

21 DECEMBER 2005

Flying Operations

C-17 OPERATIONS PROCEDURES



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OPR: HQ AMC/A37V (Maj Marvin Fisher)

Certified by: HQ AF/XOO
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Supersedes AFI11-2C-17, Vol 3,
1 December 1999

Pages: 228
Distribution: F

This instruction implements Air Force Policy Directive (AFPD) 11-2, *Aircraft Rules and Procedures* and references AFI 11-202, Volume 3, *General Flight Rules*, as well as Air Force Tactics Techniques and Procedures (AFTTP) 3-3.35A. It establishes policy for the operation of the C-17 aircraft to safely and successfully accomplish worldwide mobility missions. This instruction applies to all commanders, operations supervisors, and aircrew assigned or attached to all flying activities of commands operating C-17 aircraft. This publication is applicable to Air Force Reserve Command (AFRC) and Air National Guard (ANG) units. Ensure that all records created as a result of processes prescribed in this publication are maintained in accordance with AFMAN 37-123, (will convert to 33-363) *Management of Records* and disposed of in accordance with the *Air Force Records Disposition Schedule (RDS)* located at <https://afirms.amc.af.mil>. This publication requires the collection and or maintenance of information protected by the Privacy Act (PA) of 1974. The authorities to collect and or maintain the records prescribed in this publication are Title 10 *United States Code*, Chapter 857 and Executive Order 9397, *Numbering System for Federal Accounts Relating to Individual Persons*, 30 Nov 1943. Forms affected by the PA have an appropriate PA statement. System of records notice F011 AF XO, *Aviation Resource Management System (ARMS)* (December 26, 2002, 67 FR 78777) applies. To recommend changes, conflicts, suggestions, or recommendations use the AF IMT 847 and route it through the publishing channels to the OPR for the publication. The use of the name or mark of any specific manufacturer, commercial product, commodity, or service in this publication does not imply endorsement by the Air Force.

SUMMARY OF REVISIONS

This document is substantially revised and must be completely reviewed. Major changes include deleting unused chapters. Some paragraphs and chapters were renumbered as a result. Night Vision Goggle (NVG) guidance has been updated and guidance is now contained in appropriate chapters and paragraphs versa a stand alone NVG chapter. **Chapter 4, *Aircraft Operating Restrictions***, has been updated to reflect current guidance.

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Chapter 1

GENERAL INFORMATION

1.1. General.

1.1.1. This Air Force Instruction (AFI) provides policy for operating the C-17 aircraft. It is an original source document for many areas but, for efficacy, restates information found in aircraft flight manuals, flight information publications (FLIP), and other Air Force directives. This manual is used in concert with AFTTP 3-3.35A, *C-17 Combat Aircraft Fundamentals* (U). When guidance in this AFI conflicts with another basic/source document, that document takes precedence. For matters where this AFI is the source document, waiver authority is in accordance with (IAW) paragraph 1.4. For matters where this AFI repeats information in another document, follow waiver authority outlined in the basic/source document.

1.1.2. Unit commanders and agency directors involved with or supporting C-17 operations shall make current copies of this AFI available to appropriate personnel. Transportation and Base Operations passenger manifesting agencies will maintain a current copy of this AFI.

1.2. Applicability. This AFI applies to aircrew members, support personnel, and managers involved with employing C-17 aircraft.

1.3. Key Words Explained.

1.3.1. "Will" and "shall" indicate a mandatory requirement.

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

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

1.3.4. **“NOTE”** indicates operating procedures, techniques, etc., considered essential to emphasize.

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

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

1.4. Deviations and Waivers. Do not deviate from policies in this AFI 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.

1.4.1. Deviations. The PIC shall report deviations or exceptions taken without a waiver through command channels to their Chief, Major Command (MAJCOM) Stan/Eval who in turn shall notify Chief, AMC Stan/Eval (lead command) as appropriate for follow-on action.

1.4.2. Waivers. Unless otherwise directed, waiver authority for contents of this instruction is the MAJCOM/A3/DO with mission execution authority. PICs can obtain waivers to deviate from provisions in this AFI via MAJCOM Stan/Eval.

1.4.2.1. Permanent waivers affect theater unique circumstances and are enduring in nature. List MAJCOM/A3/DO-approved permanent waivers in the MAJCOM supplement (see paragraph 1.5.)

1.4.2.2. Long-term waivers affect multiple aircraft/multiple missions but are not permanent in nature (expire at a specific date/time). MAJCOM Stan/Eval shall send HQ AMC Stan/Eval (lead command) copies of MAJCOM/A3/DO-approved long-term waivers.

1.4.2.3. Short-notice waivers are for specific missions in execution. PICs shall use the Waiver Protocol procedure in **Chapter 4** to secure MAJCOM/A3/DO approval for short-notice waivers.

1.5. Supplemental Procedures. This AFI is a basic directive. Each user MAJCOM or operational theater may supplement this AFI according to AFD 11-2, *Aircraft Rules and Procedures*, and AFI 33-360, Volume 1, *Publications Management Program*. Stipulate unique MAJCOM procedures (shall not be less restrictive than this basic document) and publish MAJCOM A3/DO-approved permanent waivers in the MAJCOM supplement.

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

1.5.2. Coordination Process. Forward MAJCOM approved supplements (attach AF IMT 673, **Request To Issue Publication**) to HQ AMC/A37V, 402 Scott Dr., Unit 3A7, Scott AFB IL, 62225-5302. Chief, AMC Stan/Eval shall facilitate the HQ AMC/A3 and HQ AFFSA/XOF approval process.

1.6. Local Supplement Coordination Process. Operations Group commanders (OG/CCs) shall define local supplements to this Instruction. OG/CCs shall obtain Numbered Air Force (NAF) and MAJCOM/A3/DO approval prior to releasing their supplement. Send an electronic copy of the approved version to HQ AMC/A37V, NAF/DO (if applicable) MAJCOM/A3/DO.

1.7. Requisition and Distribution Procedures. Unit commanders shall use AFI 36-161, *Distribution Management* procedures to provide Aircrew members and associated support personnel current copies and changes of this AFI.

1.8. Improvement Recommendations and Review. Send comments and suggested improvements to this instruction on an AF IMT 847, **Recommendation for Change of Publication**, through channels to HQ AMC/A37V, 402 Scott Drive Unit 3A7, Scott AFB IL, 62225-5302 IAW procedures in AFI 11-215, *Flight Manual Program (FMP)* and MAJCOM Supplement. HQ AMC/A37V will normally lead a MAJCOM level review of this instruction within six months of the publication of a respective AFTTP 3-3.

1.9. Definitions. Find explanations or definitions of terms and abbreviations commonly used in the aviation community in Code of Federal Regulations (CFR) Title 14, Part 1; *DoD FLIP General Planning*, Chapter 2; and Joint Pub 1-02, *The DoD Dictionary of Military and Associated Terms*. See **Attachment 1** for common terms used herein.

1.10. Aircrew Operational Reports. The reporting requirements in this instruction are exempt from licensing IAW paragraph 2.11.10 of AFI 33-324, *The Information Collections and Reports Management Program; Controlling Internal, Public, and Interagency Air Force Information Collections.*

Chapter 2

COMMAND AND CONTROL

2.1. General. The Mobility Air Forces (MAF) command and control (C2) network consists of the following C2 centers: 18th Air Force Tanker Airlift Control Center (18 AF TACC) Global Cell, Pacific Air Forces (PACAF) or United States Air Forces Europe (USAFE) Air Mobility Operation Control Centers (AMOCCs), Air National Guard (ANG) Readiness Center, Air Force Reserve Command (AFRC) Command Center, theater Air Operations and Space Centers (AOCs), Air Mobility Division (AMD), Joint Operational Support Airlift Center (JOSAC), Unit Command Posts, Air Mobility Control Centers (AMCCs), Contingency Response Groups (CRG), and Special Tactics Teams (STTs). C2 centers are action agents for the MAF commander with execution authority (operational control) over mobility missions/forces.

2.2. Execution Authority. Headquarters commanders with command authority over MAF resources hold execution authority for directed missions. Commanders with execution authority formulate plans, allocate assets, and approve missions through a local command post or C2 element. OG/CCs serve as execution authority for local training missions. The PIC will execute missions operating outside normal communication channels (use last known mission orders or best course of action).

2.2.1. Off-Station Trainer (OST). Refer to AMCI 11-208, *Tanker/Airlift Operations*, for procedures and requirements governing OSTs

2.2.1.1. AFRC Current Operations (AFRC/DOOM) is approval authority for AFRC Unit Equipped (UE) OSTs.

2.3. Pilot in Command (PIC) Responsibility and Authority. SQ/CCs shall designate an aircraft commander (AC), instructor pilot (IP), or evaluator pilot (EP) as the PIC for all flights on a flight authorization form, IAW AFI 11-401, *Aviation Management*, and applicable supplements. An unqualified or non-mission ready pilot may not be designated as PIC. PICs are:

2.3.1. In command of all persons aboard the aircraft.

2.3.2. Vested with authority to accomplish the assigned mission. The PIC shall only fly events authorized in the mission tasking unless in the PIC's judgment an emergency condition demands otherwise. Only fly unscheduled training events (for example, air refueling (A/R) or transition training) after obtaining approval of the execution authority.

2.3.3. The final mission authority and will make decisions not assigned to higher authority.

2.3.4. The final authority for requesting or accepting aircrew or mission waivers.

2.3.5. Responsible for relaying mission status (at least daily) to C2 agents.

2.3.6. Responsible for interaction between aircrew members and mission support personnel and will establish a point-of-contact (POC) with the appropriate C2 agent prior to entering crew rest. Local C2 agents are responsible for coordinating mission support requirements on the PIC's behalf.

2.3.7. Responsible for the welfare of aircrew members, Mission Essential Ground Personnel (MEGP), passengers, and the safe accomplishment of the mission.

2.4. Mission Clearance Decision. The execution authority and PIC shall make the mission clearance decision. In all cases, final responsibility for the safe conduct of the mission rests with the PIC. If a PIC elects to delay a mission, that mission will not depart until the conditions that generated the decision to delay improve or are resolved. Further, no execution authority may task another PIC to take the same mission under the same conditions.

2.4.1. Only re-route or divert a mission when authorized by the execution authority, to resolve an emergency, or if required by en route or terminal weather conditions.

2.4.2. The agent that directed the re-route or divert shall ensure the aircraft is capable of executing departure, en route, and destination arrival procedures.

2.4.3. The PIC will notify the appropriate C2 agent of any aircraft or aircrew limitation that may preclude re-route or divert.

2.4.4. When a C2 agent directs a PIC to fly to an alternate airfield, the agent will ensure existing and forecast weather for the alternate, Notices to Airmen (NOTAMs), and airfield information from the Global Decision Support System (GDSS)/GDSS2/Airfield Suitability and Restrictions Report (ASRR) is suitable. If the alternate becomes unsuitable while en route, the PIC will coordinate with the C2 agent for other suitable alternates. The PIC is final authority for accepting a suitable alternate. A C2 agent will alert customs and all appropriate ground service agencies to prepare for arrival.

2.5. Operational C2 Reporting.

2.5.1. Stations With MAF C2 Agency. Local MAF C2 agents will enter mission data (arrival, departure, and advisory messages) in the MAF C2 system.

2.5.2. Stations without MAF C2. Transmit mission data to the controlling C2 agency by any means available (i.e., DSN, HF, AERO-I, Airline Operational Control (AOC)). HF Radio is the primary method of communication for routine mission information. For critical C2 communications, i.e. aircraft waiver request, maintenance delay, etc., voice communications are the primary method.

2.5.3. En route Reporting.

2.5.3.1. Make the following en route calls to TACC:

2.5.3.1.1. Airborne call when departing from a location without an AMC presence.

2.5.3.1.2. Maintenance call whenever aircraft alpha status changes to code 3.

2.5.3.1.3. On aeromedical evacuation missions, no later than 1 hour prior to landing, to update arrival time.

2.5.3.2. CONUS. Periodic "ops normal" calls/transmissions are not required; however, the controlling C2 agency may increase reporting requirements.

2.5.3.3. OCONUS. MAJCOM C2 agencies will specify increased reporting procedures through a communications plan in the OPLAN, OPORD, FRAG, Mission Directive, or FLIP. Aircrews will maintain listening watch in accordance with the communications plan within aircraft equipment capabilities (e.g. HF-Automatic Link Establishment (HF-ALE), AOC).

2.5.4. Aircraft Status/Maintenance Discrepancy Reporting. PICs shall report aircraft system malfunctions that traditionally require extensive trouble shooting as soon as feasible. Contact arrival C2 agency if available, otherwise contact MAJCOM C2 for relay.

2.5.5. Not Used.

2.5.6. "Thirty Minute" Out Call. Transmit a UHF or VHF arrival advisory to the destination C2 agency approximately 30 minutes prior to arrival. Provide Estimated Time in Blocks (ETB).

2.5.7. Integrated Flight Management (IFM) Sorties. On IFM sorties the flight managers (FM) will be the C2 conduit for aircrews. They will provide aircrews with flight planning, flight following, flight support and act as a resource to aircrews as they perform their missions. For critical C2 communications, voice communications (HF, DSN, etc.) are the primary method.

2.5.7.1. Position Reporting on IFM Missions. IFM missions transiting oceanic flight information regions (FIRs) need to add the phrase "Pass to Hilda" to ATC position reports. Crews may also use the ARINC frequencies listed in the aircrew flimsy for C2 phone patch requirements. Use ARINC phone patch only after exhausting normal communication methods. Airline Operational Control (AOC) will be the primary means of routine communications between FMs and aircrew, on AOC equipped aircraft. While using AOC, crews will not have to request ATC pass position reports via "Pass to Hilda" procedures.

2.5.8. High Frequency (HF) Communications. HF is the primary means of voice access to the worldwide C2 network. When SELCAL is primary ATC, use AERO-I and/or AOC to monitor C2, in lieu of ALE. Ensure the other HF radio is not in ALE mode to preclude the automatic link (ALE) feature from overriding ATC messages.

2.5.9. Airline Operational Control (AOC). AOC is not secure means of communication. Crews will exercise sound information assurance techniques, such as confirming major mission changes directed by TACC via AOC. Do not pass classified information via AOC.

2.5.10. The AERO-I satellite voice system is provided as an alternative means of communication between the aircraft and a number of C2 agencies and ATC. The system will be used only for non-secure in-flight communications between aircrews and C2 organizations and between aircrews and oceanic air traffic controllers. Due to the high cost of using the system, aircrews should attempt communications by other means (HF, UHF, ALE, etc.) for C2 communications before using the AERO-I system. AERO-I voice is a backup for the Controller Pilot Data Link Communications (CPDLC), Airline Operational Control (AOC) and C2 communications. Certain C2 and ATC agencies have the capability to call the aircraft using the AERO-I. AERO-I is for official use only.

2.5.10.1. The AERO-I communications software loaded on the aircraft automatically logs onto a specific Ground Earth Station (GES), based on aircraft location, and which GES is under contract to provide service. Manually selecting a different GES will result in a connection through a non-contract carrier, resulting in a much higher cost. Aircrews will only manually select a different GES when all other avenues of communication have failed, and when essential for mission completion.

2.5.11. DV Messages. Airborne unclassified messages originated by DV passengers may be transmitted at the discretion of the PIC.

2.6. Mission Commander (MC).

2.6.1. Unit commanders shall designate an MC when more than two aircraft are assembled to perform missions away from home station. Unit commanders should consider appointing a MC for special, high-visibility missions (i.e. CAPSTONE, DV2, etc.). The MC has overall responsibility and is the

final authority for decisions that impact mission execution. The MC shall properly coordinate mission details. For flight-managed sorties, MC shall coordinate any special mission planning requirements with the IFM mission allocator not later than 24 hours prior to mission execution.

2.6.1.1. For MAJCOM-tasked missions, MAJCOM/A3/DO will coordinate and designate a lead planning agency when more than one unit is involved in an A/R, airdrop, or tactical airland operation. For theater airlift missions with more than one airlift unit involved, the theater AOC shall designate a central planning agency responsible for coordinating the entire mission with all involved agencies. The OG/CC for the lead planning agency will designate an MC. The MC will be a rated (normally field grade) officer qualified in the type mission.

2.6.1.2. The MC will ensure all collocated aircrew members attend required briefings.

2.6.1.3. When non-collocated, the MC (in conjunction with the lead planning agency) will ensure non-collocated aircrew members receive applicable information, to include rendezvous, formation, abort, and recovery procedures. The MC will provide controlling agency and all non-collocated PICs anticipated delays or mission changes.

2.7. Not Used.

2.8. C2 Agency Telephone Numbers. **Table 2.1.** contains a list of 18 AF TACC phone numbers. Crewmembers may also use the 18 AF TACC toll-free number, 1-800-AIR-MOBL, to contact other offices within the 18 AF TACC, including flight managers.

