunition (include the type):

16.2.1.5.1. Type “A” - Small arms.

16.2.1.5.2. Type “B” - Mortars.

16.2.1.5.3. Type “C” - Artillery.

16.2.1.6. Class VI - Personal demand items.

16.2.1.7. Class VII - Major end items (vehicles, howitzers, etc.).

16.2.1.8. Class VIII - Medical supplies.

16.2.1.9. Class IX - Repair parts.

16.2.1.10. Class X - Non-military programs (e.g., agricultural supplies).

16.2.2. Airdrop loads may also be identified by the following internationally recognized color coding system for combined operations:

16.2.2.1. Red - Ammunition and weapons.

16.2.2.2. Blue - Fuel and lubricants.

16.2.2.3. Green - Rations and water.

16.2.2.4. Yellow - Communications equipment.

16.2.2.5. White (or Red Cross on white background) - Medical supplies.

16.2.2.6. Black and white stripes - Mail.

16.3. Airdrop Kits. The loadmaster will carry enough equipment in the airdrop kit to satisfy load or mission requirements. Minimum contents of airdrop kits will include cloth-backed pressure sensitive tape, 1/2-inch tubular nylon cord, 550 cord, 5 cord, 80-lb cotton webbing, and two carabiners (NSN 4240-01295-4305 or equivalent carabiner with a locking mechanism). Additional items will be added per unit guidance. **(T-3)**

16.4. Joint Airdrop Inspection.

16.4.1. The loadmaster will complete the applicable DD Form 1748, *Joint Air Drop Inspection Records*, before takeoff (see AFI 13-210, *Joint Airdrop Inspection Records, Malfunction/Incident Investigations, and Activity Reporting* for specifics) and verify the accuracy of cargo and troop documentation. **(T-3)** The Joint Airdrop Inspector (JAI) will check all applicable items for all loads to be dropped during that mission. **(T-3)** For loads that require in-flight rigging, the JAI will annotate on the DD Form 1748 which items are required to be completed during flight, and the aircrew loadmasters will ensure those items are completed and checked. **(T-3)** No further inspections by the JAI are required. Reject loads with inaccurate or unavailable weights, or loads hazardous to flight. **(T-3) Note:** Equipment not rigged per 13C-series technical orders (TO) or Joint Special Operations Command (JSOC) 350 series manuals, requires a waiver from the appropriate MAJCOM Tactics agency/division.

16.4.2. If airdrop and airland loads are carried at the same time, see the restrictions listed in **Table 16.1**. These restrictions are designed to prevent airland loads from interfering with airdrop rigging equipment.

Table 16.1. Load Planning Restrictions.

	RESTRICTIONS	MINIMUM DISTANCE (INCHES)
1.	Retriever winch cable/pulley from aircraft floor	84”
2.	Distance between anchor cables; (a) CDS or equipment (b) Personnel (1) (1) Forward bulkhead (2) Intermediate supports	108” 6” Inboard, 64” Outboard 76” Inboard, 76” Outboard
3.	Airland cargo height	Cannot interfere with overhead rigging equipment CDS Only – 80” Height (2)
4.	Cargo locations on personnel airdrops (static line or High Altitude Low Opening (HALO))	Troop door exit: no cargo between LS 857- 937/ FS 657- 737). Ramp exit: forward of LS 900 (FS 700).
5.	Passenger/personnel distance from airdrop rigging equipment	60”
6.	Safety aisle to rear of aircraft (3)	All missions, alongside or over top of cargo.
7.	Access to operate airdrop equipment (4)	Troop seats not used 1L and 2L.
NOTES:		

(1) Personnel airdrops may be performed with only one troop door configured for airdrop with user concurrence.
(2) Will not exceed 80" within 12" either side of retriever cable. Height of cargo outside of the 12" left and right (total 24") may exceed the 80" height limitation, but will not interfere with overhead rigging equipment. **(T-3)**
(3) CDS and heavy equipment configuration. Safety aisles for airdrop operations may not be feasible IAW AFMAN 11-2C-130JV3 Addenda A. Loadmasters will maintain access to the aft end of the aircraft during airdrop operations. All sidewall seats will be raised or stowed in the wheel-well area when airland pallets and vehicles are located within this area and exceed 96" width. **(T-3)**
(4) Loadmasters will maintain a clear pathway between the MFCD and platform(s) to ensure obstructions do not preclude required emergency procedure actions. **(T-3)** Heavy Equipment and Personnel configuration with platform(s)/jumpers on aircraft: Loadmasters will maintain access from MFCD to platform(s) for emergency equipment procedures. **(T-3)**

16.5. Verification and Marking of Airdrop Loads. A pilot will verify with the loadmaster that the actual number and type of parachutes, load weights, sequence of extraction, and position of loads in the aircraft agree with planned CARP data. 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 will land on the DZ. Base drop altitude on the item requiring the highest drop altitude. For training missions (e.g., unilateral, exercise, or JA/ATT) the loadmaster will coordinate with the pilots to ensure all equipment, drogues, CDS bundles, and standard airdrop training bundles are marked with the aircraft call sign and date. If more than one load is dropped on the same pass, mark loads with order of exit from aircraft. Markings will be placed on the extracted end of the load, and on the drogue line. **(T-3) Exception:** If more than one CDS bundle is dropped on the same pass, mark only the first container out.

16.6. Safety Equipment.

16.6.1. Low-Level Environment. Personnel required to be mobile in the cargo compartment during low-level phases will wear protective headgear from the combat entry point to the combat exit point if an actual threat is briefed. **Exception:** Personnel performing water jumps. All other personnel will be seated with the seat belt fastened. **(T-3)**

16.6.1.1. Airdrop. During an airdrop, occupants in the cargo compartment will have seat belt fastened. **(T-3)** Personnel required to be mobile will wear a restraint harness, or wear a parachute before doors are opened.

16.6.1.2. For static line jumps, static lines are attached to anchor cables before doors are opened. The loadmaster will wear either a restraint harness or a parachute from the DROP PREPARATION Checklist until doors are closed and locked. Loadmasters will lower their helmet visor when near an open door (except when NVDs are used) and keep it lowered until doors are closed. As a minimum, the helmet will be worn from the start of the DROP PREPARATION Checklist until the COMPLETION OF DROP Checklist. Loadmasters will be on interphone from completion of DROP PREPARATION Checklist until COMPLETION OF DROP Checklist. **(T-3)** ***WARNING:*** During the aircrew briefing, the PIC will brief the loadmaster(s) when the mission profile requires flight below 800 feet AGL with the door(s) open. **(T-3)** ***WARNING:*** The loadmaster(s) must wear a restraint harness when performing duties near an open exit above 25,000 feet MSL or below 800 feet AGL. **(T-3) Exception:** Flight examiner loadmasters are exempt from wearing a

parachute or restraint harness while conducting flight evaluations provided they do not go aft of LS 977 (FS 677). **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 LS 817 (FS 617). **Note:** Do not use restraint harness located on the flight deck for airdrops. **(T-3)**

16.6.2. When used, inspect restraint harness for overall operating condition and ensure lifeline doesn't include burs, frays, or knots. Fit the restraint harness and adjust the lifeline before flight as follows:

16.6.2.1. Troop Door Drops. Prior to opening paratroop door, connect the hook to tiedown ring 32C-E (26C-E) and adjust the lifeline to allow mobility only to the troop door for installation of the paratroop retrieval strap/bar and to accomplish other emergency procedures. **(T-3)**

16.6.2.2. Troop Door SATB Drops. Connect the lifeline as described in **paragraph 16.6.2.1** or to a floor/ECHS rail tiedown ring at LS 977 (FS 677) and adjust to allow mobility only to the troop door being used. If mobility is required forward of the troop doors during troop door SATB drops the lifeline may be attached to a floor/ECHS rail tiedown ring at LS 837 (FS 637) and adjust to allow mobility only to the troop door being used. **(T-3)**

16.6.2.3. Ramp and Door Operations. Connect the hook to a floor/ECHS tiedown ring no further aft than LS 1017 (FS 737). Adjust the lifeline to allow mobility to LS 1115 (FS 835), and to a point that will preclude the wearer from exiting the aircraft. Restraint harness lifelines may be attached to an unused anchor cable provided the anchor cable stop is positioned and taped no further aft than LS 1017 (FS 737). Ensure tiedown ring used during airdrop is no further aft than the tiedown ring used when preflighting the restraint harness. **(T-3)** ***WARNING:*** Except for an actual contingency, towed trooper, or 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 the loadmaster to fall outside the aircraft. **(T-3)**

16.6.3. Loadmasters will wear a life preserver unit (LPU) for operations over bodies of water when doors are open and a parachute is worn instead of a restraint harness. **(T-3)**

16.6.4. Airdrop safety personnel provide their own parachutes.

16.7. Airdrop Weather Minimums and Wind Restrictions. Refer to DAFMAN 13-217 and AFMAN 11-231 for airdrop weather minimums and wind restrictions. SATB drops may be accomplished at less than 300 and 1/2 with Drop Zone Control Officer (DZCO) approval. The following surface wind limits apply to LCLA/SATB airdrop: Actual LCLA airdrop is 17 knots, SATB airdrop is 25 knots.

16.8. Airdrop Time Advisories. The “twenty minute”, “ten minute”, “six minute”, “one minute”, “30 seconds”, and “five second” advisories are required for all personnel airdrops. Only the “one minute” and “five second” advisories are required for all other airdrops.

16.9. Navigation Accuracy.

16.9.1. Crews must verify navigation accuracy of 300 yd Circular Error Probability (CEP) within 10 minutes of slowdown for all airdrops. This calculation combines the maximum

allowable CARP XTRK of 164 yds and the aircraft navigation uncertainty. **Note:** Anytime a position bias (update) has been added to a navigation solution, displayed FOM values do not reflect the result of the bias.

16.9.2. For BLK 6.0 aircraft, set the POS ALERT(s) at 0.03 NM (~ 55 yards; FOM 2) and 0.05 NM (~ 110 yards; FOM 4) to provide monitoring for navigation uncertainty. If both INAV solution FOM's are less than or equal to 4 and no POS ALERTS (INAV Pos Miscompare ACAWS/INAV Pos Difference ACAWS) are indicated, navigation accuracy is verified. If these conditions are not met, a radar or visual verification or update is necessary to verify/improve navigation accuracy prior to performing airdrops. **(T-3)**

16.9.3. BLK 8 aircraft have a variety of navigation solutions for airdrop and it is important that crews consider which navigation solution best fits the environment for the airdrop. For BLK 8.1.1 aircraft, crews will set CGPS POS LIM to 0.05/0.07 to provide continuous monitoring for degraded navigation solution and set the EGI POS LIM to 0.05/0.07 to provide initial indications of navigation solution uncertainty. EPU is the primary confirmation of navigation accuracy, if EPU is greater than 0.07 (~140 yds) the crew must change to MISSION/EGI and execute a solution verification or update. During training crews will not conduct a drop if any POS MISCOMP CGPS ACAWS are indicated. The EGI POS LIM will only compare the current solution against the unbiased EGIs and will not provide solution monitoring after initial indication. In a GPS degraded environment the crew will need to utilize solution updates and will not have automatic alerting of solution drift nor will the EPU be displayed if EGI is selected without additional sources available.

16.10. CARP XTK/VERT. Airdrops are not allowed if a CARP XTK or CARP VERT is displayed. **(T-3) Exception:** Continuing an airdrop with CARP XTK or CARP VERT displayed or performing a manual drop is permitted for Low-Cost Low-Altitude Pilot-directed airdrop or other airdrop methods described in section 7.3, Additional Airdrop Methods, of AFTTP 3-3.C-310J.

16.10.1. During low drift situations (3 degrees or less); if the wingman maintains the correct CAPS wing position and the lead aircraft is on the correct run-in, a CARP XTK advisory may result. Refer to AFTTP 3-3.C-130J for techniques to avoid this situation.

16.10.2. During contingency operations, the DIRMOBFOR or equivalent may approve manual drops (pushing green light switch based on visual reference to point of impact (PI) only) for increased flexibility of PI placement.

16.11. Airdrop Data Entry in Mission Computer.

16.11.1. Airdrop ballistics. All airdrop data entry in the CARP INIT pages will primarily use the mission computer generated airdrop ballistics data without overwriting any data. **(T-3)** Crews are only required to overwrite ballistics data in the following scenarios:

16.11.1.1. The parachute being used for airdrop is not available for selection in the mission computer.

16.11.1.1.1. Aircrews will select T-10C (static-line/non-drivable) or MT1-X (freefall/drivable) for personnel airdrops and G-14 for all others and overwrite the mission computer ballistics data with data from an authorized source (e.g., AMC Ballistics Data Tables, Approved For Use List, etc).

16.11.1.1.2. When conducting test operations (e.g., Yuma) with unknown ballistics data, aircrews will use conservative data for the load being airdropped (e.g., MC-4 for freefall personnel tests).

16.11.1.2. Weight and/or load station is beyond that of the mission computer's data.

16.11.1.2.1. If the CARP INIT 2/5 load station is beyond the mission's computer's limit (e.g., CDS LS forward of 710), then the exit time is the only data that is required to be overwritten.

16.11.1.2.2. Heavy equipment exit times remain IAW TO 1-C130J-1.

16.11.1.2.3. Scenarios not addressed or ballistics data from unauthorized sources requires MAJCOM/A3 approval.

16.11.1.3. Crews will only use the modified HAHO K Factor for all HALO and HAHO airdrops as calculated (Kmod = K *(20.8 / FD)). Only use the HAHO K factor for the formula. The resulting Kmod Factor, correctly termed Glide Constant for CARP INIT 6/6, produces the most correct drive distance for HALO and HAHO airdrops. **Note:** Due to the modification formula, the resulting specific parachute Glide Constant is the same value regardless of jumper weight. Round to the nearest whole number value where applicable.

16.11.2. Usable DZ Length Adjustments. The following length adjustments will be accomplished by reducing LE-TE on the CARP INIT 1/5 page. These adjustments are to limit Mission Computer green light time.

16.11.2.1. Personnel airdrops. During training missions aircrew will subtract 200 yards from the trailing edge to account for the safety zone. **(T-2)**

16.11.2.2. Sequential heavy equipment. Aircrew will subtract 400 yards from the trailing edge for each additional platform during sequential heavy equipment extractions. **(T-2)**

16.11.2.3. Mass CDS. Aircrew will subtract 50 yards for each additional row of containers. **(T-2) Note:** When targeting the center bundle, subtract 50 yards for each additional row exiting after the targeted bundle.

16.12. High Altitude Airdrop Requirements.

16.12.1. See AFMAN 11-409, *High Altitude Airdrop Mission Support Capability Program*, AFMAN 11-202V3, and applicable supplements for high altitude airdrop operations oxygen requirements (pre- breathe requirements and exposure limits, restrictions, Physiological Technician (PT) requirements, etc.). **Note:** Aircrew will use supplemental oxygen any time the cabin pressure altitude exceeds 10,000 feet MSL. When mission essential, aircrew may operate without supplemental oxygen above 10,000 feet MSL IAW AFMAN 11-202V3.

16.12.2. The jumpmaster may dictate the use of supplemental oxygen by any or all jumpers at altitudes less than those listed. Parachutists transfer from aircraft oxygen system or portable oxygen console to personal oxygen system at approximately one minute before green light.

16.12.3. Pressurization Scheduling. Maintain cabin pressure at or below 10,000 feet until the Cabin Altitude Check and the Drop Preparation checklist (time for check may have to be adjusted) are complete. Depressurization will not exceed 3,000 feet per minute. Slower rates are recommended if time allows. Ensure zero pressure differential before opening doors.

16.13. High Altitude Airdrop Conduct of Operations.

16.13.1. For communications and signals, interphone and hand signals are the primary methods of communications. Written messages may be necessary in some instances to communicate with individuals not connected to the aircraft interphone. Loadmasters will carry a suitable writing utensil and medium to write out messages that cannot be dealt with by using hand signals. When dropping parachutists, the jumpmaster may monitor interphone. The loadmaster will coordinate all hand signals with the jumpmaster.

16.13.2. Crewmembers will wear parachutes or restraint harnesses in the cargo compartment any time the doors are open during high altitude airdrop operations. Safety harnesses are worn on airdrops conducted above 25,000 feet MSL. **Exception:** PTs may wear a parachute on drops above 14,000 feet MSL but will not position themselves near an open exit. LPUs must be worn with parachutes for operations over bodies of water with the doors open.

16.13.3. If an oxygen console is used, the loadmaster will be stationed aft of it to perform in-flight duties. The other loadmaster and physiology technician will be on interphone and normally forward of the oxygen console, if used, to perform in-flight duties. This arrangement will provide a buddy system to check everyone on oxygen.

16.13.4. Loadmasters should utilize the High Pressure Oxygen System (HPOS) on all airdrops above 10,000 feet MSL where extended mobility in an unpressurized aircraft is required beyond any standard oxygen hose provided. When properly preflighted, the HPOS may be used during any aircraft emergency requiring the use of supplemental oxygen. The HPOS will not be used as a source of oxygen for pre-breathing requirements, but may be transitioned to once pre-breathing requirements have been satisfied.

16.13.5. Maintain interphone contact between the cockpit and the cargo compartment. Both loadmasters will be on interphone from completion of DROP PREPARATION Checklist until execution of the COMPLETION OF DROP Checklist and the cabin altitude is below 14,000 feet. The jumpmaster may also monitor interphone during high altitude personnel airdrops.

16.14. High Altitude Personnel Airdrop Procedures. ***CAUTION*****:** Ensure any paratroopers remaining on-board de-arm their parachutes before cabin altitude descends below set parachute activation altitudes.