Table 2.1. 18 AF TACC Mission Controller Phone Numbers.

TYPE OF MISSION	18 AF TACC PHONE NUMBER
Contingency and Air Refueling	DSN 779-0320
Channel	DSN 779-0321
JAATT	DSN 779-0322
SAAM and Exercise	DSN 779-0323
All Other	DSN 779-0324

2.9. Close Watch Missions. Close Watch missions (for example, Combat Search and Rescue (CSAR); Aeromedical Evacuation (AE), PHOENIX BANNERS) receive special C2 attention. PICs will promptly notify appropriate C2 agency of delays, aborts, or other events that affect on-time departure. Provide the C2 agent the estimated time in commission (ETIC), planned ETD, and estimated time of arrival (ETA) within 10 minutes of the event or as soon as safety allows.

2.10. Law Enforcement Support. It is the policy of the Department of Defense (DOD) to cooperate with civilian law enforcement officials to the maximum extent practicable. AFI 10-801, *Assistance to Civilian Law Enforcement Agencies*, provides the policies and procedures service members must follow when supporting federal, state, and local civilian law enforcement agencies. Coordinate all civilian law enforcement authorities' requests for assistance through appropriate C2 channels.

2.11. En route Maintenance Support. 18 AF TACC/XOCL will support all mobility aircraft requests for parts and/or maintenance assistance regardless of type of mission or component. Refer to paragraph [2.8](#) for 18 AF TACC telephone numbers.

Chapter 3

AIRCREW COMPLEMENT/MANAGEMENT

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

3.2. Aircrew Complement. SQ/CCs shall 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 (See [Table 3.1.](#) below). SQ/CCs shall base the aircrew complement for specialized missions on guiding principles in chapters covering those missions.

3.2.1. The minimum aircrew member complement for local flights is an aircraft commander, pilot/copilot, and loadmaster. When a mission requires more than one aircrew member at a position, the SQ/CC will determine whether an instructor and student meet mission requirements.

3.2.2. SQ/CCs shall form augmented aircrews for missions planned to take longer than a basic FDP. Augmenting aircrew members must be current, qualified, and Mission Ready (MR) IAW AFI 11-2C-17, Vol 1. SQ/CC shall augment an aircrew for the full Flight Duty Period (FDP). The MAJ-COM/A3/DO may augment aircrews while the mission is underway.

3.2.3. NVG Aircrew Compliment. Normally, an NVG crew will consist of an NVG qualified crewmember in each of the primary crew positions. However, the pilots may use NVGs even if the loadmaster(s) on the crew is not NVG qualified.

Table 3.1. Aircrew Complement.

Crew Position	Crew Complement		
	Basic	Augmented	Tactical (Not Used)
Aircraft Commander	1 (1,8)	1 (3,8)	*
Pilot/Copilot	1	2 (2)	*
Loadmaster	1 (4,5,7)	2 (4,6,7)	*

NOTES:

1. Air refueling and tactical events will be accomplished within the first 14 hours of the flight duty period.
2. One must be first pilot qualified. Pilots who have graduated from the ACIQ course may augment the crew in lieu of a first pilot. Pilots who have graduated from the PIQ course, (when approved by the Sq/CC) may act as the augmenting crewmember.
3. All A/R and tactical events will be accomplished within the first 18 hours of the flight duty period. Two aircraft commanders are required if A/R is accomplished after 14 hours flight

duty period. Intent is to manage rest cycles to have one AC accomplish any A/R prior to the 14-hour point, and the second AC accomplishes the A/R past the 14 hour point. The second aircraft commander fulfills the requirement for an additional pilot/copilot. **NOTE:** A graduate of C-17 ACIQ, ACAL, or PCO, who has not yet been certified as an AC may serve as the augmenting AC, and perform the A/R as long as they are current and qualified.

4. Two loadmasters or one loadmaster and another C-17 qualified crewmember are required if more than 40 passengers are scheduled to be carried. Both crewmembers must remain in the cargo compartment, one forward and one aft for takeoffs and landings.
5. One loadmaster and another qualified crewmember/physiological technician are required in the cargo compartment on any mission segment where cabin altitude exceeds 13,000 feet MSL.
6. For augmented airdrop missions, one loadmaster must be airdrop qualified; the other loadmaster may be airland qualified.
7. Two loadmasters are required for dual-row airdrop missions. Both loadmasters shall be qualified in the specific mission.
8. For formation airdrop, the following lead crew requirements apply.
 - a. Single-element formations. When the element consists of three aircraft, a lead crew is required in the formation (any position). Two ship elements do not require a lead qualified crew.
 - b. Multiple-element formations. A lead qualified crew is required in the lead, deputy lead and element lead positions. If deputy lead or an element lead abort after station time, any crew can assume their position with the concurrence of the mission commander. Any crew can fly the last ship of a formation even if it is an element lead position.

3.3. Aircrew Member Qualification. An aircrew member will be qualified or in qualification training to perform duties as a primary aircrew member.

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

3.3.2. Pilots who complete a Senior Staff Course will log “FP” for Flight Authorization Duty Code on the AFTO IMT 781, ARMS **Aircrew/Mission Flight Data Document**.

3.3.3. Pilots who complete a Senior Staff Familiarization flight will log “OP” for Flight Authorization Duty Code on the AFTO IMT 781, ARMS **Aircrew/Mission Flight Data Document**.

3.4. Pilots. An instructor pilot (IP) must supervise non-current or unqualified pilots regaining currency or qualification (direct IP supervision during critical phases of flight).

3.4.1. SQ/CCs shall designate an AC as Pilot in Command (PIC) and form aircrews with a sufficient number of pilots to accomplish the mission. The PIC shall be qualified to perform duties as a primary aircrew member.

3.4.2. SQ/CCs will designate those additional pilots authorized to perform PIC duties. The PIC shall brief the aircrew on the plan to transfer PIC duties.

3.4.3. Missions With Passengers. Two current and qualified pilots (AF IMT 8, *Certificate of Aircrew Qualification* for position) will occupy pilot seats with passengers on board.

3.4.3.1. A non-current but qualified pilot may fly with passengers on board if under direct IP supervision.

3.5. Not Used.

3.6. Loadmasters. A non-current or unqualified loadmaster may serve as a primary aircrew member on any mission when supervised by a qualified instructor or flight examiner (direct supervision for critical phases of flight).

3.7. Aircrew Management. SQ/CCs and en route C2 agents shall ensure work/rest cycles permit an aircrew adequate time to safely accomplish mission duties and personal time for rest.

3.7.1. Flight Duty Period (FDP). FDP is the period of time starting at mission report time and ending immediately after the aircrew completes the final engine shutdown of the day. SQ/CCs shall form aircrews based on worst-case FDP in the mission directive. Once en route, the mission directive or C2 agent will inform the PIC of expected FDP at show time. Reduce FDP when the autopilot fails after departure IAW information below. PICs shall work with C2 agents to determine the best course of action to minimize mission impact (may require divert for maintenance). In this case, the PIC will contact C2 agencies, coordinate intentions, and comply with the FDP limitations.

3.7.1.1. Basic Crew FDP. The maximum FDP for a basic aircrew is 16+00 hours (12+00 hours when the autopilot is inoperative). Once an aircrew begins a basic FDP, only MAJCOM/A3/DO may extend to augmented day regardless of aircrew composition (MAJCOM/A3/DO shall augment basic crew to extend FDP).

3.7.1.1.1. When extended en route ground times, non-optimum routing/winds, weather delays or other extenuating circumstances will increase a basic to an augmented FDP, a PIC with an augmented crew may accept an augmented FDP as long as:

3.7.1.1.1.1. The C2 agent or PIC discovers the extenuating circumstances before the first takeoff of the day.

3.7.1.1.1.2. The PIC verifies all augmenting aircrew members can get adequate rest en route.

3.7.1.1.2. A PIC with a basic crew may seek MAJCOM/A3/DO (mission execution authority) approval to extend the FDP as much as 2 hours to complete a scheduled mission. Only use this provision to recover from unscheduled/unplanned en route delays. C2 agents shall not ask a PIC to exercise this option.

3.7.1.2. Augmented Crew FDP. Maximum FDP for an augmented aircrew is 24+00 hours (16+00 hours when the autopilot is inoperative). SQ/CC need only augment the pilot portion of the aircrew when the autopilot is inoperative.

3.7.1.2.1. SQ/CC will augment an aircrew when FDP exceeds 16+00 hours and the mission profile will allow augmenting aircrew members adequate time to rest en route. As a minimum, the mission profile must provide the following:

- 3.7.1.2.1.1. No more than 3 intermediate stops are authorized after 14+00 hours of FDP (each A/R shall count as an intermediate stop).
 - 3.7.1.2.1.2. Mission profile shall include at least one 6+00 hour leg or two 4+00 hour legs.
 - 3.7.1.2.1.3. The PIC shall validate planned leg times based on actual conditions, and the PIC may swap an extended ground time (4+00 hours) for a mission leg when conditions afford aircrew members a chance for rest.
- 3.7.1.3. Maximum FDP for nuclear airlift missions IAW AFI 11-299, *Nuclear Airlift Operations* (FOUO).
- 3.7.1.4. Flight examiners administering evaluations will not exceed an augmented FDP.
- 3.7.1.5. Training FDP.
- 3.7.1.5.1. Maximum FDP for training, Joint Airborne/Air Transportability Training (JA/ATT), Functional Check Flight (FCF) and Acceptance Check Flight (ACFs) missions is 16+00 hours (12+00 hours when the autopilot is inoperative). Conduct the mission as follows:
 - 3.7.1.5.2. Complete all mission-related events (i.e., FCF/ACF checks, transition events, A/R or tactical events) during the first 12+00 hours of the FDP.
 - 3.7.1.5.2.1. ANG and AFRC crews may perform mission-related events on local training missions provided their time from start of duty does not exceed 16 hours and actual flight duty does not exceed 12 hours.
 - 3.7.1.5.2.1.1. Crew duty time (CDT) and FDP include both military duty and civilian work. CDT and FDP begin when an individual reports for their first duty period (military or civilian).
 - 3.7.1.5.3. Crews may fly/deposition to home station or a deployed staging base following training (do not exceed 12+00 hours when the autopilot is inoperative).
- 3.7.2. Crew Duty Time (CDT). CDT is that period of time an aircrew may perform combined ground/flight duties. Plan the mission so aircrew members may complete post-mission duties within maximum CDT. An aircrew member may perform mission-related duties for other missions when approved by member's home station SQ/CC or equivalent. Maximum CDT for a basic aircrew is 18+00 hours and 24+45 hours for an augmented aircrew.
- 3.7.3. Except as outlined below, CDT/FDP begins 1+00 hour after aircrew alert notification. SQ/CC or equivalent may task aircrew members to perform other duties before they begin flight-related duties or MAJCOM/A3/DO may authorize a C2 agent to alert an aircrew member early: begin CDT/FDP when the first aircrew member reports for those duties.
- 3.7.3.1. For Self-alerts, the PIC shall coordinate early individual/crew mission report times with C2 agents. Begin CDT/FDP when the first aircrew member reports for duty.
 - 3.7.3.2. CDT/FDP Extensions. See AFI 11-202V3, *General Flight Rules*.
- 3.7.4. Deadhead Time. MAF aircrew members may deadhead for the purpose of positioning or de-positioning to perform a mobility mission or mission support function. Crewmembers may deadhead for a maximum of 24 hours. OG/CC or equivalent may approve crewmembers to deadhead in excess of 24 hours.

3.7.4.1. Current/qualified aircrew members may perform primary aircrew duties after flying in deadhead status provided they do not exceed a basic FDP (FDP starts at report time for deadhead flight).

3.7.4.2. Aircrew members may deadhead after performing primary crew duties, for a maximum of 24 hours from the time the crewmember's FDP began.

3.7.5. Aircrew Member Support of Aircraft Generation Activities (Pre-flight, cargo up-/off-load, start, and taxi aircraft). Crew rest is required IAW AFI 11-202V3, chapter 9. The duty day begins when the aircrew member reports for official duties.

3.8. Scheduling Restrictions. In accordance with chapter 9 of AFI 11-202V3, *General Flight Rules*. In addition, SQ/CCs shall not schedule an aircrew member to fly, nor will an aircrew member perform aircrew duties in violation of the following. (PICs shall not violate any of the following restrictions with an early takeoff.)

3.8.1. When the flight will exceed maximum flying time limitations of AFI 11-202V3.

3.8.2. Within 12 hours of consuming alcoholic beverages (based on scheduled takeoff, or ALFA standby force legal for alert time, or earliest show time from BRAVO alert) or while under the influence of alcohol.

3.8.3. When using nasal sprays to treat symptoms of head congestion existing before flight. An aircrew member may use oxymetazoline or phenylephrine nasal sprays as "get-me-downs" following an unexpected ear or sinus block during flight.

3.9. Counter-Fatigue Management Program.

3.9.1. Aircrew may use medications with prior approval (on a voluntary basis following ground testing) that enhance natural rest during off-cycle crew rest periods. This section provides AMC/A3 guidance for the use of no-go pills (prescription medications) that help aircrew initiate and maintain restful sleep during off-cycle (desynchronization) crew rest periods. Fliers shall not use no-go pills in flight.

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

3.9.3. Responsibility for counter-fatigue management of aircrew medicinal products rests with the home station Flight Surgeon (FS), OG/CC (may delegate to but no lower than squadron commander), and with each individual aircrew member. During extended deployments, aircrew members will only obtain no-go pills from a deployed USAF flight surgeon. The deployed flight surgeon shall consult with the home unit medical team prior to dispensing no-go pills to deployed fliers.

3.9.4. Unit Operational Risk Management (ORM) programs shall include use of no-go medication with OG/CC and FS oversight. A basic counter-fatigue ORM model is available for mission planners, OG/CC, crew, and FS on the AMC/A37V website.

3.9.5. Home station or deployed FS trained using the AMC/SG-approved (lead command) counter fatigue program is the point of contact for no-go prescription. Upon request, the FS will advise/assist the local OG/CC to identify missions that may impair crew rest caused by duty day length, departure and arrival times, and other mission timelines.

3.9.6. Aircrew members on Personnel Reliability Program (PRP) status will follow PRP notification procedures if prescribed no-go Pills.

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

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

3.9.7.2. Crew rest facilities lacking an optimal sleeping environment (quiet, cooled, and darkened).

3.9.7.3. Off-station missions that are 4 or more time zones from home station.

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

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

3.9.8. SQ/CC will not schedule crewmembers to fly or perform crew duties within 12 hours of consuming no-go Pills (consider DNIF). **EXCEPTION:** commanders may reduce the 12-hour timeline after consult with a flight surgeon to confirm prescribed no-go pills have short duration effect [6 hours for ambien (zolpidem) and 4 hours for sonata (zaleplon)]. In no case will crewmembers consume a no-go pill on a timeline where they would be under the effect of the medication while they perform aircrew duties (use mission report or legal for alert time to determine latest time to take no-go medication).

3.9.9. Aircrew member's responsibilities:

3.9.9.1. Aircrew members will complete ground testing for no-go pills and receive flight surgeon clearance prior to using no-go pills in the operational environment.

3.9.9.2. Aircrew members shall not operate equipment within 12-hours after consuming a no-go pill. **EXCEPTION:** Commanders may reduce the 12-hour timeline after consult with a flight surgeon to confirm prescribed no-go pills have short duration effect. In no case will crew members consume no-go pills on a timeline where they would be under the effect of the medication while they operate equipment.

3.9.9.3. Aircrew members shall not take no-go-pills within 12 hours of consuming alcohol.

3.9.9.4. Aircrew will inform the FS of any other medications (including nutritional supplements and over the counter medications) they are taking so the FS can evaluate potential interactions.

3.9.9.5. Limit use of restoril and ambien to a maximum of seven consecutive days and no more than 20 days in a 60-day period.

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

3.10. Crew Rest/En route Ground Time. OG/CCs shall establish procedures to place crewmembers in crew rest. MAJCOM/A3/DO may waive any portion of the crew rest period or ground time as needed to meet mission tasking.

3.10.1. Home-Station Pre-Departure Crew Rest. For missions that will keep aircrew members off station 16+00 or more hours, leaders shall enter primary and deadhead aircrew members into pre-departure crew rest 24 hours before the legal for alert time. Aircrew members may perform limited

non-flying duties like mission planning during the first 12 hours of pre-departure crew rest. OG/CCs may waive any portion of the first 12 hours of pre-departure crew rest. However, leaders shall not manifest deadhead aircrew members as passengers to deny pre-departure crew rest. **EXCEPTION:** AFRC, ANG, and AETC in accordance with AFI 11-202V3 and appropriate supplement.