16.14.1. When parachutists exit from the ramp, all parachutists, with exception of the jumpmaster, will stand forward of the ramp hinge until the five-second advisory. One or both paratroop doors may be used in lieu of the cargo ramp. The ramp and door or paratroop door may remain open during racetracks if required, provided racetrack altitude is at or above a safe drop altitude and paratroopers are rigged for high altitude airdrops.

16.14.2. For jumpmaster-directed HALO drops, the green light may be turned on one minute prior to the release point. The PM will provide a standard “green light” call at the jointly agreed upon release point. User assumes responsibility for drop accuracy.

16.14.3. Detailed coordination with the jumpmaster will be conducted to determine the release point and appropriate red light time based on winds, jumper experience, and parachute capabilities. Normally, the jumpers will exit the aircraft at their own discretion; however, no jumpers should exit after the red light is turned on.

16.15. Emergency Parachutist Bailout.

16.15.1. Under satisfactory conditions with the T-11 parachute (static-line exit), the minimum acceptable emergency bailout altitude is 550 feet above the terrain. Other parachute systems may require higher altitudes. When using a parachute other than the T-11, the minimum bailout altitude will be briefed by the jumpmaster prior to the airdrop sortie, but will not, in any case, be lower than 550 AGL. When an aircraft emergency occurs during static-line airdrops, the PIC maintains an acceptable attitude and altitude for the parachutists to evacuate the aircraft. If the jump must be made at an airspeed in excess of 150 KIAS, advise the parachutists of the airspeed and altitude. Order evacuation by turning on the green light and giving the briefed alarm bell signals. **(T-3)**

16.15.2. Minimum emergency bail-out altitude for free-fall parachutists is 2,000 feet AGL.

(T-3)

16.15.3. If conditions are unsuitable for aircraft evacuation, turn the red light on until exit doors are closed. The PIC advises the jumpmaster through the loadmaster to have the parachutists unhook, take their seats, and fasten seat belts.

16.16. Airdrop Procedures. Note: Drop altitude limitations are listed in the current Approved Cargo Parachute and Personnel Ballistic Data spreadsheets.

16.16.1. Personnel Airdrops.

16.16.1.1. Loadmasters will ensure jumpmasters receive all time advisories, wind updates, and no-drop decisions when passed. **(T-3)**

16.16.1.2. The PIC and primary Loadmaster will conduct a Jumpmaster briefing with all Jumpmasters. **(T-3)** ***WARNING*:** Loadmasters will not position themselves directly under the center anchor cable supports (A-Frame, LS 937 (FS 737)) in case of anchor cable or support mounting failure. **(T-3)** ***WARNING*:** Loadmasters will not lower the paratroop doors on extended jump platforms in-flight. **(T-3)**

16.16.1.3. Personnel approved to accomplish ramp and door (tailgate) personnel airdrops are listed in AFTTP 3-3.C-130J, Chapter 7 and in AFMAN 11-420, *Static Line Parachuting Techniques and Tactics*.

16.16.1.4. Troop Door Personnel Airdrop. When utilizing Towed Parachute Retrieval System (TPRS) to retrieve static lines or a towed parachutist, use of the Retrieval Assist Strap (RAS) is mandatory.

16.16.1.5. When the Loadmaster Crashworthy Seat (LMCWS) is installed, loadmasters will tape exposed bolt head, nuts and exposed threads on the upper LMCWS attachment bracket arm with clothbacked tape. Secure the hand hold straps with either 80-lb cotton webbing or cloth backed tape to the seat back cylinder support.

16.16.2. Combination Airdrops. Combination airdrops are those during which parachutists exit from the aircraft ramp after equipment extraction or gravity release (CDS, CRRC, Container Ramp Bundle, etc.).

16.16.2.1. Restricted to single-ship or the last aircraft of an equipment or CDS formation, or the first aircraft of a personnel formation. **(T-3)** When tailgating parachutists, the drop altitude is determined by the item requiring the highest drop altitude per AFMAN 11-231.

If an additional pass is required 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 TO 1C-130J-9. **(T-3)**

16.16.2.2. Aircraft will compute a CDS or platform CARP and a personnel CARP.

16.16.2.2.1. Base drop airspeed on the CAS for the equipment and drop altitude on the highest required for the equipment or personnel. **(T-3)**

16.16.2.2.2. For BLK 6.0 aircraft, annotate the personnel release point (for ten seconds after the equipment release point) and associated PI on the DZ mosaic. **(T-3)** If the PI falls within 150 yards of the DZ boundary, the jumpmaster is the final approval authority.

16.16.2.2.3. Build the CNI-MU CARP for the CDS or platform using the higher of the equipment or personnel minimum altitude for MIN DROP AA. Use the CNI-MU-generated RED LIGHT time to identify the parachutists' end of usable DZ. **(T-3)**

16.16.2.2.4. For BLK 8 aircraft, the combo drop function will shift the PI of the targeted load if the non-targeted load is forecast to land less than 150 yards from the DZ boundary. This shift can occur at any time prior to GREEN LIGHT so crews must use caution when using this option during the execution phase since it may not be possible to alert the jumpmaster to the shifted PI prior to the release point. For BLK 8 using the combo drop function, the jumpmaster will be briefed and required to approve the use of a shifted PI during all combo drops. **(T-3)** If the jumpmaster does not approve the use of a shifted PI, any CNI-MU Advisories indicating a shifted PI will result in a NO DROP. **(T-3)**

16.16.3. Door Bundle Airdrops. Containers weighing up to 500lbs (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 Personnel Airdrop Checklist. Door bundles may be dropped independently or with personnel and are limited to one bundle per exit used or 3 (C-130J-30) / 2 (C-130J) bundles per exit when utilizing Caster Assisted A-Series Delivery System (CAADS). When dropped with personnel, the bundle is the first object to exit the aircraft. **Exception:** If the jumpmaster needs the paratroop door for spotting, place the door bundle as close as possible to the paratroop door. If jumpers are to follow the door bundle, the user is responsible for ejecting the bundle out the troop door or off the ramp. For door bundles exiting over the ramp, secure the forward end of the bundle to a suitable floor tiedown ring with one-half inch tubular nylon. This tie is to prevent premature release of the bundle and will be cut by the LM at the release point. **(T-3)**

16.16.3.1. During unilateral single-ship airdrop training, door bundles do not exit the aircraft after a paratrooper has jumped. Note: During joint training, combat, or contingency operations, the user determines door bundle requirements and order of exit from any or all personnel airdrop aircraft in the formation.

16.16.3.2. 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 will impact on the DZ. Release the bundle at the personnel CARP, followed by the parachutists when the door is clear. When a door bundle is the only object dropped, base the CARP on the bundle.

16.16.3.3. The CAADS is a system designed to ensure safe, expeditious deployment of door bundles to reduce the weight on the parachutist and improve door bundle exit time to allow for multiple bundles to be deployed out of a given door on a single pass. The CAADS will consist of a custom dolly, with A-7A straps rigged with cargo Low Velocity parachutes currently approved for A-7A door bundles.

16.16.3.3.1. The CAADS will be rigged IAW approved Ft Gregg-Adams (formerly Ft Lee) Interim Rigging Procedures. Bundles not rigged IAW these procedures will be rejected. **Note:** Depending on the size and number, the CAADS bundles reduce the number of parachutists that can be carried. The CAADS will not be airdropped from the aircraft ramp.

16.16.3.3.2. Aircrews must adhere to standard Personnel/Door Bundle guidance/procedures. T-10C ballistics will be utilized for CAADS bundles rigged with T-10C parachutes weighing up to 425lbs. Aircrew will utilize G-14 ballistic data for CAADS bundles rigged with T-10C parachutes weighing between 425-500lbs. Use a 2.6 exit time for the first bundle to calculate the CARP.

16.16.3.3.3. When planning for bundles followed by jumpers, reference **Table 16.2** and use item (2), (3), or (4) as they represent the total green light time required for a given number of bundles and one jumper to exit the aircraft. When airdropping bundles without paratroopers, use 7.3 seconds between bundles. For example: when dropping 3 bundles, the time between each bundle (7.3 seconds x 2) is added to the exit time for the first bundle (2.6 seconds) which equals 17.2 seconds of required green light time.

Table 16.2. Bundles Followed by Jumpers Exit Times.

(1)	Exit time for first (targeted bundle)	2.6 seconds
(2)	1 bundle + 1st jumper	15.5 seconds
(3)	2 bundles + 1st jumper	25.2 seconds
(4)	3 bundles + 1st jumper	34.0 seconds
(5)	Required time between bundles	7.3 seconds

16.16.4. Heavy Equipment Airdrops. Crews will be thoroughly familiar with both towplate and non-towplate procedures. Only equipment rigged in accordance with 13-C series TOs or JSOC 350 series may be airdropped. **(T-2)** The maximum airdrop load to be extracted over the ramp is 42,000lbs. The aerial delivery unit supporting the load movement ensures current publications are available for loadmaster reference during joint airdrop inspections.

16.16.5. CDS Airdrops.

16.16.5.1. Loadmasters are permitted to pull down sharply with a gloved hand or on a nylon strap looped over the static-line retriever winch cable to assist the cut of the release gate. Loadmasters may pull on the cable after hearing and seeing "GREEN LIGHT".

16.16.5.2. Manual CDS gate cuts are authorized for all CDS/ICDS/JPADS single-stick airdrops (CVR or non-CVR) and ramp bundles. A manual gate cut is defined as using a knife to cut/release the CDS/intermediate gates. During manual gate operations, loadmasters will cut from the opposite side of the static line. **(T-3)** Loadmasters will ensure they hear and see “GREEN LIGHT” before manually cutting the CDS/intermediate release gate. **(T-3)** Loadmasters are allowed to go aft of the buffer stop/alternate forward barrier

to manually cut the release gate. Exercise caution to remain clear of any bundles in the event of an emergency. Manual gate cuts may be performed with CDS loaded into both sides of the CVR, as long as the bundles are released one stick at a time, and the loadmaster has adequate space to remain clear on the opposite side of the exiting CDS. ***WARNING:*** Double stick CDS released simultaneously will be accomplished via WGRS or cut via the static-line retriever. **(T-3)** ***WARNING:*** Loadmaster will not cut release gates while in the paratroop doors next to the exiting CDS. **(T-3)**

16.16.5.3. If circumstances require the crew to land with CDS loads onboard (including touch-and-go landings and assaults), loadmasters will re-inspect the bundles to determine suitability for airdrop. **(T-3)** If the honeycomb is significantly damaged, the 80-lb tie on the guillotine knife is broken, or the knife has made contact with the gate, a joint airdrop inspector (JAI) will re-inspect the airdrop load. **(T-3)** When inspecting the honeycomb, loadmasters should ensure that any damage will not impede a safe exit from the aircraft.

16.16.5.4. All CDS airdrops at or above 3,000 feet AGL are normally conducted with high-velocity (HV) parachutes. When necessary for operational missions, airdrops at or above 3,000 feet AGL may be accomplished with low-velocity (LV) parachutes with prior coordination through C2 channels with concurrence of the user and aircraft commander. The user must understand accuracy utilizing low-velocity parachutes above 3,000 feet AGL will be diminished and accept responsibility for final bundle condition and potential diminished accuracy of airdrop loads.

16.16.5.5. All loads dropped at or above 10,000 feet MSL will be rigged with break-away static lines. JPADS loads will be rigged with release-away static lines. **(T-2)**

16.16.5.6. LCADS-HV airdrops.

16.16.5.6.1. Use minimum DZ size for a 26-foot ring-slot parachute. **(T-2)**

16.16.5.6.2. LCADS-HV parachutes are factory-rigged in a break-away static line configuration regardless of drop altitude**.** Failure to use break-away static lines will result in damage to the aircraft. The static line break tie will be gutted Type III nylon (550) cord for all LCADS-HV parachutes. JAI must be vigilant to ensure proper static line configuration, including anti-oscillation ties. **(T-3)**

16.16.5.7. LCADS-LV airdrops.

16.16.5.7.1. LCADS-LV is authorized for use with the JPADS mission planner using LCADS-LV data incorporated into the mission planner. When dropping LCADS-LV without using the JPADS mission planner, use ballistics from the most current ATTLA memorandum for "Computed Air Release Point (CARP) data for LCADS Low Velocity (LOW-V) Parachute." **(T-2)**

16.16.5.7.2. LCADS-LV airdrops will use break-away static lines regardless of altitude. The static line break tie will be full strength Type III nylon (550) cord for all LCADS-LV parachutes. Use of gutted Type III cord will result in chute deployment failure. JAI must be vigilant to ensure proper static line configuration, including anti-oscillation ties. **(T-2)**

16.16.5.7.3. The minimum DZ size for LCLA during training is the same as CDS minimum DZ size computed IAW DAFMAN 13-217.

16.16.6. ICDS and JPADS Airdrops. ICDS and JPADS operations are conducted using the GPS Retransmission Subsystem (GPS-RTS), UHF Dropsonde Receiver Subsystem (UHF-DRS), and the JPADS Mission Planner (JPADS-MP) software. ICDS are CDS loads rigged with non-steerable chutes; JPADS operations are conducted using steerable chutes with autonomous guidance units (AGUs). Aircrew will use the appropriate JPADS checklists located on the AMC/A3V Publications webpage and in TO 1C-130J-1. **(T-3)**

16.16.6.1. JPADS certified POs are authorized to use the JPADS mission planner and software to calculate release points for JPADS/ICDS airdrop operations. The PO will determine a revised CARP using dropsonde data (if required), and will advise the crew of the updated release point. After the JPADS-MP produces the updated CARP it is entered into the Mission Computer. The PM and PO will verify the CARP and all airdrop parameters are entered correctly into the navigation system. For verification, the PO will read the JPADS-MP computed release point coordinates directly from the JPADS-MP while the PM verifies the same information is in the aircraft navigation system. **(T-3)**

16.16.6.2. The PO or mission planner is required to provide JPADS-MP derived CARP(s) for each airdrop pass and a completed Airdrop Damage Estimate (ADE) prior to an airdrop mission. **(T-3)** Both pilots will review preflight CARP(s)/ADE for each respective airdrop. **(T-3)** Use the approved checklist for dropsonde and ICDS/JPADS airdrops. During the dropsonde release, use of zero flaps at speeds between 170 – 180 KIAS is required to preclude dropsonde tail strikes. Loadmasters should release the dropsondes from the corners of the cargo ramp.

16.16.6.3. Airdrop Damage Estimate (ADE). Units must perform a full airdrop damage assessment prior to JPADS/ ICDS airdrops. **(T-3)** The ADE must be coordinated and approved by the area controlling agency. **(T-2)** Coordinate with the owning agency of the restricted airspace or controlled airspace and landowners with property surrounding the DZ for all JPADS/ICDS operations. Examine the area in the vicinity of the DZ for potential damage or hazards in the course of normal operations or during extraordinary system failure events. If the ADE demonstrates potential damage or hazards restrict airdrop release LAR, lower the drop altitude, change the run-in, change parachute type or cancel operations. **(T-3)** Inform the controlling unit of the risk to their operations; the controlling unit, and the Joint Force Controller (JFC) designated agency are approving authorities for risk to the area surrounding the DZ. Intelligence personnel are responsible for providing the JFC-designated agency close-up and overview imagery to facilitate ADE. For actual JPADS training drops, AMC units are required to contact their Wing Tactics two weeks prior in order to ensure all planning, coordination and reviews/assessments have been accomplished. **(T-3)** Operations conducted at Yuma Proving Ground under JPADS related test plan do not need Air Mobility Command/Combat Operations Division-Tactics (AMC/A3TW) review. See AFTTP 3-3.C-130J and DAFMAN 13-217 for further information. The ADE must include, at a minimum, a review of the airspace and ground space with respect to:

16.16.6.3.1. CARP and LAR location. Actual JPADS training airdrops must be conducted entirely within a restricted area. **(T-3)**

16.16.6.3.2. ICDS success ellipses. **(T-3)**

16.16.6.3.3. Chute failure footprints. **(T-3)**

16.16.6.3.4. Guidance failure footprints. **(T-3)**

16.16.6.4. IMC/VMC day/night airdrops are authorized for contingency operations. CONUS training operations are required to comply with FAR 105, *Parachute Ops* restrictions. **(T-0)** Drops conducted through or originating from IMC are only authorized from within or above an active restricted area. JPADS parachutes will not be dropped through severe turbulence or severe icing. **(T-2)**

16.16.6.5. When dropping JPADS, dropsondes are not required. When dropping near the edge of the Launch Acceptability Range (LAR) or in strong/variable wind conditions, dropping a dropsonde is recommended to improve the drop solution and reduce risk.

16.16.6.6. For BLK 6.0 ICDS and JPADS operations, a GPS FOM 3 or less is required. **(T-3)** For BLK 8.1.1 ICDS and JPADS operations, an EPU of 0.04 is required. **(T-3)**

16.16.6.7. Wind Limits. Wind limitations are unrestricted for dropsonde operations, and 17 knots for JPADS Ultra Light Weight (ULW)/2K-M/10K. **(T-2)**

16.16.6.8. Altitude and Weight Limits.

16.16.6.8.1. JPADS 2K/2K-M operations conducted from 5,000 feet AGL to 24,500 feet MSL have a weight range of 850 to 2,280 lbs rigged weight. Training payloads may be dropped as low as 3,500 feet AGL. When dropping 3,500 to 5,000 feet AGL, payload weights will be within 1,380 to 1,780 lbs rigged weight.