3.10.2. Off-station/En route Crew Rest. The minimum en route crew rest period is 12 hours before legal for alert or scheduled report time when self-alerting. This provides aircrews at least 8+00 hours to sleep plus 4+00 hours to travel, relax, and dine.

3.10.2.1. Except during emergencies or as authorized by MAJCOM/A3/DO, C2 agents shall not disturb an aircrew member in crew rest. When necessary to interrupt aircrew members' crew rest period, re-enter that aircrew in a subsequent minimum 12 hour crew rest period after they complete official duties.

3.10.2.2. Do not enter aircrew members into crew rest until they complete official post-flight duties. Those duties may include, but are not limited to, refueling, cargo on-/off-load, aircrew arming, minor maintenance, or mission debriefing.

3.10.3. Off-station/En route Ground Time. Mobility planners normally provide aircrews 16+30 hours (nuclear airlift missions will be IAW AFI 11-299 (FOUO)) ground time between engine shutdown and subsequent takeoff.

3.10.3.1. Missions planners, PICs, or C2 agents may modify ground time as follows:

3.10.3.1.1. In the interest of safety.

3.10.3.1.2. To start (mission reporting time) no earlier than 12 hours from the time the aircrew entered crew rest. Before reducing ground time, PICs will consider time to complete mission planning, cargo on-/off-load, and non-standard mission related duties. C2 agents will not ask PICs to accept less than 16+30 ground times.

3.10.3.2. Mobility planners should construct mission itineraries with en route ground times longer than 16+30 hours to afford aircrew members opportunities to recover from the cumulative effects of fatigue caused by flying on several consecutive days or due to transiting several time zones. If practical, make the en route ground time 36 hours (maximum) after three consecutive near maximum FDPs.

3.10.4. Crew Enhancement Crew Rest (CECR). CECR is not an alternative to a safety-of-flight delay but provides PICs a means to minimize the adverse effects of a crew alert and report period outside normal duty time. CECR periods should be of minimum duration and are normally used during de-positioning legs. Tasking authorities shall approve requests to delay alert time to normalize the work-rest cycle or increase messing options when mission allows. When requests are disapproved, the C2 agent will inform the PIC of the reason for disapproval.

3.10.5. Post-Mission Crew Rest (PMCR) SQ/CCs shall give aircrew members returning to home base sufficient time to recover from cumulative effects of the mission and tend to personal needs. PMCR begins upon mission termination. (N/A for AFRC, ANG and AETC).

3.10.5.1. For missions that kept an aircrew off station 16 or more hours, the SQ/CC shall provide 1 hour (up to 96+00 hours) PMCR for each 3 hours off-station. Do not enter these aircrew members in pre-departure crew rest until the PMCR period expires.

3.10.5.2. PMCR is not applicable to continuing missions and MAJCOM/A3/DO may suspend PMCR during contingency operations.

3.10.5.3. OG/CCs (or equivalents) are PMCR waiver authority.

3.10.6. Flying Crew Chief (FCC) Work/Rest Plan. While on Temporary Duty (TDY), the deployed FCC or MEGP maintenance technician shall report to the PIC. In conjunction with en route/transient maintenance supervisor, the PIC will determine how long the crew chief can safely perform aircraft maintenance duties. The PIC shall ensure the FCC has sufficient time in each 24-hour period to get 8 hours of uninterrupted rest. See AFI 21-101, *Aerospace Equipment Maintenance Management*, for detailed guidance.

3.10.7. The lead USAF component will publish MAJCOM/A3/DO-approved crew rest criteria in the Exercise or Contingency Operation Order (OPORD), Operation Plan (OPLAN) or Concept of Operations (CONOPs).

3.10.8. The Prime Knight program streamlines the process of getting aircrews from aircraft parking ramp into lodging/crew rest. It is only successful when billeting agents receive accurate aircrew/mission information in a timely manner.

3.10.8.1. C2 Agent Responsibilities. A MAJCOM C2 agent will forward information on the departing aircrew's orders to a point of contact (POC) for the next crew rest location's Prime Knight function.

3.10.8.2. PIC Responsibilities. If departing from a location with a C2 agency, ensure a C2 agent has accurate aircrew/mission information to forward to the next Prime Knight POC. If departing from a facility without a C2 agency, the PIC will call the next crew rest location Prime Knight POC to pass aircrew/mission information.

3.10.8.3. SQ/CC or designated authenticating official shall ensure TDY/Flight orders clearly indicate the unit fund cite so that the PIC may make Prime Knight reservations in advance. Without a unit fund cite on the TDY/Flight orders, the PIC must make advance reservations using a government travel card to participate in the Prime Knight program.

3.11. Alerting Procedures. MAJCOM C2 agents shall establish a legal for alert time with the PIC and when appropriate, the Medical Crew Director (MCD) of Aeromedical Evacuation (AE) crews. Whenever possible, C2 agents will inform PICs and MCDs of aircraft status, expected patient up load time, and other pertinent mission details that will streamline mission launch.

3.11.1. Aircrew alert time is normally 3+45 hours (4+15 for airdrop missions) before scheduled take-off time (allows 1+00 hour for reporting and 2+45 hours (3+15 for airdrop missions) for mission preparation). OG/CCs may establish alert procedures for local training missions.

3.11.1.1. For missions with more than minimum ground time, the PIC may arrange an alert time that provides additional preparation time to accomplish the mission. The PIC may also accept alerting with reduced preparation time when the mission allows. In all cases, the PIC shall coordinate changes to standard alerting times with the appropriate C2 agency.

3.11.1.2. With PIC agreement and when cargo load warrants (i.e. outsized and Technical Order (TO) 1C-17A-1-9 section VI cargo), C2 agents may alert loadmasters up to 2 hours before normal alert time. When early alerting is warranted, the PIC and C2 agent must notify the loadmaster before he/she enters crew rest. Do not alert the loadmaster early if they will not receive the mini-

imum amount of crew rest of 12 hours. Do not alert the loadmaster more than 1 hour before beginning cargo up load. Base the aircrew FDP on the loadmaster's show time.

3.11.1.3. C2 agents will not alert an aircrew until the aircraft is in commission or there is reasonable assurance that maintenance technicians will complete repairs that allow the aircrew time to pre-flight and load the aircraft to meet the target takeoff time.

3.11.1.4. C2 agents will not alert outbound crews when inbound aircraft is on A-2 or A-3 status until maintenance technicians determine required parts are available and the aircraft will be repaired within the target ground time.

3.11.1.5. Self-Alerts. Crews will self-alert at locations without a C2 agency, but must coordinate with controlling C2 agency. The PIC may elect to self-alert on operational missions at locations with a C2 agency. Coordinate the alert time with local C2 agents to avoid FDP limitations that result from unexpected changes in the mission.

3.11.2. The aircrew release policy is as follows:

3.11.2.1. On the aircrew's initial entry or re-entry into crew rest, the controlling C2 agent, or PIC during self-alerts, will establish an expected alert time.

3.11.2.2. For all missions, the latest allowable alert time is 6 hours after the expected alert time. The PIC may extend that window to 8 hours when flying as primary crew or 12 hours when dead-heading. The controlling C2 agent will not ask the PIC to accept more than the 6 hour window. ANG/AFRC aircrew members may extend the window as necessary to deadhead to home station to meet the Firm Scheduled Return Time (FSRT).

3.11.2.3. When a C2 agent determines circumstances will not allow for aircrew alerting during the legal for alert window, at that time but not earlier than the expected alert time, the C2 agent will contact the PIC and establish a new expected alert time at least 12+00 hours from the time of notification.

3.11.2.4. At the end of the legal for alert window or if a mission can't depart within 4+00 hours of scheduled takeoff time, the PIC will contact a C2 agent and establish a new expected alert time. The PIC may extend takeoff window to 6 hours

3.12. Stage Management.

3.12.1. Stage Posture. Stages operate on a positive launch principle. C2 agents shall alert aircrews using the following priority/hierarchy:

3.12.1.1. Aircrews that require an emergency return to home station.

3.12.1.2. De-positioning stage crews will be prioritized by their SRTs.

3.12.1.3. Aircrews in sequence of arrival time.

3.12.1.4. If the stage manager returns an aircrew in the stage to crew rest because of a mission delay or abort, that aircrew becomes first out when legal for alert.

3.12.2. Mechanical Stage. A C2 agent may create a mechanical stage when a delayed or aborted mission will not resume before that aircrew's FDP expires. Aircrews in a mechanical stage will be first out when a mission in the same direction transits their location while they are legal for alert. A C2 agent may bump an inbound aircrew with FDP to complete that mission to cycle aircrews in a

mechanical stage. C2 agents should not normally establish a mechanical stage for ANG and AFRC crews flying unit-equipped aircraft.

3.13. Standby Force Duty. MAJCOM C2 Agents shall task units for Standby Force Duty not later than 18 hours prior to legal for alert time. This allows crewmembers 12 hours of pre-standby crew rest and 6 hours for aircraft pre-flight duty. When aircrews are unable to complete all preflight duties within 6 hours of crew show time, provide an additional 12-hour pre-standby crew rest. If MAJCOM C2 agents are unable to provide 18 hours prior notification, SQ/CC shall place the pre-standby crew in 12 hour crew rest and follow aircraft generation procedures in paragraph 3.7.5. to prepare the aircraft for launch. SQ/CC may keep an aircrew in ALFA/BRAVO status up to 48 hours. MAJCOM/A3/DO may extend this period for contingencies. After 48 hours, launch, release, or re-enter aircrew into 12 hour pre-departure crew rest. OG/CCs may provide additional local procedures for management of Standby Force Duties.

3.13.1. ALFA Standby Aircraft Preflight Generation and Security. When tasked, SQ/CC shall posture an aircraft and aircrew as an ALFA Standby Force able to launch within 1 hour. The following procedures apply to primary aircraft as well as spare aircraft generated for ALFA alerts. A maintenance Dash -6 and aircrew Dash -1 preflight must be completed. Preflight validity will be in accordance with applicable T.O. After the preflight, the PIC will notify the controlling agency. The aircraft will remain in a sealed posture and be referred to as "cocked on alert". Documentation of when the aircraft was cocked on alert must be placed in the forms. The PIC will ensure the aircraft is secure before entering crew rest. Secure all hatches and doors to show unauthorized entry. The aircrew preflight portion remains valid if performed by one crew, cocked on alert, and launched by another crew. Uncocking a generated aircraft is not a standard procedure but may be accomplished on a case by case basis. The PIC or a designated aircrew representative must be present if access to the aircraft is required. Ensure command and control and the controlling agency are notified when uncocking and recocking generated aircraft. Follow-on pre-flights done during normal waking hours do not interrupt crew rest. Begin CDT/FDP when C2 agent directs the aircrew to launch from crew rest or while performing pre-flight (begin CDT/FDP when the aircrew arrived at the aircraft to do the pre-flight).

3.13.2. BRAVO Standby Force. When tasked, SQ/CC shall posture an aircraft and/or aircrew in BRAVO Standby Force to permit launch within 3 hours. Follow-on pre-flights, if required, interrupt crew rest. Begin CDT/FDP when aircrew shows for duty, normally one hour after C2 alerts the aircrew from crew rest.

3.13.3. CHARLIE Standby Force. When tasked, SQ/CC shall posture aircrews as a CHARLIE Standby Force ready to enter crew rest within 2 hours. Tasked aircrews will be legal for alert 12 hours after entering crew rest. SQ/CC may keep aircrews in CHARLIE status up to 72 hours. After 72 hours, release aircrews from CHARLIE Standby or enter them into 12 hours crew rest for directed mission, training mission, or subsequent standby force duty.

3.13.4. J-Alert (JCS-directed alert force). Alert aircrew will be provided 12 hours crew rest prior to alert duty. Alert crew may be considered in crew rest upon termination of a flight, even though remaining on alert. If a crew completes a mission within their alert cycle, they are legal for alert again after 12 hours of crew rest. The length of a J-Alert tour will be determined by the OG/CC, but will not exceed 192 hours/8 days.

3.13.4.1. J-Alert crews will not be used as preflight crews for aircraft other than their own alert aircraft or its replacement.

3.13.4.2. J-Alert crew members may complete ground currency events and limited office duties at their leisure while on alert; however, they will not accomplish those items that result in DNIF status.

3.13.4.3. Flying during alert is authorized with the following restrictions:

3.13.4.3.1. At the discretion of the individual, not to exceed a flight duty period of 6 hours.

3.13.4.3.2. Crew members fly for individual currency or Special Operations/Boat Drop training. They are not an instructor/examiner pool.

3.13.4.3.3. The alert aircraft and crew integrity are not required if recovery and re-launch can be accomplished within 1.5 hours of real world alert launch notification. If this timing cannot be met, the integral alert crew and aircraft must be used to allow airborne diversion.

3.13.4.3.4. Special Operations training may be accomplished provided the crew members are allowed to adjust their work/rest cycle.

3.13.4.3.5. Crew duty time (CDT) for real world crisis response will begin when the crew shows for the real world mission.

3.13.5. Wing Standby Force. OG/CC may place aircrews in Wing Standby status. After a 12 hour pre-departure crew rest period, aircrews are legal for alert for 12 hours and must be able to launch within 3+15 hours. After 12+00 hours, launch, release, or re-enter aircrews in 12 hour crew rest period before subsequent 12 hours Wing Standby duty.

3.13.5.1. Wing Standby Force Crew Management. A Wing Standby aircrew shall only pre-flight its own aircraft. Aircrew members in post-mission crew rest are available for Wing Standby only after post-mission crew rest period expires.

3.13.6. Post-Standby Missions. On completion of standby duty, aircrew members may be dispatched on a mission. If started, post-standby crew rest must be completed before the start of pre-departure crew rest. If an aircrew member is dispatched on a mission, compute the post-mission crew rest time on standby time plus mission time.

3.13.7. Post Standby Crew Rest. Aircrew members not dispatched on a mission following standby duty will receive post-mission standby crew rest as follows:

3.13.7.1. If standby duty is performed away from normal quarters, crew rest time is computed from this standby time on the same basis as for mission time.

3.13.7.2. If standby duty was performed in normal quarters, no crew rest time is authorized

3.14. Orientation Flights and Incentive Flights. Refer to DoD 4515.13-R, *Air Transportation*, AFI 11-401, *Aviation Management*, and the appropriate MAJCOM supplement.

3.15. Interfly. Interfly is a temporary arrangement between OG/CCs or equivalent to permit the exchange or substitution of aircrew members and/or aircraft between mobility units to accomplish flying missions. Normally, interfly should be limited to specific operations, exercises, or special circumstances. However, it may be used for events of longer duration such as unit conversion to another model design series (MDS). Participating aircrews shall use guidelines established by the lead command or as specified in the OPLAN or CONOPS. **EXCEPTION:** AE crewmembers are exempt from interfly requirements.

NOTE: ANG/XO has delegated approval authority to Wing Commanders for active duty/AFRC interfly with ANG. Conduct interfly operations as follows:

- 3.15.1. Aircrew members shall be current and qualified in the MDS (aircraft and model), as well as unique systems or configuration required to fly the aircraft/mission.
- 3.15.2. Aircrew members will follow operational procedures established by the lead command for the MDS. The Mission Commander or PIC will brief MAJCOM-specific items.
- 3.15.3. Each effected group commander who commits resources (personnel or aircraft) must concur with interfly proposal.
- 3.15.4. MDS conversion training.
 - 3.15.4.1. Units may request an interfly agreement for duration of their conversion. OG/CCs will forward interfly requests to individual OG/CCs for approval. Requests will include as a minimum a list of effected units, duration of the agreement, and purpose.

3.16. Additional Crewmembers (ACM). Crewmembers qualified in mobility aircraft are authorized ACM status on any mobility aircraft to pre/de-position in support of mobility operations. MAJCOM designated crewmembers who are assigned or authorized to accompany the normal crew compliment are allowed ACM status.

3.16.1. Crewmembers in ACM status are not authorized to:

- 3.16.1.1. Displace manifested passengers.
- 3.16.1.2. Maintain currency and/or log flying time.
- 3.16.1.3. Use for transportation while on leave.

EXCEPTION: ANG/AFRC Air Technicians may be in a civilian leave status while traveling en route to perform in a military duty status.

3.16.1.4. Travel on Special Air Missions/Command Support Mission (SAM/CSM) aircraft unless authorized by HQ AF/CVAM through the PIC.

3.16.1.5. Travel on Special Assignment Airlift Missions (SAAM) when specifically restricted by the mission directive (Form 59).

3.16.1.6. Travel on Operational Support Airlift (OSA) aircraft unless authorized by Joint Operational Support Airlift Command (JOSAC) through the PIC.