16.16.6.8.2. JPADS 10K operations conducted from 5,000 feet AGL to 24,500 feet MSL have a weight range of 5,000 to 10,000 lbs rigged weight. Training payloads may be dropped as low as 3,500 feet AGL.

16.16.6.9. DZ Size. DZ size criteria for JPADS and ICDS drops during contingency operations is at the discretion of the user. DAFMAN 13-217 DZ size restrictions apply during training.

16.16.6.10. JPADS Guided Footprint Locations. During normal training operations a JPADS DZ, CARP, chute failure footprint and guidance failure footprint will be located within a restricted airspace. If winds force the CARP outside of restricted airspace, additional coordination with ATC is required prior to airdrop operations. This includes coordination with the ATC agency, filing a Notice to Airmen (NOTAM), and ensuring airspace is clear for the entire guided system’s flight profile from the drop altitude to the ground. **(T-2)**

16.16.6.11. During normal training operations the ICDS success footprint and chute failure footprint will be located within the surveyed DZ boundaries. File a NOTAM IAW DAFMAN 13-217 paragraph 3.3.5. Coordinate with the ATC agency and ensure airspace is clear from the drop altitude to the ground. (T-2)

16.16.6.12. JPADS Military GPS (MILGPS) Procedures. Follow MILGPS keying procedures contained in TO 13C7-49-51, *Maintenance for 10K JPADS*. The JPADS contains a Selective Availability Anti-Spoofing Module (SAASM) Global Positioning System (GPS) within the guidance unit (referred to as "JPADS MILGPS"). The JPADS MILGPS is located within the Avionics Module for the ULW/2K-M. The JPADS 10K MILGPS is located in a separate enclosure compartment. The JPADS MILGPS is approved to receive crypto-variable GPS keys and is an UNCLASSIFIED but controlled item and

must be handled to preclude unauthorized access, tampering, theft, or loss. Due to the general application and associated security protocols, black GPS keys will be used. **(T-2) Note:** Keying and unkeying requires the MILGPS to be installed in a powered ON AGU. The AGU LCD screen should update within 20 seconds and should read MILGPS Keyed or Unkeyed. Once complete, power OFF the AGU. The PO will remove and return the enclosure to the unit's tactics office. **(T-3)**

16.16.6.12.1. When programing JPADS guidance units, the following items are the most critical and must be verified after the final data transfer, or at any point prior to the airdrop:

16.16.6.12.1.1. The intended impact point coordinates in latitude/longitude or MGRS ("LAT/LON" or "MGRS"). **(T-3)**

16.16.6.12.1.2. The elevation of the intended impact point ("IP Elev"). Ensure use of the correct PI from the current Drop Zone survey is crucial to system navigation. **(T-3)**

16.16.6.12.1.3. The JPADS parachute type used ("Canopy"). **(T-3)**

16.16.6.12.1.4. Total rigged weight of the airdrop load ("Weight"). **(T-3) Note:** The transfer of the mission file from the JPADS Mission Planner is not necessary if all programmed information within the guidance unit has been reviewed and validated as correct.

16.16.6.13. Jettison of JPADS guidance units with Military GPS (MILGPS). Instances of jettison of the JPADS MILGPS must be reported to the GPS Controlling Authority. Each such report will include the JPADS SAASM GPS serial number and must state whether the system was keyed or unkeyed. If unable to obtain the serial the number, the number was previously recorded on the DD Form 1748-5, *Joint Airdrop Inspection Record (JPADs - Gravity)* during the JAI Inspection. Reporting will be completed using the form contained in TO 13C7-49-61 and submitted to US Army Soldier Systems Center, Assistant Product Manager, Cargo Aerial Delivery Systems Team, Product Manager Force Sustainment Systems (PM FSS) SFAE- CSS-FP-F, 10 General Greene Avenue, Natick, MA 01760-5057. **(T-2) Note:** Time permitting, the LM with concurrence from the PIC or PO will remove the Avionics Module/enclosure from the JPADS prior to load jettison. **(T-3)**

JAMES C. SLIFE, Lt Gen, USAF
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Attachment 1

GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION

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TO 1C-130J-5-1, *Sample Basic Weight Checklist,* 1 July 2020

TO 1C-130(C)J-5-1, *Sample Basic Weight Checklist,* 1 July 2020

TO 1C-130J-5-2, *Loading Data Manual,* 1 July 2020

TO 1C-130(C)J-5-2, *Loading Data Manual,* 1 July 2020

AIM, *Aeronautical Information Manual*

The DoD Dictionary of Military and Associated Terms

Adopted Forms

AMC Form 43, *AMC Transient Aircrew Comments*

AMC Form 54, *Aircraft Commander's Report on Services/Facilities*

AMC Form 4031, *CRM/TEM Skills Criteria Training/Evaluation*

AMC Form 4128, *Fleet Service Checklist*

AMC IMT 97, *AMC In-Flight Emergency and Unusual Occurrence Worksheet*

AF Form 8, *Certificate of Aircrew Qualification*

DAF Form 673, *Air Force Publication/Form Action Request*

DAF Form 1631, *NATO Travel Orders*

AF Form 4327a, *Crew Flight (FA) Authorization* (or MAJCOM prescribed according to DAFI 11- 401, *Flight Management)*

AF IMT 457, *Hazard Report*

AF IMT 651, *Hazardous Air Traffic Report (HATR)*

AFTO Form 781, *ARMS Aircrew/Mission Flight Data Document*

AFTO Form 781H, *Aerospace Vehicle Flight Status and Maintenance Document*

AF IMT 1297, *Temporary Issue Receipt*

AF IMT 711B, *USAF Mishap Report*

AF IMT 4075, *Aircraft Load Data Worksheet*

AFTO Form 781A, *Maintenance Discrepancy and Work Document*

CBP Form 6059B, *US Customs and Border Protection Declaration Form*

CBP Form 7507, *General Declaration (Outward/Inward)*

DAF Form 847, *Recommendation for Change of Publication*

DD Form 1351-2, *Travel Voucher or Sub Voucher*

DD Form 1351-2C, *Travel Voucher or Sub Voucher (Continuation Sheet)*

DD Form 1748-2, *Airdrop Malfunction Report (Personnel-Cargo)*

DD Form 2131, *Passenger Manifest*

DD Form 364-5, *Weight and Balance Clearance Form F - Transport/Tactical*

DD Form 1801, *International Flight Plan*

DD Form 1748, *Joint Air Drop Inspection Records*

DD Form 1748-5, *Joint Airdrop Inspection Record (JPADS - Gravity)*

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

SF 44, *Purchase Order-Invoice-Voucher*

Japanese Customs Service Forms

AF Form 70, *Pilot's Flight Plan and Flight Log*

Abbreviations and Acronyms

A-PATH—Along Path

AAIM—Aircraft Autonomous Integrity Monitoring

ABFDS—Aerial Bulk Fuel Delivery System

AC—Aircraft Commander

ACARS—Aircraft Communications Addressing and Reporting System

ACF—Acceptance Check Flight

ACM—Additional Crew Member

ACAWS—Advisory, Caution and Warning System

ACBRN—Aircrew Chemical, Biological, Radiological, Nuclear

ADC—Air Data Computer

ADE—Airdrop Damage Estimate

ADS—Aerial Delivery System

ADS-B—Automatic Dependent Surveillance-Broadcast

ADS-C—Automatic Dependent Surveillance-Contract

AE—Aeromedical Evacuation

ADF—Automatic Direction Finding

AFCS—Automatic Flight Control System

AFE—Aircrew Flight Equipment

AFI—Air Force Instruction

AFLCMC—Air Force Life Cycle Management Center

AFMAN—Air Force Manual

AFMC—Air Force Material Command

AFPAM—Air Force Pamphlet

AFPD—Air Force Policy Directive

AFTTP—Air Force Tactics, Techniques, and Procedures

AGL—Above Ground Level

AGU—Autonomous Guidance Unit

AMAX—Adjusted Maximum Effort

AMC—Air Mobility Command

AMCI—Air Mobility Command Instruction

AMU—Avionics Management Unit

AMP—Airfield Marking Pattern

ANP—Actual Navigation Performance

AOA—Angle of Attack

AOC—Air Operations Center

AOR—Area of Responsibility

AP—Auto Pilot

APOD—Aerial Port of Debarkation

APU—Auxiliary Power Unit

APV—Approach with Vertical Guidance

ARM—Aeromedical Readiness Mission

ARTCC—Air Route Traffic Control Center

ASRR—Airfield Suitability and Restrictions Report

A/T—Autothrottle

ATA—Actual Time of Arrival

ATC—Air Traffic Control

ATCS—Automatic Thrust Control System

ATOC—Air Terminal Operations Center

ATTLA—Air Transportability Test Loading Agency

ATIS—Automatic Terminal Information Service

BARO—Barometric

BRNAV—Basic Area Navigation Airspace

C2—Command and Control

CAADS—Caster Assisted A-Series Delivery System

CAT I—Category I Approach/Nav Route

CAT II—Category II Approach/Nav Route

CARP—Computed Air Release Point

CAPS—Coordinated Airplane Positioning System

CDI—Course Deviation Indicator

CDS—Container Delivery System

CDT—Crew Duty Time

CFL—Critical Field Length

CFP—Computer Flight Plan

CGPS—Civil GPS

CHOP—Change of Operational Control

CNBP—Communication/Navigation/Breaker Panel

CNI—Communication/Navigation/Identification

CNI-MS—Communication/Navigation/Identification-Management System

CNI-MU—Communication/Navigation/Identification-Management Unit

CNI-SP—Communication/Navigation/Identification-System Processor

COMAFFOR—Commander of Air Force Forces

COMSEC—Communications Security

CONEMP—Concept of Employment

CONOPS—Concept of Operations

CONUS—Continental United States

CPDLC—Controller Pilot Data Link Communication

CRM—Crew Resource Management

CRM/TEM—Crew Resource Management/Threat and Error Management

CS—Concurrent Servicing

CSAT—Civil SATCOM

CSS—Chief Servicing Supervisor

CVR—Centerline Vertical Restraint

CVR—Cockpit Voice Recorder

DA—Decision Altitude

DAFI—Department of the Air Force Instruction

DAFMAN—Department of the Air Force Manual

DCU—Digital Crew Unit

DDA—Derived Decision Altitude

DFDR—Digital Flight Data Recorder

DIRMOBFOR—Director of Mobility Forces

DH—Decision Height

DME—Distance Measuring Equipment

DRS—Dropsonde Receiver System

DTED——Digital Terrain Elevation Data

DZ—Drop Zone

DZCO—Drop Zone Control Officer

ECB—Electronic Circuit Breaker

ECBU—Electronic Circuit Breaker Unit

ECHS—Enhanced Cargo Handling System

ED—Engineering Dispositions

EFB—Electronic Flight Bag

EGI—Embedded Global Positioning System/Inertial Navigation System

EMI—Electromagnetic Interference

EMMU—External Mass Memory Unit

EPOS—Emergency Passenger Oxygen System

EPU—Estimated Position Uncertainty

ERAA—Emergency Route Abort Altitude

ERO—Engine Running On/Offload

ESA—Emergency Safe Altitude

ETA—Estimated Time of Arrival

ETE—Estimated Time Enroute

ETP—Equal Time Point

FAA—Federal Aviation Authority

FADEC—Full Authority Digital Electronic Control

FAF—Final Approach Fix

FCF—Functional Check Flight

FCG—Foreign Clearance Guide

FCIF—Flight Crew Information File

FD—Flight Director

FDP—Flight Duty Period

FIH—Flight Information Handbook

FLIP—Flight Information Publication

FMS—Flight Management System

FOB—Forward Operating Base

FODS—Fire Overheat Detection System

FOD—Foreign Object Damage

FOM—Figure of Merit

FPA—Flight Path Angle

FPM—Flight Permanence Module

FS—Flight Station

FSAF—First Suitable Airfield

FSS—Flight Service Station

FTU—Formal Training Unit

GDSS—Global Decision Support System

GCAS—Ground Collision Avoidance System

GOLD—Global Operations Datalink

GPS—Global Positioning System

GP—FLIP General Planning

GWT—Gross Weight

HALO—High Altitude Low Opening

HAT—height above touchdown

HATR—Hazardous Air Traffic Report

HDD—Head Down Display

HDG—Heading

HF—High Frequency

HMIA—Hatch Mounted International Marine/Maritime Satellite Antenna

HPOS—High Pressure Oxygen System

HUD—Head Up Display

HV—High Velocity

IAP—Instrument Approach Procedure

IAS—Indicated Airspeed

IAW—In Accordance With

ICAO—International Civil Aviation Organization

ICS—Intercom Communication System

ICDS—Improved Container Delivery System

IFF—Identification Friend or Foe

IFR—Instrument Flight Rules

IL—Instructor Loadmaster

ILS—Instrument Landing System

IMC—Instrument Meteorological Conditions

INMARSAT—International Marine Maritime Satellite

IP—Initial Point/Identification Point/Instructor Pilot

IPRA—Independent Precision Radar Approach

ISA—International Standard Atmosphere

JOG—Joint Operations Graphic

JPADS—Joint Precision Aerial Delivery System

KIAS—Knots Indicated Airspeed

KTAS—Knots True Airspeed

KuSS—Ku band Spread Spectrum

LAR—Launch Acceptability Range

LCADS—Low Cost Aerial Delivery System

LCLA—Low Cost Low Altitude

LM—Loadmaster

LMCWS—Loadmaster Crashworthy Seat

LNAV—Lateral Navigation

LOW-V—Low Velocity

LP—Localizer Performance

LPU—Life Preserver Unit

LPV—Localizer Performance with Vertical Guidance

LRC—long range cruise

LS—Load Station

LSAF—Last Suitable Airfield

LSK—Line Select Key

LV—Low Velocity

LZ—Landing Zone

MAF—Mobility Air Forces

MAFPS—Mobility Air Force Planning system

MAJCOM—Major Command

MAX—Maximum Thrust

MC—Mission Computer

MCD—Medical Crew Director

MDA—Minimum Descent Altitude

MDS—Mission Design Series (e.g., C−130)

ME—Mission Essential

MEA—Minimum Enroute Altitude

MEL—Minimum Equipment List

MEP—Mission Essential Personnel

MFP—Master Flight Plan

MFCD—Multifunction Control Display

MGT—Measured Gas Temperature

MHE—Material Handling Equipment

MIDS-LVT—Multifunctional Information Distribution System Low Volume Terminal

MILGPS—Military GPS

ML—Mission Loadmaster

MNPS—Minimum Navigation Performance Specification

MOCA—Minimum Obstruction Clearance Altitude

MPC—Mission Planning Cell

MR—Mission Ready

MSL—Mean Seal Level

MTR—Military Training Route

NAF—Numbered Air Force

NAS—National Airspace System

NAT HLA—North Atlantic High Level Airspace

NG—Gas Generator Speed

NIU—Nacelle Interface Unit

NM—Nautical Mile

NMR—Non-Mission Ready

NOTAM—Notice To Airmen

NP—Power Turbine Speed/Propeller Rotation Rate

NVD—Night Vision Device

OAT—Outside Air Temperature

OAP—Offset Aimpoint

OCONUS—Outside Continental United States

OEI—One Engine Inoperative

OG/CC—Operations Group Commander

OI—Open Item/Operating Instruction

OPORD—Operation Order

OPLAN—Operation Plan

OPR—Office of Primary Responsibility

OROCA—Off Route Obstacle Clearance Altitude

ORTCA—Off Route Terrain Clearance Altitude

ORM—Operational Risk Management

PAA—Primary Assigned Aircraft

PADS—Precision Airdrop System

PAR—precision approach radar

PBN—Performance Based Navigation

PCM—Passenger Compartment Monitor

PCMCIA—Personal Computer Memory Card International Association

PF—Pilot Flying

PFD—Primary Flight Display

PFPS—Portable Flight Planning Software

PI—Point of Impact

PIC—Pilot In Command

PIREP—Pilot Report

PLCU—Pallet Lock Control Unit

PMD—Portable Mission Display

PO—Precision Aerial Delivery System Operator

POC—Point of Contact

PM—Pilot Monitoring

PSP—Pierced Steele Planking

RA—Radar Altimeter/Resolution Advisory

RAIM—Receiver Autonomous Integrity Monitoring

RAS—Retrieval Assist Strap

RCR—Runway Condition Reading

RNAV—Area Navigation

RRFL—Required Ramp Fuel Load

RNP—Required Navigation Performance

RSC—Runway Surface Condition

RTS—Retransmission Subsystem

RVR—Runway Visual Range

RVSM—Reduced Vertical Separation Minimum

SA—Situational Awareness

SAASM—Selective Availability Anti-Spoofing Module

SATB—Standard Airdrop Training Bundle

SATCOM—Satellite Communications

SBAS—Satellite-Based Augmentation System

SBU—Swift Broadband Unit

SCA—Self Contained Approach

SDP—Special Departure Procedure

SFO—Specialized Fueling Operation

SKE—Station Keeping Equipment

SLICC—Senior Leader In-transit Conference Capsule

SLOP—Strategic Lateral Offset Procedure

SM—Statute Mile

SMDP—Special Mission Display Processor

SPINS—Special Instructions

SRTM—Shuttle Radar Topography Mission

TA—Traffic Advisory

TACC—Tanker/Airlift Control Center

TACAN—Tactical Air Navigation System

TALPA—Takeoff and Landing Performance Assessment

TAR—Technical Advisory Request

TAWS—Terrain Awareness Warning System

TCAS—Traffic Collision Avoidance System

TERPS—Terminal Instrument Procedures

TNP—Tactical Navigation Performance

TOLD—Takeoff and Landing Data

TOT—Time Over Target

TPRS—Towed Parachutist Retrieval System

UHF—Ultra High Frequency

U.S.—United States

USAF—United States Air Force

VFR—Visual Flight Rules

VHF—Very High Frequency

VMC—Visual Meteorological Conditions

VMCA—Velocity-Minimum Control (Air)

VNAV—Vertical Navigation

VOR—VHF Omnidirectional and Radio Range

VO—Vertical Obstruction Data

WAAS—Wide Area Augmentation System

WG/CC—Wing Commander

WGRS—Wireless Gate Release

WX—Weather

X-PATH—Cross-Path

Office Symbols

AF/A3T*—Headquarters USAF Training and Readiness Directorate*

AMC/A3AS*—Air Mobility Command Airfield Suitability Office*

AMC/A3T*—Air Mobility Command Aircrew Tactics and Training Division*

AMC/A3TW*—Air Mobility Command Combat Operations Division-Tactics*

AMC/A3V*—Air Mobility Command Aircrew Standards and Evaluations*

AMC/A3VX*—Air Mobility Command Aircrew Standards and Evaluations Airlift Branch*

MAJCOM/A3*—Major Command Directorate of Operations*

Terms

Aeromedical Evacuation (AE)—Movement of patients under medical supervision between medical treatment facilities (MTFs) by air transportation.