3.16.2. All ACMs require valid travel/flight orders or supporting message authorizing ACM status. OG/CCs may authorize ACM status for their mobility aircrews.

3.16.3. Flight evaluators have priority and will not be displaced by any other ACM. The priority for evaluators is MAJCOM, NAF, group, then squadron level.

3.16.4. ACMs normally travel in the crew compartment. If the number of ACMs desiring travel exceeds the capacity of the crew compartment, the C2 agency will notify the ATOC, who in turn will coordinate with the passenger terminal; seats not previously assigned may be used for ACMs.

3.16.5. The PIC, or designated representative, will brief ACMs on seat assignment, appropriate mission information, emergency procedures including egress, and armed crewmembers. The PIC may assign an ACM aircrew-related duties for which the ACM is qualified.

3.16.6. ACMs will coordinate their travel with the appropriate C2 agency prior to travel. They will process through the C2 agency as early as possible but NLT 3 hours prior to planned block time.

3.17. Mission Essential Ground Personnel (MEGP). Procedures and policies regarding MEGP are contained in AFI 11-401 and AMCI 11-208. PICs will ensure personnel traveling in this status are properly authorized.

3.18. Mission Mobility Observers (MMO). MAJCOM supplements or additional directives may establish programs authorizing senior military and civilian personnel to fly for mobility mission familiarization. For AMC MMO information reference AMCI 11-208.

3.19. Flight Attendants on Distinguished Visitor Missions. Flight Attendants will fly as primary crewmembers on designated C-17 missions IAW AFI 65-503 Table A36-1 note 32. They will fall under the authority of the Mission Commander throughout the mission. An egress briefing will be given to the Flight Attendants prior to the first mission leg.

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 is the final authority in determining the overall suitability of an aircraft for the mission. The PIC will ensure a detailed explanation of the discrepancy is entered in the AFTO Form 781A, **Maintenance Discrepancy and Work Document**; include the following maintenance identifiers to effectively communicate aircraft status:

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.

4.1.2. Mission Contributing (MC). The PIC will designate an item, system, or subsystem component, which is not currently essential for safe aircraft operation as MC. 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 MC discrepancy.

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. These items are normally cleared at home station.

4.2. Minimum Equipment List (MEL) Policy. The MEL is a pre-launch document that lists the minimum equipment/systems to operate the aircraft. It is impractical to prepare a list that would anticipate all possible combinations of equipment malfunctions and contingent circumstances. Consider equipment/systems with no listed exceptions as grounding items. A PIC who accepted 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. The PIC shall account for the possibility of additional failures during continued operation 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.

4.2.3. Waiver Policy. A PIC prepared to operate with a degraded MEL item shall request a waiver through C2 channels. The PIC shall provide the C2 agent: 1) nature of request, 2) individual crew-member qualification, 3) mission leg(s) requiring the waiver, and 4) the governing directive of waiver request to include volume, chapter, or paragraph. Initiate waiver requests as soon as possible; plan at least a 1-hour waiver process time.

4.2.4. PICs operating with waiver(s) for degraded equipment shall coordinate mission requirements (i.e., revised departure times, fuel requirements, maintenance requirements, etc.) with the controlling C2 agency and/or flight manager.

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 1.4. Report deviations (without waiver) through channels to MAJCOM/A3/DO within 48-hours. OG/CCs shall collect background information and submit a follow-up written report upon request.

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. Training Missions. OG/CC or equivalent with mission execution authority.

4.3.2. MAJCOM Directed Missions. MAJCOM/A3/DO with mission execution authority for active duty, AFRC, or ANG units flying MAJCOM-directed missions (includes Operational Readiness Inspections). Initiate the request with MAJCOM C2 agency. For AMC-directed missions contact HQ AMC/A37V through 18 AF TACC.

4.3.3. Contingency Missions. DIRMOBFOR (or equivalent) for the agency with C2, if not specified in the OPORD/Tasking Order.

4.3.4. ANG or AFRC Directed Missions. ANG or AFRC maintains C2 and waiver authority for ANG or AFRC directed mission prior to mobilization.

4.3.5. Other Than MEL Waivers. Determine governing source document (i.e. AFI, Flight Manual, Maintenance T.O., 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.

4.3.6. Engineering Dispositions (ED). Dispositions are requested when aircraft are damaged and/or established maintenance technical order procedures cannot be followed or do not exist. The on-site 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.

4.3.6.1. PICs shall coordinate dispositions containing flight restrictions, prohibitions, additional operating limits, or modified/nonstandard operating procedures with the appropriate MEL waiver authority (see paragraph 4.3.).

4.3.6.2. PICs will not accept dispositions appearing incomplete, in error, or unsafe. Prior to rejecting a disposition, the PIC will contact the appropriate MEL waiver authority. The waiver authority will attempt to resolve the issue.

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.

4.5. MEL Table Definitions/Column Identifiers. MEL tables are arranged by aircraft system to provide the PIC a mechanism to determine minimum system requirements. Components are listed by number installed and minimum required for flight. Requirements are defined by Home Station Departure/Main Operating Base (MOB) (Column A) and en route stations (Column B). Local training missions, to include off-station trainers, fall under Column B. An asterisk (*) in the Required column indicates the number required is situation dependent; refer to the Remarks/Limitations/Exceptions column for clarification. AMC and AMC gained aircrews will consider Charleston AFB, McChord AFB, and McGuire AFB as MOB. When transiting a MOB on a pre-positioning or an active leg of a mission use Column A. When transiting a MOB on a de-positioning leg use Column B.

EXAMPLE: A McChord C-17 transiting Charleston en route to Ramstein AB will use Column A. However, when transiting Charleston en route to McChord (de-positioning) use Column B.

NOTE: Column B requirements will not normally be waived when transiting a MOB on a de-positioning leg.

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

4.5.2. One-time Flight Clarification: Normally a Red X discrepancy downgraded for a one-time flight without passengers. The MXG/CC who owns the aircraft is the approval authority. Cargo may be carried as long as safety-of-flight is not compromised. The priority is to move the airplane to a repair capable facility; once repaired, the mission can be completed. PICs must coordinate with appropriate agencies to ensure repair capability exists at the destination. One-time flights may include en route stops only when necessary to recover the airplane. **Example:** An airplane departs on a gear-down flight from Djibouti IAP and requires an en route fuel stop (Cairo) before landing at the nearest repair capable facility, Sigonella NAS.

4.5.3. One-time flight to nearest repair capable facility: Flight is limited to the nearest (shortest en route time) repair capable base.

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

4.5.5. Other Mission and Repair Clarifications:

4.5.5.1. Shall be repaired at next repair capable facility: Mission may continue as scheduled; item shall 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. En route repair capable facilities are deemed so regardless of parts availability. **Example:** If Yokota AB did not have the required part, the aircraft is not cleared to proceed without a waiver.

4.5.5.2. Repair as soon as practical: Item should be repaired when ground time permits. Do not delay the mission even if at a maintenance capable facility.

4.5.5.3. Mission may continue: Regardless of location, do not delay the mission, continue as scheduled. Item is designated MC; repair per paragraph [4.1.2](#).

4.5.5.4. Mission dictates requirement: PIC shall consider the entire mission profile, not just the next leg. **Example:** An airplane is departing an en route station with repair capability, after engine start it is discovered that 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 en route stops, the PIC elects to have the item repaired prior to departing.

4.6. C-17 MEL. This MEL applies to all C-17 models and 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. The MEL is not intended to promote continued operation of the aircraft for an indefinite period with systems/subsystems inoperative. See this chapter for further information including objectives, policy, and waiver protocol. Additional guidance specific to SOLL operations are listed in **Addenda B, C-17 Special Operations**.

4.7. Supplements. Each MAJCOM may supplement the MEL (see [Chapter 1](#)).

4.8. Navigation Systems.

4.8.1. Equipment listed in FLIP for permitting compliance with MNPS is mandatory. Loss of any component before airspace entry requires return to a station with maintenance capability or re-filing via routes permitting equipment degradation.

4.9. Gear Down Flight Operations. During peacetime, gear down flight operations will be limited to those sorties required to move the aircraft to a suitable repair facility. Gear down flight should only be considered and approved after all avenues to repair the aircraft have been exhausted.

4.9.1. PICs shall not takeoff until there is reasonable assurance that they will achieve/maintain adequate obstacle clearance (to include en route stops and alternates). Reference “Climbout Flight Path – 3 Engines Gear Down” charts in TO 1C-17A-1-1. PICs are reminded to also reference TO 1C-17A-1-1 for the appropriate drag index.

4.9.2. Time and communications capability permitting, validate takeoff data with OG/OGV or MAJ-COM STAN/EVAL.

4.10. NVG Minimum Operating Equipment. The following equipment is required for NVG operations.

4.10.1. NVGs that are HUD compatible (i.e. F4949G or L) mounted on a standard aircrew helmet. If available, one spare set of NVGs will be carried per crew. Each crewmember will carry approved spare batteries for their own NVGs. All crewmembers will preflight their own NVGs prior to flight, and should preflight their NVGs using an eye lane, Hoffman 20-20 box, or equivalent. The spare will also be preflighted.

4.10.2. Each crewmember will carry an NVG-compatible light.

Table 4.1. Air Conditioning/Pressurization

Item/System	Message/Cue/Alert	Installed	Required		Notes/Limitations/Exceptions
			A	B	
Air Conditioning Pack	L or R Pack “Disagree”	2	2	1*	These requirements include the H2O Separator, Flow Control Valve, Turbine Bypass Valve, H2O Injector Nozzle, and Air Cycle Machine. All equipment will be operable on the same side as the operable pack if one pack is inop
Ram Air Ventilation Valve		1	0*	0*	Both packs will be operational if inop
Ram Air Doors For Air Conditioning Pack		2	1*	1*	These requirements cover Exhaust Ram Air Valve, Actuator, Linkages and cables. Inop Ram Air Inlet Door will be wired open
Pack Discharge Pneumatic Thermostat		2	1*	1*	Will be operational on operating pack
Pack Discharge Temperature Sensor		4	2*	2*	Will be operational on operating pack

Item/System	Message/Cue/Alert	Installed	Required		Notes/Limitations/Exceptions
			A	B	
L/R Pack DISAG Switch		2	1*	1*	Operable switch will correspond to operating pack
HI Flow On Switch		1	0*	0*	Avionics Cooling Override Switch will be operational if HI-Flow Switch is inop
Remote Temp Control Switch		1	0*	0*	Loadmaster Temp Control Selector will be operational if Remote Temp Controller Switch is inop
Inlet Air Temperature Sensor		6	3*	3*	One sensor per zone will be operational
Zone Temperature sensor		6	3*	3*	One sensor per zone will be operational
Environ Control Panel, Bleed/Supply/Compt Temp Indicator		8	0	0	
Cargo Compartment Recirculation Fan		1	1	0*	Will be operable if one pack is inop
Environmental System Controller (ESC)		2	2	2	En route, if one ESC is inop, continue to a station with repair capability
Cargo Compartment Exhaust Fan		2	0	0	
Trim Air Regulator		2	1*	1*	These requirements cover the Trim Air Differential Pressure Sensor. Inop, valve will be locked closed. All associated equipment will be operational on same side as operational trim air regulator
Trim Air Check Valve		3	2*	2*	Center check valve may be inop
Trim Air Switch , Flt Deck Overhead Panel		1	0	0	
AC Supply Check Valve, Cargo Compt		4	2*	2*	One per side required, inop valve will be closed
Air Conditioning Outlet Air Valve		13	0	0	
Avionics Cooling Fan		3	2*	2*	These requirements cover the Avionics Cooling Check Valve
Avionics Ground Cooling Inlet Filter Assembly		1	0	0	Will have filter installed for ground operation of avionics equipment
Avionics Cooling Differential Pressure Sensor		2	1	1	

Item/System	Message/Cue/Alert	Installed	Required		Notes/Limitations/Exceptions
			A	B	
Avionics Cooling Inflow Valve		1	0	0	
Ground Inlet Shutoff Valve		1	0*	0*	Will be manually closed for flight if inop
Avionics Cooling Heat Exchanger		1	0*	0*	Will have air conditioning pack operating for ground ops. Valve will be manually locked open if heat exchanger is inop
Avionics Cooling Equipment Air Shutoff valve Assembly		10	0*	0*	Valve required to be closed if corresponding avionics equipment is not installed
Ramp Temperature Sensor		1	0	0	
Environmental System-Fire Detection Control Panel	ENV PANEL INOP/SINGLE	1	1*	1*	These requirements cover the Trim Air OFF/DIS Switch light.
Temperature Control Panel, LM Station		1	0*	0*	Remote Temp Control Switch on ESCP will be operational.
Environ Control Panel APU Air Switch		1	0	0*	Required if no air cart available for engine start
Cabin Pressure Outflow Valve		1	1*	1*	These requirements include the Outflow Valve Actuator.
Cabin Pressure Controller	AUTO PRESS INOP/SINGLE	2	1*	1*	These requirements include Cabin Pressure Sensor and Outflow Valve Motor. One complete cabin pressure system will be operational
Positive Pressure Relief Valve		3	2*	2*	These requirements include the Positive Pressure Relief Valve Filter Assembly.
Negative Pressure Relief Valve		3	2	2	
Cabin Pressure Indicator Unit		1	1*	1*	Two of three indicators in panel will be operational
Cabin Differential Pressure Sensor		1	1	1	
10000 Ft Pressure Warning Aneroid Switch		1	1	1	
Cabin Pressure Gauge (crew entry door)		1	1	0*	If inop, comply with TO 1C-17A-1, Section II warning
Cabin Differential Press. Indicator (cockpit)		1	1	1	
Cabin Altitude Rate of Climb		1	0	0	

Item/System	Message/Cue/Alert	Installed	Required		Notes/Limitations/Exceptions
			A	B	
Cabin Altitude Indicator		1	1	1	
Cargo Floor Heat		1	0	0	
Ramp Floor Heater/ Blower		2	2	1	
Temperature Control			Req*	Req*	Auto or manual control. Remote Temp Control Switch may be inop if LM Temp Control is operational

Table 4.2. Anti-Ice.

Item/System	Message/Cue/Alert	Installed	Required		Notes/Limitations/Exceptions
			A	B	
Air Data Sensor Heating		31	31	0*	Will be operational for flights into known or forecast icing.
Engine Anti-Ice Systems (Includes valves, cockpit switches, temp sensors)		4	4	0*	Will be operational for flights into known or forecast icing. If icing is anticipated, manually open Shutoff Valve after associated engine has been started.
Ice Detector Probe		1	1	0*	Crew will monitor for ice if inop.
Low Temp Cowl Ice Protection Sensor		4	4	0*	Will be operational for flights into known or forecast icing.
TAT Heater	TAT Heater Disagree			*	Do not take-off with TAT Heater Disagree displayed on the WAP.
Window Defog Control Box		1	1	1	
Windshield Ice Protection		2	2	0*	Will be operational for flights into known or forecast icing.
Windshield Wipers		2	2	0*	Required for flight through rain.
Wing Ice Protection System (Includes valves, cockpit switch, temp sensor)		2	2	0*	Will be operational for flights into known or forecast icing. Failed valve will be locked closed.

Table 4.3. Bleed Air.

Item/System	Message/Cue/Alert	Installed	Required		Notes/Limitations/Exceptions
			A	B	
Cowl Ice Prot Burst Duct Differential Press Switch		8	4*	4*	One per engine will be operable
Engine SOVs		4	4	2*	One SOV per wing may be inop provided flight is not conducted into known or forecast icing conditions. All components will be functioning on the operational bleed systems
Pneumatic Ground Service Connector		2	0*	0*	APU required if ground service connector inop.
Sensing element, overheat detector		142	71*	71*	One loop will be operable per region
Wing Ice Prot Burst Duct Differential Pressure Switch		4	2*	2*	One per wing will be operable.
Wing Isolation Valve		1	1	1	May be manually closed after engine start. If manually closed, two bleed sources required for each operating pack.

Table 4.4. Cargo Mission Systems (Airland).

Item/System	Message/Cue/Alert	Installed	Required		Notes/Limitations/Exceptions
			A	B	
Aircrew Data Transfer Device		1	1	0	
Cargo Loading Stabilizer Struts		2	2	0*	Required to jack the aircraft. Mission may continue if struts are not needed for mission accomplishment. Continue to a station with repair capability.
Cargo Rail and Locks (ADS and Logistic)			*	*	Home Station Departure: All rails, locks, vertical lips and roller conveyors (ADS and logistic) will be fully operational. En route: A minimum of one lock per pallet per side is required for airland pallets/platforms.
Cargo Winch		1	1	0*	Mission may continue if winch is not needed for mission accomplishment.
Ramp Toes		4	4	0*	Will have both stowage pins in each toe. At least one of the ramp toes requires an operational proximity sensor. May have less than 4 operational toes if not needed for mission accomplishment.