Air Mobility Control Center (AMCC)—Provides global coordination of tanker and airlift for AMC and operationally reports to the 618 AOC (TACC). Functions as the AMC agency that manages and directs ground support activities and controls aircraft and aircrews operating AMC strategic missions through overseas locations.

Air Mobility Element (AME)—The air mobility element is an extension of the Air Mobility Command Tanker Airlift Control Center deployed to a theater when requested by the geographic combatant commander. It coordinates strategic airlift operations with the theater airlift management system and collocates with the air operations center whenever possible. Also called AME.

Air Route Traffic Control Center (ARTCC)—The principal facility exercising enroute control of aircraft operating under instrument flight rules within its area of jurisdiction. Approximately 26 such centers cover the United States and its possessions. Each has a communication capability to adjacent centers.

Air Traffic Control (ATC)—A service provided by an appropriate authority to promote the safe, orderly and expeditious use of the air transportation system and to maximize airspace utility.

Airfield Suitability and Restrictions Report (ASRR)—The ASRR and GDSS Airfield Database (AFD) products provide guidance and policy for AMC organic aircraft operations at airfields worldwide by means of individual suitability assessments (Giant Reports). Per AFMAN 11-202V3, other MAJCOMS and services establish specific policy concerning applicability of the ASRR (and associated information) for their aircraft. The ASRR and AFD products are available to anyone with a GDSS account or on request from the AMC Airfield Suitability office (AMC/A3AS) at: **Airfield.Helpdesk@us.af.mil** or via **https://intelshare.intelink.gov/sites/GDSS/_layouts/15/start.aspx#/default.aspx**

Augmented Crew—Basic aircrew supplemented by additional qualified aircrew members to permit in-flight rest periods.

Bird Aircraft Strike Hazard (BASH)—An Air Force program designed to reduce the risk of bird strikes.

Block Time—Time determined by the scheduling agency responsible for mission accomplishment for the aircraft to arrive at (block in) or depart from (block out) the parking spot.

BLUE BARK—US military personnel, US citizen civilian employees of the Department of Defense, and the dependents of both categories who travel in connection with the death of an immediate family member. It also applies to designated escorts for dependents of deceased military members. Furthermore, the term is used to designate the personal property shipment of a deceased member.

Border Clearance—Those clearances and inspections required to comply with federal, state, and local agricultural, customs, immigration, and immunizations requirements.

Charge Medical Technician—AE team member responsible for ensuring completion of enlisted aeromedical crew duties.

Chart Update Manual (CHUM)—Manual issued each March and September (with monthly supplements) to update maps/charts with new information. It may reflect temporary or permanent information pending the next chart/map release.

COIN ASSIST—Nickname used to designate dependent spouses accompanying dependent children and dependent parents of military personnel reported missing or captured who may travel space available on military aircraft for humanitarian purposes on approval of the Chief of Staff, United States Army; Chief of Staff, United States Air Force; Chief of Naval Operations; or the Commandant of the Marine Corps.

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. Command and control functions are performed through an arrangement of personnel, equipment, communications, facilities, and procedures employed by a commander in planning, directing, coordinating, and controlling forces and operations in the accomplishment of the mission.

Command and Control Center—Each C2 Agency provides supervision, guidance, and control within its assigned area of responsibility. For the purpose of this AFMAN, C2 Agencies include operations centers, command posts, air mobility elements, tanker airlift control elements (TALCE), air mobility control centers, and tanker task forces.

Contingency Mission—Mission operated in direct support of an OPORD, OPLAN, disaster, or emergency.

Critical Phase Of Flight—Takeoff, formation, low level (below MSA), airdrop (from DROP PREPARATION Checklist through COMPLETION OF DROP Checklist), approach, and landing.

Deviation—A deviation occurs when takeoff time is not within −20/+14 minutes of scheduled takeoff time. Scheduled takeoff time may be adjusted to make good a TOT/TOA. Notify controlling agency before takeoff to adjust the scheduled takeoff time.

Direct Instructor Supervision—Supervision by an instructor of like specialty with immediate access to controls (for pilots, the instructor must occupy either the pilot or copilot seat).

Digital Terrain Elevation Data (DTED)—A matrix of terrain elevation values that provides landform, slope, elevation, and/or terrain roughness information.

Director, Mobility Forces (DIRMOBFOR)—When established, the director of mobility forces serves as the designated agent for all air mobility issues in the area of responsibility or joint operations area, and for other duties as directed. The director of mobility forces exercises coordinating authority between the air operations center (or appropriate theater command and control node), the tanker airlift control center, the air mobility operations control center (when established and when supporting subordinate command objectives), and the joint movement center, in order to expedite the resolution of air mobility issues.

Distinguished Visitor (DV)—Passengers, including those of friendly nations, of star or flag rank or equivalent status, to include diplomats, cabinet members, members of Congress, and other individuals designated by the DoD due to their mission or position (includes BLUE BARK and COIN ASSIST).

Diverse Departure—The airfield has been assessed for departure by TERPS personnel and no penetration of the obstacle surfaces exist. An aircraft may depart the field, climb to 400 feet above the departure end of the runway elevation, turn in any direction, and if a minimum climb gradient

of 200 FT/NM is maintained be assured of obstacle clearance. This is normally indicated on DoD/NOAA publications by the absence of any published departure procedures.

Due Regard—Operational situations that do not lend themselves to International Civil Aviation Organization (ICAO) flight procedures, such as military contingencies, classified missions, politically sensitive missions, or training activities. Flight under "Due Regard" obligates the military aircraft commander to be his or her own air traffic control (ATC) agency and to separate his or her aircraft from all other air traffic. (See FLIP General Planning, section 7.)

DZ Entry Point—A fixed point in the IFR Drop Corridor where an aircraft or formation may safely begin descent from IFR enroute altitude or a segmented altitude to IMC drop altitude. The DZ entry point is a maximum of 40 NM before the DZ exit point according to Federal Aviation Administration FAR exemption 4371C. Formation descent will not begin until the last aircraft in formation is at or past the DZ entry point.

DZ Exit Point—A fixed point on the DZ escape flight path centerline, established during pre-mission planning, at which the formation will be at the minimum IFR enroute altitude. Calculate the exit point based upon three-engine performance at airdrop gross weight. This point will be planned no less than 4 NMs track distance beyond the DZ trailing edge.

Egress—The route portion from the last objective to the planned recovery base.

Equal Time Point (ETP)—Point along a route at which an aircraft may either proceed to First Suitable Airfield (FSAF) or return to Last Suitable Airfield (LSAF) in the same amount of time based on all engines operating. FSAF/LSAF are airports closest to the coast-out and coast-in route of flight that meet applicable destination alternate requirements.

Execution—Command-level approval for initiation of a mission or portion thereof after due consideration of all pertinent factors. Execution authority is restricted to designated command authority.

Familiar Field—An airport in the local flying area at which unit assigned aircraft routinely perform transition training. Each operations group commander will designate familiar fields within their local flying area.

First Suitable Airfield (FSAF)—The first suitable airfield available after completing the Category I route segment.

Formation—Two or more aircraft operating together as a single unit, where trailing aircraft follow and support a lead aircraft’s navigation and communication, and are operating toward a common objective.

Global Decision Support System (GDSS)—AMC's primary execution command and control system. GDSS is used to manage the execution of AMC airlift and tanker missions.

Ground Time—Interval between engine shut down (or arrival in the blocks if engine shutdown is not scheduled) and next takeoff time.