Table 4.5. Cargo Mission Systems (Airdrop).

Item/System	Message/Cue/Alert	Installed	Required		Notes/Limitations/Exceptions
			A	B	
ADSC		1	1*	1*	All associated components for airdrop are required.
Air Deflector Doors/Pod Fairings		2	2	0*	As required for personnel airdrop
BSA		1	1	0*	Required when dropping CDS > 9400 lbs.
GRM		6	6	0*	As required for CDS airdrop
Paratroop Doors		2	2	0*	As required for personnel airdrop
Paratrooper Retrieval Systems		2	2	0*	As required for personnel airdrop
Rail Bridge Assembly		1	1	0*	Required for equipment airdrop
Ramp Edge Covers		1	1	0*	Required for equipment airdrop
Retrieval Winches		2	2	0*	As required for CDS or personnel airdrop
TRM		1	1	0*	Required for equipment airdrop

Table 4.6. Communications.

Item/System	Message/Cue/Alert	Installed	Required		Notes/Limitations/Exceptions
			A	B	
Communications Control Unit (CCU)	CCU FAULT X	2	2	2	A one time flight with one inop to a station repair capability is authorized.
AERO-I, Airline Operational Control (AOC), CPDLC		1	0	0	
Comm/Nav Control Panel (CNC)		2	2	1	
Control, Intercommunications Set (ICS)		7	4*	4*	Pilot's, copilot's, forward and aft loadmaster's intercom control sets (2341CT) will be operational. The Aft loadmaster ICS will be operational for backing, CDS, and personnel airdrop.
Comm 1		1	1	1	
Comm 2 / UHF / VHF		3	3	2	
Public Address System		1	1	0*	When carrying passengers, will be operational unless other means of communication is available
HF Radios		2	0*	0*	As mission dictates for airspace
SURECOMM		1	0	0	

Table 4.7. Doors.

Item/System	Message/Cue/Alert	Installed	Required		Notes/Limitations/Exceptions
			A	B	
Crew Entrance Door	“ENTRY DOOR”	1	1	1	Indicating systems will be operational.
Emergency Exit	“EMERG EXIT”	1	1	1	Indicating systems will be operational.
Hor/Vert Stab Access, Crew Oxygen, Belly Maintenance Door, Maintenance Ditching Hatch Proximity Indicating Systems	“HATCH ACCESS”		*	*	May be inop if the door is visually verified closed and locked.
Cargo Ramp Latches/ Locks		22/2	22/2	22/2	All cargo ramp latches and electrical safety locks will be operational. Manual operation permissible, unless aeromed or airdrop.
Cargo Door/Ramp Proximity Indicating Systems					All proximity sensors and indicating systems affecting the ADSC, LFCP, LACP, and PADS will be operational for airdrop missions. All proximity sensors and indicating systems associated with the cargo door system will be operational. May be inop on unpressurized flights if it can be determined that the locks are positively locked. But, with palletized cargo on board, all door/ramp locks are required to permit cargo jettison.
Cargo Door Downlock Assemblies		2	2	2	
Sidewall Jamb Spindles		34	34	34	
Cargo Door Ditching Locks		4	4	4	Cargo door, ramp, and ditching locks will be operational (without the use of manual override). Manual override procedures may be used to continue the mission to a repair facility. Cargo door, ramp, and ditching locks will be operational (without the use of manual override) for all missions that require in-flight use of cargo door and ramp.
Cargo Door Uplocks		2	2	2	
Cargo Ramp		1	1	1	All cargo ramp latches and electrical safety locks will be operational.

Item/System	Message/Cue/Alert	Installed	Required		Notes/Limitations/Exceptions
			A	B	
Paratroop Doors		2	2	0*	As required for mission accomplishment
Air Deflector Doors		2	2	0*	As required for mission accomplishment

Table 4.8. Electrical.

Item/System	Message/Cue/Alert	Installed	Required		Notes/Limitations/Exceptions
			A	B	
Integrated Drive Generators (IDG)	“GEN/OFF” Switchlight Illuminated	4	3	3*	With two inop, one time flight to a station with repair capability is approved.
AC X-TIE		1	1	1*	If inop, continue mission to a repair facility provided 4 IDG’s and all AC bus ties are operational. If operating with 3 IDG’s or any AC bus tie is failed, a one-time flight to a station with repair capability is authorized.
AC BUS TIE Relays		4	4	4*	With one inop and all IDGs operational, a one time flight to a station with repair capability is authorized.
DC Cross Tie		1	1	1	
DC BUS TIE Relays		2	2	2*	With one inop and transformer rectifiers operational, a one time flight to a station with repair capability is authorized.
Transformer Rectifiers		4	3*	3*	DC X-TIE and both DC Bus Ties will be operational.
AC Instrument BUS Transformers		2	1*	1*	Operational transformer will be installed on bus #3.
Emergency Power Generation					
Batteries		2	2	2	
Static Inverter		1	1	1	
Transfer Buses	AC XFER BUS	2	2	2	
Emergency Power Relays		2	2	2	
Battery Chargers	BATT NOT CHARGING	2	2	2	
Loadmaster Buses 1 and 4	LM 1, or 4 BUSES		Req	Req	

Item/System	Message/Cue/Alert	Installed	Required		Notes/Limitations/Exceptions
			A	B	
External Power		1	1	0*	External power is required for Aeromedical Evacuation Mission.
60hz Power Supply System		1	1	0*	Will be operational for Aeromedical Evacuation Missions

Table 4.9. Engines/APU.

Item/System	Message/Cue/Alert	Installed	Required		Notes/Limitations/Exceptions
			A	B	
Engines		4	4	4	
EEC	EEC FAULT X	4	4	4*	One channel (A or B) may be inop. If channel A is inop, engine will operate in N1 mode.
Ignition System		8	8	4*	One ignition source per engine may be inop. Only 1 engine may have CH A inop—one time flight to a station with repair capability is approved.
TCA Valve	ENG STABILITY X	4	0*	0*	Valve will be locked open if inop.
EGT Thermocouple Probes		24	20*	20*	6 probes per engine, 5 required; 2 channels per engine, 1 required.
SED		1	1	1	
Thrust Reversers		4	2	0*	Inop TRs will be locked out in symmetrical pairs.
Oil Quantity Transmitter	ENG OIL ABNORMAL	4	0*	0*	Oil pressure and temp indications will be operational. Verify oil quantity prior to flight.
Low Oil Pressure Switch	ENG OIL PRESSURE	4	4	4	Monitor oil pressure on MFD.
Starter Control Valve		4	4*	4*	Starter control valve will be operable manually. For manual operation, starter position indicator must be operable.
APU		1	1	0*	APU will be operational for any mission departure into a field without alternate electric/air sources when engine shutdown is planned.

Table 4.10. Emergency Equipment.

Item/System	Message/Cue/Alert	Installed	Required		Notes/Limitations/Exceptions
			A	B	
FEDS Life Rafts (includes Retractor Assembly and Ladders)		3	3*	0*	Raft quantity will be adequate to accommodate total persons onboard when flight exceeds power off gliding distance from land.
FEDS Initiators		7	7	6*	All required for flights exceeding power off gliding distance from land. Exterior initiator is required at all times.
Fire Extinguishers		9	9	9	
Crash Axes		2	2	2	
Ramp Blow Down System		1	1	0*	Required for Aeromedical Evacuation Missions

Table 4.11. Equipment and Furnishings.

Item/System	Message/Cue/Alert	Installed	Required		Notes/Limitations/Exceptions
			A	B	
Lavatory		1	1	1*	Continue mission (if practical) to a facility with repair capability. Can be inop with comfort pallet onboard.
Potable Water System		1	0*	0*	If inop, ensure adequate supply of water
Refrigerator		1	0	0	

Table 4.12. Fire Protection.

Item/System	Message/Cue/Alert	Installed	Required		Notes/Limitations/Exceptions
			A	B	
Fire Detection System, Engine		4	4*	4*	Either loop A or B for each engine will be operational.
APU Fire Detection Sys		1	1	0*	Either loop A or B will be operational. If inop the APU may not be used.
Smoke Detector, Cargo Compartment		14	6*	6*	Sensors 9, 10, 13 & 14 plus two others will be operable
Lavatory Smoke Detector		1	0	0	
Crew Rest Smoke Detector		1	0	0	
Avionics Smoke Detector		2	1	1	
IRU Smoke Detector		4	4	3*	Must correspond to inop IRU
Fire Bottle, Engine	“Agent Low”	4	4	4*	A one-time flight to a station with repair capability is authorized.
Fire Bottle, APU		1	1	0*	If inop then APU may not be used.

Table 4.13. Flight Controls (Auto-Flight).

Item/System	Message/Cue/Alert	Installed	Required		Notes/Limitations/Exceptions
			A	B	
Flight Control Computer	FCC X	4	4	4*	With FCC 1 and 4 and both SCEFCs operational, and no Pitch, Yaw, Roll, or Pitch Trim Fail Op messages illuminated, a one time flight to a station with repair capability at or below FL 200 is authorized.
Spoiler Control/ Electronic Flap Computer	SCEFC X	2	2	2*	With 1 inop and 4 FCCs operational, a one-time flight to a station with repair capability is authorized.
Electronic Flight Control Axis	Any EFCS Axis “FAIL” Light	5	5	5	
Alpha Limiter System	ALPHA LIMIT INOP	1	1	1	
Stall Warning System	STALL WARNING INOP	1	1	1*	If one channel is failed, continue mission to a station with repair capability.
Stick Shaker		2	2	2	
Ground Proximity Warning System	GPWS/GPWS FAIL	1	1	1*	If inop, continue the mission to a station with repair capability. No low level contour flight is authorized.

Item/System	Message/Cue/Alert	Installed	Required		Notes/Limitations/Exceptions
			A	B	
Terrain Avoidance Warning System	TAWS/TAWS FAIL	1	1	1*	If inop, continue the mission to a station with repair capability.
Auto Throttles		1	0	0	
Axis Fail Operation Modes	Roll, Yaw, or Pitch Fail Op		Req*	Req*	Do not takeoff with any axis fail op condition
Surface Fail Operation Modes	Aileron, flap, elevator, rudder, or slat Fail Op		Req	*	With any single surface fail op condition, continue mission to a station with repair capability.
System Fail Operation Modes	ALS, Pitch Trim, ADC Fail Op		Req	*	Continue the mission to a station with repair capability.
SCEFC THRTL FAIL	SCEFC THRTL FAIL		Req	*	A one-time flight to a station with repair capability is authorized.
Aileron Trim Actuator		1	1	1	
Flap Actuator Cylinder		8	8	7*	All are required for Full-Flap operations.
Transducer, Flap Position		4	4	4	
Indicator, Flap Position		1	0*	0*	MFD indication will be operational.
Indicator, Speed Brake		1	0*	0*	MFD indication will be operational.
Trim Indicators, Aileron, Rudder, Horizontal Stabilizer		1	0*	0*	MFD indication will be operational.
Spoiler Assy & Actuator Cylinder		8	7*	7*	Will be failed retracted. All will be operational for ALZ operations.
Switch, Control, Direct Lift (DLC)		2	1	1	
Slat Actuator		16	14*	14*	One actuator per wing may be inop.
TOGA Button	TOGA Button Fail	1	1	1	
Aileron Actuator, Ratio Changer		1	1	1	
Aileron Actuator Cylinder Assembly		4	4	2*	If inop, one time flight to a station with repair capability is authorized.
Transducer, RVDT, Stick, Roll		4	4	3*	Four required for ALZ operations.
Integrated Flight Control Module (IFCM), Rudder		2	2	2*	With the upper IFCM inop, a one time flight to a station with repair capability is authorized.
Rudder Actuator Cylinder Assembly		4	2*	2*	One per surface may be inop. Four required for ALZ operations.
Elevator Actuator, Ratio Changer		1	1	1	

Item/System	Message/Cue/Alert	Installed	Required		Notes/Limitations/Exceptions
			A	B	
Autothrottle Disengage Switch		1	1	0*	Required for A/R missions.
Integrated Flight Control Module, Elevator		4	4	4	
Cylinder Assembly, Elevator		8	6*	6*	Maximum of one failed cylinder per surface.
Transducer, Position, RVDT, Pitch		2	2	2*	One channel in one RVDT may be inop.
Control Valve, Horizontal Stabilizer		2	2	2	
Horizontal Stab Pitch Trim Motor, Hydraulic		2	2	2	
Tandem Control Valve		4	4	4	
Air Refueling Mode	A/R MODE INOP		Req	Req*	Continue to station with repair capability if no A/R planned.

Table 4.14. Fuel.

Item/System	Message/Cue/Alert	Installed	Required		Notes/Limitations/Exceptions
			A	B	
Valve Assembly, Solenoid, Fuel Vent, Override		2	0*	0*	Primary and secondary climb/dive valve will be operational.
Valve Assy, Secondary Climb/Dive		2	0*	0*	Primary climb/dive valve and override solenoid valve will be operational.
Valve Assy, Primary Climb/Dive		2	0*	0*	Secondary climb/dive valve and override solenoid valve will be operational.
Transfer Pumps		4	2*	2*	If fuel quantity in tank 2 or 3 is greater than 36K lbs, respective XFER pump will be operational. One transfer pump/switch per wing may be inop; tank with inop pump will have both boost pumps and crossfeed valve operational.
Dump Valves		2	2	1*	Left and Right Master, or Center separation valve, will be operational.
Boost Pumps		8	6*	6*	One per wing may be inop if inboard transfer pumps and crossfeed valves are operational on affected side.
Separation Valve		1	0*	0*	If failed closed, both A/R isolation valves will be operable.

Item/System	Message/Cue/Alert	Installed	Required		Notes/Limitations/Exceptions
			A	B	
Receptacle, Ground Refueling		2	1	1	
Panel, Control, Ground Refueling		1	1	0	
Valve, Isolation, Ground Refueling		2	0*	0*	Inop valve will be closed manually prior to takeoff
Fill Valve		4	4	2*	Four required for A/R missions. Fill valves 1 and 4 will be operational. Over wing refueling is required for affected tanks.
Hi-Level Shutoff Test Valve		4	4	0*	Four required for A/R missions. Quantity Select method required for ground refueling.
Ground Refuel Switch, Overhead Panel		2	0*	0*	Ground Refuel Panel will be operational
Crossfeed Valves		4	4	4	
Fuel Manifold Drain & Check Valves & Pump		1	1	0*	May be inop but manifold must stay dry and have manifold drain capability
Valve, Drain, Manual, Ground Refueling		1	1	1	
Low-Level Fuel Dump Shutoff		4	4	4	
Fuel Quantity Computer		1	1	1*	With one channel inop, one-time flight to a station with repair capability is authorized.
Fuel Quantity Display, Overhead Panel		4	4	3*	Total fuel quantity indication will be operational.
Total Fuel Quantity Indicator		1	1	0*	Required if any fuel quantity display inop.
UARRSI System		1	1	0*	Required for A/R missions.
Door Assembly & Handle, UARRSI		1	0*	0*	Door will be verified open before flight for A/R missions.
Air Refuel Master Valves		2	1*	0*	Inop valve will be manually closed prior to takeoff. With any inop valve, the center separation valve will be operable. One required for A/R missions.
Dimming Unit, A/R Annunciator		1	1	0*	Required for night A/R missions.
Annunciator Lights, READY, DISC. & LATCHED, Center Post		1	1	0*	For A/R missions READY light may be inop if overhead panel READY light is operational.

Item/System	Message/Cue/Alert	Installed	Required		Notes/Limitations/Exceptions
			A	B	
Rheostat, Air Refuel Ann/Slipway, Overhead Panel		1	1	0*	Required for night A/R missions.
Switch, L/R Master, DISAG, Air Refuel, Overhead Panel		2	1*	0*	Separation valve will be operable. Inop valves will be closed prior to takeoff. Required for A/R missions.
Switch, A/R Amp Override, Overhead Panel		1	0*	0*	Required if Override Boom Latching authorized by mission directive

Table 4.15. Hydraulics.

Item/System	Message/Cue/Alert	Installed	Required		Notes/Limitations/Exceptions
			A	B	
Engine Driven Hyd Pumps		8	8	6*	Only one pump per system may be inop. One pump on systems #2 and #3 may be inop provided the AUX pump for affected system and transfer pump are operational. If a pump fails to depressurize, a one time flight to a station with repair capability is authorized.
Aux Pumps		4	4	3*	If the failed pump is on #2 or #3 system the transfer pump will be operational. If failed pump is on #1 or #4, a one time flight to a station with repair capability is authorized.
Transfer Pump		1	1	0*	If inop, all system 2 and 3 (engine driven and AUX) pumps will be operational
Hydraulic Panels	HYD PANEL SINGLE/INOP	2	2	1*	Continue mission to a station with repair capability
Hydraulic System Controllers	HCU SINGLE/INOP	2	2	2	
Hyd Manifold Press Transducer		4	3*	3*	Associated pump low pressure light and temp indicator required
Hyd quantity transducer		4	0*	0*	Associated system reservoir low quantity prox sensor required
Hyd low quantity prox sensor		4	0*	0*	Associated system reservoir hydraulic quantity transducer required
Ram Air Turbine		1	1*	1*	Will be stowed prior to departure

Table 4.16. Indicating Systems.

Item/System	Message/Cue/Alert	Installed	Required		Notes/Limitations/Exceptions
			A	B	
Proximity Sensor Interface Unit (PSDAU, PIU)	PROX UNIT 1,2	2	2	2	
Central Aural Warning Computer		1	1	1	
Loudspeaker, CAWS		2	1	1	
Warning and Caution Computer - WCC	WAC COMPUTER 1 or 2	2	2	2	
Annunciator, Lighted, WACS Fail		2	0	0	
Switch, Master Warning & Reset		2	1	1	
Switch, Master Caution & Reset		2	1	1	
ELT		1	1	1*	If inop, continue the mission to a station with repair capability.
Underwater Beacon		1	1	0	
Cockpit Voice Recorder (CVR)		1	1	1*	If inop, continue the mission to a station with repair capability, provided the FDR is operating
Single Flight Data Recorder (FDR)		1	1	1*	If inop, continue the mission to a station with repair capability, provided the CVR is operating.

Table 4.17. Landing Gear and Brakes.

Item/System	Message/Cue/Alert	Installed	Required		Notes/Limitations/Exceptions
			A	B	
Wheel & Tire Assy, Main Gear		12	12	12	
Multiple Disk Brakes		12	10	10	
Brake Accumulator		2	2	2	
Control Unit, Antiskid-Brake Temp Monitor		1	1	1	
Anti-Skid Braking	ANTI-SKID INOP	1	1	1	
Transducer, Motional Pickup, Wheel Speed, MLG		12	10*	10*	Brakes (7 or 8) and (11 or 12) transducers will be operational. Brake on affected wheel will be capped.
Sensor, Temperature, Brake Monitor		12	8	8	One sensor per bogie may be inop.
Indicator, Brake Pressure, Cockpit		1	1	1	
Steering Cylinder Assembly		2	2	2	
Nose wheel Steering Control (Tiller)		2	2	2*	With one inop, a one time flight to a station with repair capability is authorized. (The operable tiller will be in Pilot Flying position.)
Landing Gear Indicators		2	2	2*	Accurate gear indication will be available on either CFG page or landing gear control indication panel. With one inop continue mission to a station with repair capability
Parking Brake	PARK BRAKE INOP	2	1	1*	A one-time flight to a station with repair capability is authorized.

Table 4.18. Lighting.

Item/System	Message/Cue/Alert	Installed	Required		Notes/Limitations/Exceptions
			A	B	
Flight Compartment Lighting		1	1	1*	Main inst panel floodlight, cockpit dome and thunderstorm lights will be operational for night flight.
Light and Buttons, Nurse Call		2	0*	0*	Will be operable for Aeromedical Evacuation missions
Cargo Compartment Lighting			Req*	Req*	Adequate lighting to perform mission.
Wingtip Landing and Taxi Lights		2	1*	1*	One wingtip or nose landing light on each side will be operational. For NVG landings, both wingtip lights will be operational with IR lens covers installed.
Nose Landing Light		2	1*	1*	One wingtip or nose landing light on each side will be operational. For white light assault landings, both nose landing lights will be operational if wingtip IR filters are installed. For normal landings with wingtip IR filters installed, only one nose landing light is required.
Nose Taxi Light		2	1*	1*	One may be inop provided the nose landing light on the same side is operational. Not required if mission conducted during daylight hours.
Wingtip Navigation Light, Fwd Position		2	2*	2*	One bulb per wing will be operational. (Note: there are 2 bulbs in each lighting assembly.)
Wingtip Navigation Light, Aft Position		4	2*	2*	One position light assembly per wing will be operational. (Note: there are 2 light assemblies with single white bulbs on each wing.)
Upper & Lower Anti-Collision, Beacon		2	2	2*	See AFI 11-202 Vol 3 for requirements. If either the upper or lower light is inop, a one time flight to a station with repair capability is authorized. For SPRO ops, lower light may be removed, upper light must be operational.
Tailcone In-Trail Light		2	0*	0*	One required for night formation flight.
Wing In-Trail Light		2	0*	0*	Two required for night formation flight. Wing tip position lights can be used as an alternate for training only.

Item/System	Message/Cue/Alert	Installed	Required		Notes/Limitations/Exceptions
			A	B	
Fuselage In-Trail Light		2	0*	0*	Two required for night formation flight.
A/R Flood Light		1	1	0*	Required for night A/R.
UARRSI Perimeter Light Panel		3	3	0*	Required for night A/R.
Emergency Exit Signs		13	13	13	
Emergency Exit Lighting Systems		3	3	3	
Emergency Lighting, Battery Power Supply		3	3	3	
Wing Tip (Strobe) Recognition Lights		4	0*	0*	See AFI 11-202 Vol 3 for requirements

Table 4.19. Navigation Systems.

Item/System	Message/Cue/Alert	Installed	Required		Notes/Limitations/Exceptions
			A	B	
Pitot Static Probes	P/S XX MAST/ HEAD HTR	4	3*	3*	Upper left (1A) and lower right (2A) probes will be operational to provide standby pitot static instruments
Standby Attitude Indicator		2	2	1*	Pilot will have a full set of standby indicators.
Standby Altimeter Airspeed Indicator		2	2	1*	Pilot will have a full set of standby indicators. Altimeter set function will be operational on both.
BDHI	Blank display or OFF flags	2	2	1*	Pilot will have a full set of standby indicators.
CIP		2	2	2	
Air Data Computer Channels	ADC 1A, 1B, 2A, 2B	4	4	4*	With ADC 1A inop, a one-time flight to a station with repair capability is authorized.
IRUs	IRU INOP X	4	4	3*	Includes IRU batteries. See FCC inop guidance.
GPS		2	2	0*	As required for ATC airspace restrictions
TACAN		1	1	0*	As required for mission accomplishment

Item/System	Message/Cue/Alert	Installed	Required		Notes/Limitations/Exceptions
			A	B	
PLSR 1/2		2	2	2*	With 1 PLSR inop, a one-time flight to a station with repair capability is authorized, provided a CAT II ILS approach is not required/expected. Aircrew will comply with single FM Immunity receiver procedures in the applicable Area Planning series.
DME 1/2		2	1*	1*	As required for mission accomplishment
LF/ADF		1	0*	0*	As required for mission accomplishment
RADAR Altimeter		2	1	1	
Weather RADAR		1	1	0*	Required for air refueling and when thunderstorms are forecast for the planned route of flight
IFF		1	1	1*	Mode 1, 2, 4, may be inop based on msn/airspace requirements.
TCAS		1	1	1*	Continue the mission to a station with repair capability. Required if ATC airspace mandates equipment.
SKE		1	0*	0*	As required for mission accomplishment
MCD		4	4	3	
Data Entry Keyboard (MCK)		2	2	2	
HUD		2	2	1*	5 of 6 displays (HUD/MFDs) will be operational. 2 req'd for ALZ/NVG.
MFD		4	4	3*	5 of 6 displays (HUD/MFDs) will be operational.
MFC		2	2	2	
A/PDMC		2	2	1	

Table 4.20. OBIGGS.

Item/System	Message/Cue/Alert	Installed	Required		Notes/Limitations/Exceptions
			A	B	
OBIGGS Systems		2	0*	0*	As required for mission tasking and tank inerting requirements.

Table 4.21. Oxygen.

Item/System	Message/Cue/Alert	Installed	Required		Notes/Limitations/Exceptions
			A	B	
25 liter Crew LOX Converter	CREW OXY LOW	1	1	1*	May be inop if PAX and/or auxiliary system and crossfeed are operational.
75 liter PAX LOX Converter	OXY LOW	1	1	1*	May be inop if auxiliary system is operational.
75 liter AUX Converter	OXY LOW	1	1	1*	May be inop if passenger system is operational.
Regulators		10	3*	3*	Pilot, co-pilot, loadmaster regulators will be operational. Other regulator(s) required for each occupied crewmember position.
Portable Oxygen Bottles		10	10	6*	Two minimum required for each primary crewmember. Ensure requirements of AFI 11-202 Vol 3, Table 6.1, are met.
Quick Don Mask		15	15	3*	Required for each primary crewmember. Ensure requirements of AFI 11-202 Vol 3, Table 6.1, are met.

Chapter 5

OPERATIONAL PROCEDURES

5.1. Checklists. A checklist is not complete until all items have been accomplished. Momentary hesitations for coordination items, ATC interruptions and deviations specified in the flight manual, etc., are authorized. Notes amplifying checklist procedures or limitations may be added to the checklists. Currency of notes is a crewmember's responsibility.

5.1.1. Checklist Inserts. MAJCOM Stan/Evals shall approve the use of checklist inserts IAW AFI 11-215, *Flight Manual Program (FMP)*. For AMC and AMC-gained units, AMC/A37V is the checklist insert approval authority. The inserts should be placed at the end of the appropriate checklist or in an in-flight guide. All checklist inserts must have a POC. OGVs shall approve local in-flight guides and inserts not affecting TO guidance and procedures.

5.2. Duty Station. A qualified pilot will be in control of the aircraft at all times during flight. (**EXCEPTION:** Unqualified pilots undergoing qualification training and senior staff members who have completed a Senior Staff Familiarization Course.) All crewmembers will be at their duty stations during all critical phases of flight, unless crew duties dictate otherwise. Due to mission requirements, and at the discretion of the PIC, loadmasters may occupy a seat on the flight deck or cargo compartment. During other phases of flight, crewmembers may leave their duty stations, for brief periods, to meet physiological needs and perform normal crew duties. Only one pilot may be absent from their duty station at a time. Crewmembers will coordinate with the PF before departing their assigned primary duty stations. 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).

5.3. 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. In all cases, sufficient oxygen sources must be available. Passengers and observers will not be permitted access to the pilot, copilot, or loadmaster position regardless of its availability.

5.4. Takeoff and Landing Policy. A current and qualified 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.

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

5.4.1.1. Airlift of nuclear weapons.

5.4.1.2. Aircraft emergencies, unless conditions prevent compliance.

5.4.1.3. Assault landing operations or landings with substandard airfield operations.

EXCEPTION: Pilots receiving upgrade training or receiving an evaluation.

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

5.4.1.5. CAT II ILS approaches and landings when weather is below CAT I mins.

5.4.2. PICs who possess less than 100 Primary Assigned Aircraft (PAA) hours in the C-17 since certification will perform all takeoffs and landings.

EXCEPTION: They may allow current ACs or higher to perform takeoffs and landings when required to maintain currency.

5.4.3. Copilot Takeoff/Landing Policy. Copilots may takeoff or land from the right seat if an AC with over 100 PAA hours since certification in the C-17 occupies the left seat. Copilots may takeoff and land from the left seat only if an instructor pilot or flight examiner provides direct supervision from the right seat.

5.4.4. First Pilots and graduates of the Pilot Initial Qualification (PIQ) course may takeoff or land from either seat if an AC with over 100 PAA hours since certification in the C-17 occupies the other seat.

5.5. Landing Gear and Slat/Flap Operating Policy. The landing gear will be operated by the pilot in the right seat on command of the pilot flying the aircraft. Before actuation of the landing gear, the other pilot will verify appropriate airspeed and acknowledge the command by repeating it. The slats/flaps will be operated by the pilot not flying (PNF) the aircraft on command of the pilot flying (PF) the aircraft. Before actuation of the slats/flaps, the other pilot will verify appropriate airspeed and acknowledge the command by repeating it.

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.

5.7. Seat Belts.

5.7.1. All occupants will have a designated seat with a seat belt. Use of seat belts will be as directed by the PIC and flight manual.

5.7.2. Primary crewmembers occupying pilot, copilot, or loadmaster positions will have seat belts fastened at all times in-flight, unless crew duties dictate otherwise.

5.7.3. All crewmembers will be seated with seat belts and shoulder harnesses fastened during taxi, takeoff, and landing, unless crew duties dictate otherwise. For A/R, all crewmembers and passengers will be seated with seat belts fastened (unless authorized by the PIC to observe tanker A/R or crew duties dictate otherwise), and all equipment will be properly secured. Crewmembers performing instructor or flight examiner duties are exempt from seat belt requirements if not occupying a primary crew position; however, a seat with an operable seat belt will be assigned.

5.7.4. Litter patients, actual or simulated, may remain secured on litters for takeoff and landing.

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

5.8.1. NVG Lighting.

5.8.1.1. During combat/contingency operations, the tactical situation may dictate the use of all, some, or none of the aircraft exterior lights as determined by the mission commander. Lights-out operations during peacetime will be conducted in warning or restricted areas IAW AFI 11-202V3

unless a letter of agreement exists with the FAA. Use the following guidance for aircraft exterior lighting configurations when operating outside of these areas.

5.8.1.2. Navigation Lights: Steady, bright.

5.8.1.3. Formation Lights: On, medium (formation operations only).

WARNING: Immediately discontinue use of NVGs, and/or increase spacing from preceding aircraft (if possible), when exterior lights in a preceding aircraft create excessive distractions or degrade performance of NVGs to the point where safe flying operations cannot be maintained.

5.8.1.4. Anti-Collision Lights: On, lower (upper and lower for single ship operations or for the last aircraft in the formation unless it causes distractions).

5.8.1.5. Landing Lights. IR landing lights will be turned on no later than 400' AGL on final.

5.8.2. NVG Aircraft Preparation. The cockpit of the C-17A is specifically designed for NVG operations and little preparation is required for flights requiring NVGs. During the exterior walk around inspection, a pilot will ensure all wheel well inspection lights are turned off and necessary exterior IR lighting is installed.

NOTE: Mini-chemical lights or tape to mark/identify switches and equipment may be used as required.

5.9. Portable Electronic Devices. IAW AFI 11-202V3.

5.9.1. Do not connect unauthorized equipment (laptop computers, video equipment, food preparation equipment, radios/tape players, CD players, etc.) to the aircraft intercom, PA, radio systems, or electrical system.

5.9.2. Aircrew members shall not use uncertified Government Furnished Equipment (GFE) or personal devices with RF transmit/receive capability on AMC aircraft carrying hazard class 1 explosive cargo at anytime. Prohibited devices include cellular phones, and laptop computers/PDAs with wireless capability enabled (i.e. Bluetooth). Loadmasters will ensure passengers comply with this restriction. Aircrew members may use certified GFE such as PFPS laptops and PDAs with infrared transmitters.

5.10. Tobacco Use on Air Force Aircraft. Tobacco use of any type is prohibited on Air Force aircraft.

5.11. Advisory Calls. The pilot flying will periodically announce intentions during departures, arrivals, approaches, and when circumstances require deviating from normal procedures. [Table 5.1.](#) through [Table 5.4.](#) depicts mandatory calls for nonprecision approaches, precision approaches, climb out and descent respectively.

Table 5.1. Nonprecision Approaches.

PHASE OF FLIGHT	PNF CALL	PF RESPONSE
100 feet above FAF altitude	“100 above”	
100 feet above step down altitude	“100 above”	
100 feet above Minimum Descent Altitude (MDA)	“100 above”	
At MDA	“Minimums”	
Runway environment in sight	“Runway in sight”	
MAP	“Missed Approach Point”	See note (1)

Table 5.2. Precision Approaches.

PHASE OF FLIGHT	PNF CALL	PF RESPONSE
100 feet above glide slope intercept altitude	“100 above”	
100 feet above Decision Height Altitude (DH)	“100 above”	
At DH		
- Runway environment in sight	“Land”	See note (3)
- Approach Lights in sight (CAT 1 ILS)	“Continue” (2)	“Continue” (3)
- Approach lights and/or Runway environment not in sight	“Go-around”	“Go-around”

Table 5.3. Climb Out.

PHASE OF FLIGHT	PNF CALL	PF RESPONSE
Transition Altitude	“Transition Altitude”	
1000 below assigned altitude	“1000 Below”	

Table 5.4. Descent.