Hazardous Cargo or Materials—Articles or substances that are capable of posing significant risk to health, safety, or property when transported by air and classified as explosive (class 1), compressed gas (class 2), flammable liquid (class 3), flammable solid (class 4), oxidizer and organic peroxide (class 5), poison and infectious substances (class 6), radioactive material (class

7), corrosive material (class 8), or miscellaneous dangerous goods (class 9). Classes may be subdivided into divisions to further identify hazard, e.g.,, 1.1, 2.3, 6.1, etc.

Home Station Departure—Departure from the permanently assigned base of an aircraft/crew.

Ingress—The route portion from takeoff to the last objective.

Instructor Supervision—Supervision by an instructor of like specialty. For critical phases of flight, the instructor must occupy one of the seats or stations, with immediate access to the controls.

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. AMC publishes JA/ATT taskings in AMC OPORD 17−76, annex C, appendix 1.

Jumpmaster—The assigned airborne-qualified individual who controls parachutists from the time they enter the aircraft until they exit. See also stick commander (air transport).

Last Suitable Airfield (LSAF)—The last suitable airfield available before beginning the Category I route segment.

Latest Descent Point—Latest planned point on the DZ run-in course where the formation plans to initiate descent to drop altitude. This is planned to ensure all aircraft in the formation are stabilized (on altitude and airspeed) before the drop.

Loading Time—Specific time established jointly by the commanders concerned when aircraft loading will begin. For paratroopers, 20 minutes before Air Force stations time.

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

Maintenance Status—A1—No maintenance required; A2 – Minor maintenance required, but not serious enough to cause delay; A3 – Major maintenance; A4 – Aircraft or system has suspected or known biological, chemical, or radiological contamination; A5 – Aircraft or system has suspected or known battle damage.

Medical Crew Director (MCD)—Flight Nurse responsible for supervising patient care and AEMCs assigned to AE missions. On missions where a Flight Nurse is not onboard, the senior AET will function as MCD.

Military Training Route (MTR)—MTRs are developed for use by the military for low-altitude, high-speed training. FLIP contains descriptions of these routes. Nonparticipating aircraft are not prohibited from flying within the boundaries of a MTR; however, they are encouraged to exercise extreme vigilance and to contact FSS for route status when flying in the vicinity of a MTR.

Mission Contributing (MC)—Any degraded component, system, or subsystem, which is desired, but not essential to mission accomplishment.

Mission Essential (ME)—A degraded component, system, or subsystem, which is essential for safe aircraft operation or mission completion.

Mobility Air Force (MAF)—Forces assigned to mobility aircraft or MAJCOMs with operational or tactical control of mobility aircraft.

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.

Off Station Training Flight—A training flight that originates or terminates at other than home station that is specifically generated to provide the aircrew experience in operating away from home station. Off station trainers will not be generated solely to transport passengers or cargo.

Operational Control (OPCON)—Transferable command authority that may be exercised by commanders at any echelon at or below the level of combatant command. Operational control is inherent in combatant command (command authority). Operational control may be delegated and is the authority to perform those functions of command over subordinate forces involving organizing and employing commands and forces, assigning tasks, designating objectives, and giving authoritative direction necessary to accomplish the mission. Operational control includes authoritative direction over all aspects of military operations and joint training necessary to accomplish missions assigned to the command. Operational control should be exercised through the commanders of subordinate organizations. Normally this authority is exercised through subordinate joint force commanders and Service and/or functional component commanders. Operational control normally provides full authority to organize commands and forces and to employ those forces as the commander in operational control considers necessary to accomplish assigned missions. Operational control does not, in and of itself, include authoritative direction for logistics or matters of administration, discipline, internal organization, or unit training.

Operational/Operationally Necessary Missions—All missions that are not designated as training specific missions are considered "operational" or "operationally necessary". All 618 AOC and CVAM-tasked missions are considered operational/operationally necessary. A training mission will be considered operational/operationally necessary if external users (e.g., JA/ATT) are scheduled as part of the mission.

Originating Station—Base from which an aircraft starts on an assigned mission. May or may not be the home station of the aircraft.

Operational Risk Management—ORM is a logic-based, common sense approach to making calculated decisions on human, materiel, and environmental factors before, during, and after Air Force operations. It enables commanders, functional managers and supervisors to maximize operational capabilities while minimizing risks by applying a simple, systematic process appropriate for all personnel and Air Force functions.

Overwater Flight—Any flight that exceeds power off gliding distance from land.

Patient Movement Categories—Urgent – Patients who must be moved immediately to save life, limb, or eyesight, or to prevent complication of a serious illness; Priority – Patients requiring prompt medical care that must be moved within 24 hours; Routine – Patients who should be picked up within 72 hours and moved on routine/scheduled flights.

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. This permit lists the requirements to be met at the next point of landing, e.g., number of crew and passengers, cargo not yet cleared. Aircraft commanders 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 aircraft commander for not complying with permit to proceed procedures.).

Positioning and Depositioning Missions—Positioning missions are performed to relocate aircraft for the purpose of conducting a mission. De-positioning missions are made to return aircraft from bases at which missions have terminated.

Scheduled Takeoff Time—Takeoff time is established in the schedule or OPORD. For air aborts and diversions, this will be engine shut down time (or arrival in the blocks if engine shutdown is not scheduled) plus authorized ground time. Early deviation does not apply to aborts or diversions unless the mission is formally rescheduled by current operations.

Special Assignment Airlift Mission (SAAM)—Funded airlift that cannot be supported by channel missions because of the unusual nature, sensitivity, or urgency of the cargo or that requires operations to points other than the established channel structure.

Special Tactics Team (STT)—Team of Air Force personnel organized, trained, and equipped to establish and operate navigational or terminal guidance aids, communications, and aircraft control facilities in support of combat aerial delivery operations.

Stabilized Approach—Criteria that define specific parameters in order to mitigate the risk during this critical phase of flight.

Stabilization Point—Point on the DZ run-in course at which the lead aircraft should plan to be stabilized at drop altitude and airspeed. This point will be planned to be at least 6 NMs before the point of impact.

Stations Time—The time at which aircrews will have completed their pre-flight duties and be at their crew positions. Passengers will be seated and cargo will be secured.

Tactical Event—Airdrop, visual low level (day/NVD), formation (visual/SKE), assault landings/takeoffs, tactical approaches/departures, landings/takeoffs on an AMP-3/4 configured landing zones, and unimproved runway operations.

618 Airlift Operations Center (Tanker Airlift Control Center) (618 AOC (TACC))—The Air Mobility Command direct reporting unit responsible for tasking and controlling operational missions for all activities involving forces supporting US Transportation Command's global air mobility mission. The Tanker Airlift Control Center is comprised of the following functions: current operations, command and control, logistics operations, aerial port operations, aeromedical evacuation, flight planning, diplomatic clearances, weather, and intelligence. Also called TACC.

Terminal Instrument Procedures (TERPS)—MAJCOM TERPS office ensures each published instrument procedure is operationally acceptable for the command or unit mission to include evaluation and endorsement of each nonstandard procedure.

Terrain Charts—This includes both digital and paper charts.

Time Out—Common assertive statement used to voice crew member concern when safety may be jeopardized.

Training Mission—Mission executed at the unit level for the sole purpose of aircrew training for upgrade or proficiency. See definition of “Operational/Operationally Necessary Missions”.

Unilateral—Operations confined to a single service.

Unit Move—A mission airlifting military passengers or troops who originate from the same unit and onload point, are under the control of a designated troop commander and offload at the same destination.

Attachment 2

BLOCK 8.1 SPECIFIC PROCEDURES

A2.1. Self-Contained Approaches (SCA) (Independent Precision Radar Approach (IPRA) and LZ approaches).

A2.1.1. For BLK 8.1 aircraft, the PIC will use Actual Navigation Performance (ANP)/Tactical Navigation Performance (TNP) of 0.07 or less on both Navigation Solutions as an alternative to FOM.

A2.1.2. In CIVIL/MISSION mode for BLK 8.1, set Pos Alert 1 and 2 to 0.05 and 0.07 respectively. For BLK 8.1 aircraft, this will compare the current navigation solution to the unbiased EGI1 solution.

A2.2. Required navigation accuracy for a BLK 8.1 aircraft SCA. ANP/TNP should be the primary reference for navigation accuracy and should be verified within 10 minutes of the FAF. Reference section **6.15.6.1.3** for proper setup of the CNI-MU for both CIVIL and MISSION modes. In either mode an ANP/TNP of less than 0.07 indicates adequate navigation accuracy to conduct a SCA.

A2.3. Airdrop navigation Accuracy for BLK 8.1 aircraft. set the POS ALERT(s) to 0.05/0.07 to provide initial indications of navigation solution uncertainty. ANP/TNP is the primary confirmation of navigation accuracy, if ANP/TNP is greater than 0.07 (~140 yds) the crew must change to MISSION/EGI2 and execute a solution verification or update. The POS ALERT(s) will only compare the current solution against an unbiased EGI1 and will not provide solution monitoring after initial indication.

A2.4. For BLK 8.1 ICDS and JPADS operations, an ANP/TNP of 0.04 is required.