PHASE OF FLIGHT	PNF CALL	PF RESPONSE
Transition Level	“Transition Level” (4)	(4)
1000 above assigned altitude	“1000 Above”	

NOTES:

1. The PF will announce his/her intentions to either land or go-around. If the runway environment is not in sight and/or the aircraft is not in position for a normal landing, a go around will be made.
 2. With weather at CAT 1 minimums on a CAT 1 ILS, the pilot may not see the runway environment at DH; however, the initial portion of the approach lights will be visible. The pilot may continue to 100 HAT with reference to the approach lights. The pilot may not descend below 100 feet above touchdown zone elevation using the approach lights as reference unless the red terminating bars or the red side row bars are distinctly visible and identifiable.
 3. The PF will announce his/her intentions to either land, continue, or go-around. Respond intention to "Land" if runway environment is in sight, will remain in sight throughout touchdown and the aircraft is in a position for a safe landing.
 4. Both pilots will state the altimeter setting.
- 5.11.1. Deviations:
- 5.11.1.1. The PNF will inform the PF when heading or airspeed deviations are observed, or when the altitude is more than 100 feet from the desired, and no attempt is being made to correct the deviation.
 - 5.11.1.2. Any crewmember seeing a deviation of 200 feet altitude or 10 knots in airspeed, or a potential terrain or obstruction problem, will immediately notify the PF. Deviations from prescribed procedures for the approach being flown will also be announced.

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

- 5.12.1. Sterile Cockpit. Limit conversation to that essential for crew coordination and mission accomplishment during taxi, takeoff, A/R, approach, landing, and any flight below 10,000 feet MSL.
 - 5.12.2. Aircraft Interphone. Primary crewmembers will monitor interphone during critical phases of flight. Crewmembers will coordinate with the PF before checking off interphone or operating in ISO-LATE. Crewmembers will ensure personnel on headset, or within listening distance, are cleared prior to discussing classified information over interphone.
- 5.12.3. Command Radios:
- 5.12.3.1. The PNF normally makes all air traffic control (ATC) radio calls.
 - 5.12.3.2. In terminal areas, all crewmembers (if able) will monitor the primary radio unless directed otherwise. A crewmember will be designated to monitor C2 frequencies on the inbound and outbound legs.
 - 5.12.3.3. The pilot operating the radios will notify the crew which radio is primary, and update the crew when the primary radio changes.
 - 5.12.3.4. One pilot should record and will read back all ATC clearances.
 - 5.12.3.5. Both pilots will monitor UHF and VHF guard emergency frequencies to the maximum extent possible.

EXCEPTION: Only one crewmember is required to monitor guard frequencies during rendezvous and A/R.

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

5.12.4. HF Communications. Confine message traffic to essential operational matters. Perform an HF radio ground check before takeoff if the use of HF radio may be required for ATC or C2 communications. Establish HF contact before going out of UHF and VHF range. If unable to establish HF contact with the controlling HF station, and an alternate means of relay of ATC information in oceanic areas is not available, comply with FLIP.

5.12.4.1. General. Provide ATC position and weather observations when required. If unable to contact an ATC agency, attempt relay through the GLOBAL HF stations.

5.12.5. Use secure and jam resistant communications to the maximum extent possible. In a threat environment, limit radio transmissions with the objective area to those required for safety of flight or factors affecting force employment.

5.12.6. Crew Resource Management (CRM) Assertive Statement “Time Out”.

5.12.6.1. “Time Out” is the common assertive statement for use by all crewmembers. The use of “Time Out” will:

5.12.6.1.1. Provide a clear warning sign of a deviation or loss of situational awareness.

5.12.6.1.2. Provide an opportunity to break the error chain before a mishap occurs.

5.12.6.1.3. Notify all crewmembers when someone sees the aircraft or crew departing from established guidelines, the briefed scenario, or that someone is simply uncomfortable with the developing conditions.

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

5.12.6.2.1. Safety permitting, stabilize the aircraft.

5.12.6.2.2. The initiating crewmember will voice his or her concerns to the crew.

5.12.6.2.3. The PIC will provide all other crewmembers with the opportunity to voice inputs relative to the stated concerns.

5.12.6.2.4. After considering all inputs, the PIC will direct the aircrew to continue the current course of action or direct a new course of action.

5.13. Transportation of Pets. Transporting pets (dogs and cats) in conjunction with the sponsor’s permanent change of station is authorized. Other pets or animals are normally prohibited, but may be moved according to DoD 4515.13R..

5.14. Alcoholic Beverages. MAJCOM A3/DO may authorize the dispensing of alcoholic beverages.

5.15. Runway, Taxiway and Airfield Requirements; Wind Restrictions; Runway Condition Reading (RCR) Limitations: A current landing zone (LZ) survey is needed before using other than hard-surfaced runways or taxiways, to include Matted runways. MAJCOM/A3/DO may waive runway/taxiway width requirements.

5.15.1. Runway and Taxiway Width Requirements. Minimum runway and taxiway widths for normal and tactical airland operations are depicted in [Table 5.5.](#)

Table 5.5. Runway/Taxiway Width Requirements.

Runway Operations	Width
Normal Operations	90 Feet/27.5 Meters
Tactical Assault Operations (Includes SPRO)	90 Feet/27.5 Meters
Taxiway	
Normal and Tactical Assault Operations	50 Feet/15.5 Meters
Star Turn	90 Feet/27.5 Meters

5.15.2. Runway Length for Takeoff. Normally, takeoffs will be initiated from the beginning of the approved usable portion of the runway. Minimum runway length for take off is critical field length.

5.15.2.1. Intersection Takeoffs. Normally, the PF will initiate takeoffs from the beginning of the approved usable portion of the runway. The decision to make intersection takeoffs rests solely with the PIC. Ensure the operating environment (i.e., gross weight, obstructions, climb criteria, weather, etc.) will allow a safe takeoff and departure. Data computations will be based on the actual runway remaining from the point at which the takeoff is initiated.

5.15.2.2. During operations on runways partially covered with snow or ice, takeoff computations will be based on the reported RSC or RCR for the cleared portion of the runway. A minimum of 45 feet either side of centerline should be cleared. If 45 feet either side of centerline is not cleared, then compute data based on the uncleared portion up to 45 feet either side of centerline.

5.15.3. Runway Length for Landing. Minimum runway for a normal landing (3/4 or full flap) is computed landing distance with idle reverse.

NOTE: Pilots will consider elevated brake temperatures and V_{bo} when determining the minimum runway required for landing to preclude melting the fuse plugs.

5.15.3.1. Minimum runway length for an assault landing is computed ground roll, with max reverse, plus 500 feet. Touchdown will be within the first 500 feet of the runway and full flaps will be used. Weather minimums will be circling minimums, no lower than 600/2. Prior to landing at a short field, the PIC will verify takeoff performance to ensure he/she can take off after the planned offload/onload.

NOTES:

Max reverse is referenced on the Non-Standard Configuration page of the mission computer. The data computed with this option selected is based on 2 engines in max reverse, 1 in idle reverse and 1 engine inoperative.

Pilots will consider elevated brake temperatures and Vbo when determining the minimum runway required for landing to preclude melting the fuse plugs.

5.15.3.1.1. Markings required for assault landing zone (ALZ) operations are depicted in AFI 13-217, *Drop Zone and Landing Zone Operations*. These markings are desirable for tactical airland operations; however, full markings are not mandatory on hard-surfaced runways that are permanently marked (or lighted) so as to make the touchdown zone and runway distances readily identifiable, or if the tactical situation does not permit full markings. Communication and navigation aids provided by special tactics units, are based on operational requirements, capability, and the specific threat environment.

5.15.3.2. Runways less than 3,500 feet require MAJCOM/A3/DO waiver.

5.15.3.3. Semi-Prepared Runway Operations (SPRO). See TO 1C-17A-1-1 Appendix B. OG/CC approval is required for semi-prepared runway operations within the CONUS, Alaska, and Hawaii. AMC/A3 approval is required in all other instances. For semi-prepared ALZs other than matted surfaces, Mission Commanders will ensure proper engineering evaluations (i.e. Dynamic Cone Penetrometer (DCP) or equivalent) are completed by qualified personnel within one week of the first landing to verify the LZ meets C-17 requirements.

5.15.4. Use of Overruns. If approach end overruns are available and stressed or 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.

5.15.5. Arresting Cables (does not include recessed cables).

5.15.5.1. When conditions permit (aircraft gross weight, runway length, weather, winds, TOLD, etc.) and the pilot in command has considered the potential for damaging the aircraft, make takeoffs and landings beyond raised cable barriers. Use the entire length of runway if necessary. Be aware that operations over arresting gear barriers at speeds in excess of taxi speed may result in damage to the aircraft.

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

5.15.5.3. Do not takeoff or land over an approach end cable that has been reported as slack, loose, or improperly rigged by NOTAM, automated terminal information service (ATIS), or ATC.

5.15.6. Other Airfield Requirements.

5.15.6.1. Consult with HQ AMC/A36AS (Airfield Suitability Branch) for suitability guidance. Once a mission is executed, the PIC is responsible for determining airfield suitability based upon operational need. Airfield certification requirements are detailed in the ASRR.

5.15.6.2. Aircrews and planning agencies will contact HQ AMC/A36AS for all questions pertaining to airfield weight bearing capacity and will review the GDSS/GDSS2/ASRR before all off-sta-

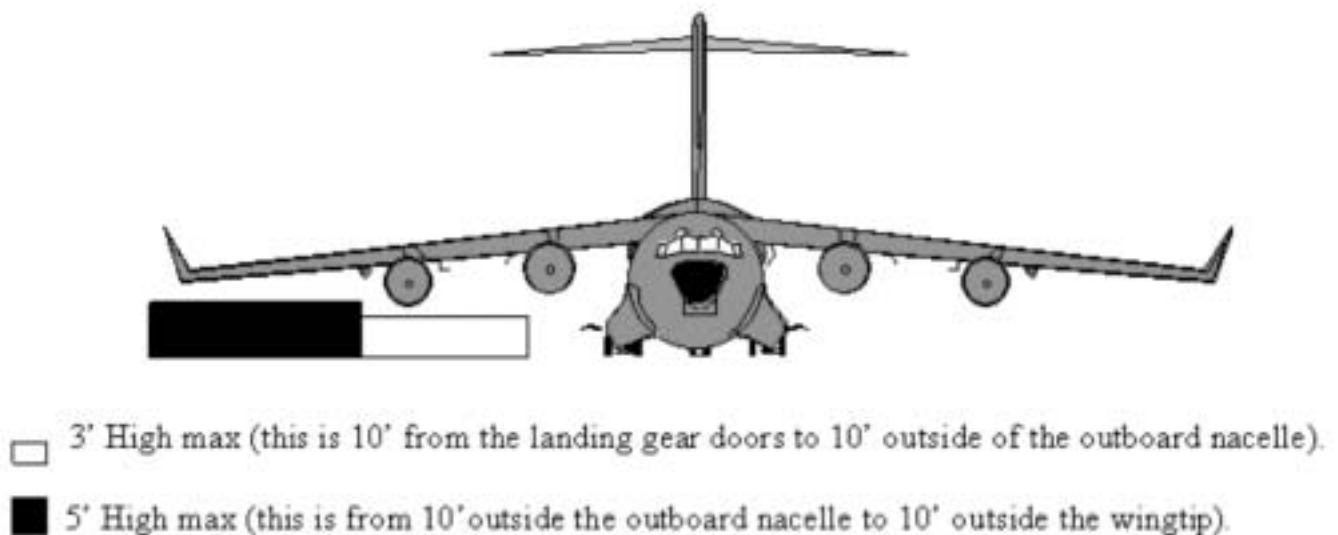
tion operations. HQ AMC/A3 is the waiver authority for the restrictions in GDSS/GDSS2 Giant Report and ASRR for AMC and AMC-gained aircraft, unless specifically delegated in AFI 11-2MDS Vol 3 or AMCI 11-208. Direct GDSS/GDSS2 Giant Report and ASRR waiver requests to HQ AMC/A36AS. HQ AMC/A37V is the OPR for waivers to airfield restrictions. MAJCOM/A3/DO is the waiver authority for non-AMC missions. The PIC is responsible for waiver compliance. Crews that have access to the World Wide Web will review airfield suitability in the airfield data base via the HQ AMC Aircrew Portal instead of the printed ASRR book. Consult the ASRR for airfield certification requirements.

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

5.16.1. Do not taxi an aircraft within 25 feet of obstructions without wing walkers monitoring clearance between aircraft and obstructions. With wing walkers, avoid taxi obstructions by at least 10 feet. Follow clearance criteria in **Figure 5.1**, for small permanent obstructions underneath the wing. During reverse taxi operations, do not taxi within 25 feet of an obstruction with or without a marshaller/wing walker.

EXCEPTION: IAW AFI 11-218, *Aircraft Operations and Movement on the Ground*, aircraft may taxi 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 obstruction. obstruction and the obstruction is permanent. Parked aircraft are not considered permanent, and 25 feet of clearance, or a wing walker, is required.

Figure 5.1. Taxi Obstruction Diagram.



NOTES:

Permanent obstacles (i.e. fuel hydrants), 3 feet high or shorter, are not considered obstructions as long as they remain a minimum of 10 feet away from the landing gear doors.

A marshaller or crew member will verify the height and location of 3' and 5' high obstacles to ensure specified clearances from the wing, engines, and landing gear doors.

5.16.2. When taxi clearance is doubtful, use one or more wing walkers. If wing walkers are unavailable, deplane one or more crewmembers to maintain obstruction clearance and provide marshaling using AFI 11-218 signals. Use wing walkers, deplaned crewmembers, or a crewmember on interphone positioned at the paratroop door(s) or ramp to act as an observer while maneuvering on narrow taxiways. During night taxi operations, marshallers will have an illuminated wand in each hand. Wing walkers are only required to have one illuminated wand. Observers should be in a position to see wing walkers at all times (through door or windows) and communicate with the pilot.

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

5.16.3.1. Carefully review airfield layout paying particular attention to taxi routes, turn requirements, and areas for potential FOD. Pay attention to other aircraft with engines running on parking aprons, adjacent taxiways, hammerheads, and arm/de-arm areas.

5.16.3.2. Minimize power settings during all taxi operations.

5.16.3.3. Avoid (when possible) 180-degree turns.

5.16.3.4. Avoid (when possible) taxi operations, which would position an engine over an unprepared or unswept surface. If it becomes necessary to position an engine over an unprepared or unswept surface, the engine should be left in idle (to the maximum extent possible) until the engine is back over an improved surface. Consider increasing power on remaining engines.

5.17. Reverse Taxi:

5.17.1. The pilot will coordinate reverse taxi directions and signals to be used with the loadmaster and marshaller (when available).

5.17.2. Unless briefed otherwise, the following standard terms will be used by the loadmaster when conducting reverse taxi operations:

5.17.2.1. The #1 and #4 engines will be used as turn references, i.e., “More turn towards #1,” “Less turn towards #4.” Use the term “roll out” when you want the PF to center the tiller.

5.17.2.2. When the aircraft nears the desired reverse taxi stopping point, the loadmaster will give the following commands: “Loadmaster counting, five, four, three, two, one, stop.”

CAUTION: During the entire reverse taxi operation, if the loadmaster states the word “Stop,” the pilot will immediately stop the aircraft. Failure to comply may result in damage to aircraft or injury to personnel.

5.17.3. Ensure all passengers are seated with seatbelts fastened and cargo is secure.

5.17.4. The loadmaster must have enough maneuverability to observe and direct reverse taxi, and report any hazards. The loadmaster will provide the pilot with continuous interphone instructions on conditions in the maneuvering area. This includes turns, distance remaining (for wingtips, empennage, and main gear), and stopping point. During aircraft backing, if the pilot and loadmaster lose interphone contact the pilot will stop the aircraft.

5.17.5. When reverse taxiing at night, the pilots and loadmaster will ensure the taxi area is sufficiently lighted. Use the staging lights, retracted landing lights, or any other source that provides adequate lighting of the taxi area.

5.17.6. During reverse taxi operations, stop at least 25 feet from an obstruction with or without a marshaller/wing walker.

CAUTION: The aircraft tail cannot be seen by the loadmaster from inside the aircraft and could possibly strike an obstruction well before the main gear tires are near the ramp edge. If any doubt exists as to sufficient clearance, stop the aircraft.

5.18. Fuel Jettison Procedures.

5.18.1. AMC policy is to burn down fuel versus jettison, unless safety of flight dictates an immediate jettison (as determined by the pilot in command). Except in the case of an emergency, before jettisoning fuel, notify the appropriate ATC or flight service facility of intentions, altitude, and location. If available, the PIC will use designated jettison areas, except when safety of flight would be compromised.

5.18.2. For missions tasked by higher headquarters authority, the tasking C2 agency (18 AF TACC, AMOCC, CAOC, etc.) may authorize fuel jettison when an urgent operational requirement dictates immediate recovery/reconstitution of the aircraft and/or aircrew. The tasking C2 agency may provide fuel jettison instructions in the OPORD, mission directive, SPINS, etc.

5.18.3. For training missions, the OG/CC may approve fuel jettison when an urgent operational requirement exists to expedite recovery of the aircraft and/or aircrew, and all alternatives have been exhausted.

5.18.4. OG/CCs will establish jettison areas and procedures to minimize the impact of fuel jettisoning. Ideally, establish jettison areas at 20,000 feet MSL, off published airways, avoiding urban areas, agricultural regions, and water supply sources. Avoid circling descents. Initiate **AF IMT 813**, Request for Environmental Impact Analysis, and submit it to the base environmental coordinator.

5.18.5. All jettisons will be followed up with a detailed report filed by the pilot in command immediately after landing (**AMC Form 97**, AMC In-flight Emergency and Unusual Occurrence Worksheet). Submit AMC Form 97 through unit OGV to AMC/A37V. Unit OGVs will retain AMC Form 97 for 6 months. Document all pertinent information, including the following items:

- 5.18.5.1. Scheduled Duration.
- 5.18.5.2. Actual Duration.
- 5.18.5.3. Landing Gross Weight.
- 5.18.5.4. Computed Stopping Distance.
- 5.18.5.5. Recovery Field.
- 5.18.5.6. Runway Available.
- 5.18.5.7. Jettison Altitude/Location.
- 5.18.5.8. Outside air temperature.
- 5.18.5.9. Wind direction and velocity.
- 5.18.5.10. Jettison Amount.
- 5.18.5.11. Reason for Jettison.

5.18.5.12. Approval Authority.

5.19. Aircraft Speed. Comply with requirements established in AFI 11-202V3. In accordance with applicable tech orders, aircraft may exceed 250 KIAS or in-flight minimum maneuver speed below 10,000 feet to safely accomplish formation departure rejoins. Once rejoined, all formation members may exceed 250 KIAS below 10,000 feet only to accommodate the minimum maneuver speed of the heaviest formation member.

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

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

5.20.1.1. Bird Watch Condition Low – No operating restrictions.

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

5.20.1.3. Bird Watch Condition Severe. All takeoffs and landings are prohibited. Waiver authority is local OG/CC or equivalent. Parent MAJCOM/A3/DO waiver is required to operate at airfields not controlled by the MAF.

5.20.2. Commanders establish Phase II of the BASH program during increased periods of migratory bird activity. Schedulers shall make every effort to not schedule takeoffs, landings, and low-levels from one hour before to one hour after sunrise and sunset during the Phase II period. Publish significant bird hazards in FLIP Area Planning (AP) and the IFR Supplement along with the associated airfield operating hour restrictions and avoidance instructions.

5.20.3. When operating at airfields where no BASH program exists, PICs have the authority to delay takeoffs and arrivals due to bird condition. Coordinate actions through appropriate C2 authority.

5.20.4. Consider bird migratory patterns during the en route portion of the mission to help minimize the potential of an in-flight bird strike. The Bird Avoidance Model (BAM) on HQ AFSC/SEF website contains BASH information including regionalized Continental United States (CONUS) bird migration patterns, Portable Flight Planning System (PFPS) software overlay, and the latest news. The Avian Hazard Advisory system (AHAS) website is another source for real time bird hazard information. Both sites may be accessed through the AMC aircrew mission planning portal. See AFPAM 91-212, *Bird Aircraft Strike Hazard (BASH) Management Techniques*, for additional information.

5.20.5. Following a bird strike, aircrews should land as soon as practicable, to have the aircraft inspected by qualified maintenance personnel. Bird strike damage cannot be accurately assessed in-flight, and undetected damage may result in a complex airborne emergency; only qualified maintenance personnel, on the ground, can make reliable damage assessments.

5.21. Functional Check Flights (FCFs) and Acceptance Check Flights (ACFs). FCFs and ACFs will be accomplished IAW TO 1C-17A-6, *Inspection Requirements Manual*, AFI 21-101, *Aerospace Equipment Maintenance Management*, TO 1-1-300, *Functional Check Flights and Maintenance Operational Checks*, and TO 1C-17-6CF-1, *Acceptance and Functional Check Flight Procedures Manual*. 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.

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

5.21.1.1. The OG/CC, or deployed equivalent, may authorize temporary waivers to FCF procedures for aircrew qualification when operationally necessary.

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

5.21.1.3. 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.

5.21.1.4. The decision to approve a combined FCF and ferry flight is the responsibility of the MAJCOM/A3/DO.

5.21.1.5. 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.

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

5.21.1.7. If a malfunction occurs during a FCF, the 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.

5.21.1.8. The OG/CC or deployed MC may authorize temporary waivers to FCF procedures for aircrew qualification when operationally necessary. Permanent waivers require MAJCOM/A3/DO approval IAW [Chapter 1](#).

5.22. Participation in Aerial Events. See AFI 11-209, *Air Force Aerial Events*, AFI 11-246V6, *Air Force Aircraft Demonstrations*, and the appropriate MAJCOM supplement. Aerial events must be sanctioned and individually approved by the appropriate military authority, and the Federal Aviation Administration (FAA). AFI 11-209 and AMC Supp 1 clearly identifies events sanctioned for support, and specifies the approval authority for each type, AFI 11-209 also stipulates that units participating in aerial events will ensure activities are coordinated with the FAA through the regional Air Force representative.

5.23. Not Used.

5.24. Traffic Alert and Collision 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.

5.24.1. Reaction to a traffic advisory (TA) or resolution advisory (RA). PNF will select the TCAS PPI display on a convenient MFD.

5.24.1.1. PF duties during an RA.

5.24.1.1.1. Press the autopilot disconnect to engage TCAS guidance.

5.24.1.1.2. Promptly and smoothly maneuver to follow flight director guidance. Crosscheck the TCAS PPI display's vertical speed guidance and maintain the minimum vertical speed in the green band.

5.24.1.1.3. Respond immediately to any "increase" or "reversal" RA maneuver advisories.

NOTE: The flight director is the primary guidance for RA maneuver. The CAWS alert may lag behind the flight director guidance when multiple messages occur.

5.24.1.1.4. If in a turn during an RA, continue with the turn while complying with TCAS advisories. If an "increase climb" RA is issued, level wings prior to increasing climb rate.

5.24.1.1.5. When "clear of conflict" advisory announced, promptly and smoothly return the aircraft to its previously assigned (or amended) clearance.

NOTE: The CAWS "altitude" warning may disrupt or mask the "clear of conflict" message. An alternate means to determine when the aircraft is clear of conflict is when the FMAs revert back to basic modes.

5.24.1.2. PNF duties during an RA.

5.24.1.2.1. Confirm the action being performed by the PF. Advise the PF of any deviation from the vertical path indicated by flight director guidance, the TCAS PPI display, and/or other annunciations.

5.24.1.2.2. Clear airspace into which aircraft will maneuver.

5.24.1.2.3. Advise ATC as soon as possible if you are deviating from your assigned clearance.

5.24.1.2.4. When "clear of conflict" advisory is announced, notify ATC you are returning to previously assigned clearance or acknowledge any amended clearance.

5.24.2. Multi-ship formation.

5.24.2.1. Lead aircraft (or designated alternates) will operate TCAS in the "TA only" mode. Consideration should be given to having the last aircraft in multi-element formations operating TCAS in "TA only" mode.

5.24.2.2. For formations utilizing SKE and TCAS overlay to verify formation position, all aircraft will operate TCAS in accordance with TO 1C-17A-1.

5.24.3. Low-level operations. This system was not designed for use in the low level environment, but could provide valuable awareness of light aircraft or other military aircraft using military airspace. Use of "TA only" mode is recommended.

5.24.4. Air refueling operations. TCAS may be used to help acquire and track the tanker(s) during the rendezvous. Use "TA only" mode inside the ARIP and be aware TCAS will be unavailable once the IFF is set to STBY.

5.24.5. Additional information.

5.24.5.1. If a GPWS or stall warning occurs, terminate the RA maneuver.

5.24.5.2. Excessive climb and descent rates could lead to inadvertent TA/RA. Pilots should limit climb and descent rates when approaching the level off altitude.

5.24.5.3. Use the above/below/normal settings as appropriate for the phase of flight and mission. Consideration should be given to selecting the below setting prior to tactical descents and while at high altitude cruise. This setting will help the crew clear for traffic in the event of an emergency descent.

5.24.6. TCAS event documentation. The PIC will document all pertinent information surrounding an RA event on the AF IMT 657 HATR, and submit the report to the nearest air force safety office.

5.25. Radar Altimeter. Any crewmember detecting the “TOO LOW” annunciation (PFD/HUD) will immediately notify the pilot flying. Terrain clearance and aircraft position must be verified.

5.26. Buddy Starts. Buddy starts may be performed when approved by the OG/CC or DIRMOBFOR. This authority may be delegated to the squadron or mission commander when the unit is deployed. This authorization will not be construed to allow repeated buddy starts at various scheduled en route stops.

5.27. Not Used.

5.28. Aircraft Recovery from Unprepared Surfaces. Aircrews will not normally attempt to recover an aircraft after inadvertent entry onto unprepared surfaces not suitable for taxi; ground crews will accomplish aircraft recovery. Unless an emergency dictates otherwise, aircrews may only accomplish recovery if there is no aircraft damage, the surface will support the aircraft, and the PIC has coordinated with appropriate MAJCOM headquarters maintenance authorities through 18 AF TACC, or appropriate C2 agency.

5.29. Ground Proximity Warning System (GPWS) / Terrain Alert Warning System (TAWS). The following escape maneuvers and flight crew procedures apply to aircrews flying aircraft equipped with GPWS/TAWS. Exceptions to these policies are addressed in the ASRR.

5.29.1. For operations in day VMC conditions, with terrain and obstacles clearly in sight, the PF will call runway and/or terrain in sight, state intentions and visually clear terrain.

5.29.2. For operations at night or in IMC, if an aural warning is heard, immediately and simultaneously rotate the aircraft to establish a climb (FPV above the horizon line) while rolling wings level, and add maximum power until the warning has ceased and adequate terrain clearance is verified.

WARNING

Do not delay pull-up for diagnosis of the low altitude warning.

Failure to roll wings level during the maneuver described above will decrease stall margin at heavy aircraft gross weights.

5.29.3. Ensure the mode of the GPWS/TAWS is commensurate with the aircraft’s phase of flight.

5.30. Use of Automation. Use appropriate levels of automation as required by the flight conditions. The first priority is to fly the aircraft. The Automatic Flight Control System (AFCS) and Mission Computer

(MC) are intended to aid in workload management, not complicate it. As the flight situation changes, do not feel locked into a level of automation.

5.30.1. Avoid the following common pitfalls associated with over-reliance, misuse, or misunderstanding of automation.

5.30.1.1. Fixating on the automation. One pilot should always remain heads up. Establish clear roles for computer related tasks. Announce “pilot heads down” or “copilot heads down” when the task requires focusing significant attention on the mission computer in flight.

5.30.1.2. Misprioritizing programming tasks. Extensive reprogramming during critical phases of flight or during periods of high workload should be avoided.

5.30.1.3. Mode awareness. The pilot flying (PF) should make AFCS panel changes during coupled operations. During uncoupled flight, the PF should direct the pilot not flying (PNF) to make changes to the AFCS panel. Confirm all mode changes by observing the correct flight mode annunciator (FMA) indications. Engagement of the autopilot and autothrottles should be announced.

5.30.1.4. Assuming automation is programmed correctly. Pilots will back up each other when making AFCS panel settings or programming the MC.

5.30.1.5. Over-reliance on automation. Practice flight operations at all levels of automation to be proficient. If the automation is not performing as expected, take over manually.

5.31. Standard AFCS Terminology. Under certain conditions, complete commands may be required. This would require an action, the proper axis, then the setting, e.g., “SELECT HEADING 060.”

5.31.1. SELECT or ENGAGE directs the selection of a value on the AFCS panel which results in the value being placed in the “Engaged” (Top) portion of the FMA. SELECT is normally used with rotary knobs labeled “SEL,” however, ENGAGE is acceptable. The FD, TOGA, APPR, ATT, AD, AP, AT are normally engaged. For added clarification, selecting an EPR rating means pressing a thrust rating button on the SED panel; engaging EPR means pressing the AFCS “EPR” pushbutton.

5.31.2. ARM directs the selection of a value on the AFCS panel which results in the value being placed in the “Armed” (Bottom) portion of an FMA.

5.31.3. For LNAV and VNAV selections, command the actual value intended, not “ARM LNAV” or “ENGAGE VNAV.” For example, “ARM VOR” or “ENGAGE VPROF” are proper commands.

5.31.4. Standard terminology is very precise, but can unnecessarily congest cockpit communication. In-flight context generally allows simplified direction and execution. For example “ARM 10,000” is obviously an altitude command and does not require the noun “altitude” to clearly communicate the PF’s desires. Airspeeds appended with “PITCH” or “THRUST” are sufficiently clear and do not require the use of the noun “speed.” VERT SPDS appended with “UP” or “DN” are sufficiently clear. If requested by the PF, ATC vectors (headings) may be automatically selected, and altitudes automatically armed by the PNF. At any time the PNF is unsure of the command, he/she will ask for clarification. If the PF sees an uncommanded FMA, he/she will clearly restate the command and ensure the actual value is made.

5.32. C-17 HUD/MFD Endorsement. The C-17 MFD is certified as a single medium display, and may be used as a primary flight reference (PFR). Due to the lack of a full-time attitude reference, the heads up

display (HUD) is endorsed as a PFR as long as one primary flight display is present on an MFD. To the maximum extent possible, keep a primary flight display (PFD) on one of the MFDs at all times. When mission requirements dictate, the PFD may be replaced with another display for short periods of time.

5.33. C-17 Engine Start Policy. If available, maintenance personnel should act as “ground” during engine starts. Any C-17 crewmember may also fulfill this requirement. If no maintenance personnel are available and crew duties limit the availability of a crewmember, the engines may be started without someone outside the aircraft. If this option is used, ensure all crewmembers are thoroughly briefed.

Chapter 6

AIRCREW PROCEDURES

Section 6A—Pre-Mission

6.1. Aircrew Uniform.

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

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

6.1.2.1. See AFI 11-301V1, *Aircrew Life Support (ALS) Program*, Attachment 1 for minimum aircrew clothing requirements. All crewmembers will have Nomex gloves in their possession.

6.1.2.2. It is recommended that primary crewmembers wear Nomex gloves during engine start, takeoff, and landing.

6.1.2.3. Crewmembers will remove rings and scarves before performing aircrew duties.

6.1.3. Personnel will have the appropriate items of clothing in their possession when flying in Arctic and Antarctic regions. **EXCEPTION:** Not applicable to transoceanic flights or when staging or transiting Elmendorf AFB AK.

6.2. Personal Requirements.

6.2.1. Passport. Crewmembers will carry a valid passport on all missions outside the CONUS.

EXCEPTION: Unit commanders may authorize newly assigned personnel who have applied for, but not yet received, a passport, and those crewmembers whose passports are being renewed, to act as crewmembers on missions not scheduled to transit locations where passports are required.

6.2.2. Shot Record. Crewmembers will maintain worldwide shot requirements and carry their shot records on all missions outside the CONUS (except overseas units on local training missions).

6.2.3. Driver's License. A valid state driver's license is required on each TDY where use of US government general purpose vehicles may be required. Crewmembers will contact the local airfield manager before driving on the flight line.

6.2.4. Identification Tags. Crewmembers will carry two identification tags on all flights.

6.2.5. FOD Hazards. Crewmembers will not wear wigs, hairpieces, rings, ornaments, or earrings in the aircraft or on the flight line.

EXCEPTION: Crewmembers may wear plain elastic hair fasteners and/or pins, clips, or barrettes providing they do not interfere with the wearing of headsets, or the donning of oxygen equipment. They will be accounted for before and after flight.

6.2.6. Helmets and Oxygen Masks.

6.2.6.1. Crewmembers will carry a personal helmet and oxygen mask:

- 6.2.6.1.1. Anytime parachutes are required to be carried by the mission directive, OPORD, SPINS, etc.
- 6.2.6.1.2. Whenever the aircrew requires night vision goggles or flash-blindness devices (MIL-G and/or PLTZ goggles).
- 6.2.6.1.3. When required for wear of the aircrew chemical defense ensemble.
- 6.2.6.2. Crewmembers will return personal helmets and oxygen masks to Life Support on mission completion.
- 6.2.7. Flashlights. Each crewmember will carry an operable flashlight for night flights.
- 6.2.8. A reflective belt or suitable substitute will be worn on flight lines during hours of darkness or periods of reduced visibility.

6.3. Pre-mission Actions.

- 6.3.1. Before transiting areas outside the CONUS, aircrews will review theater-specific information necessary to successfully operate there. The review should include (but is not limited to):
- 6.3.2. Airspace/Airfield Review. FLIP, FIR/UIR/ADIZ procedures.
- 6.3.3. Airspace classifications, GDSS/GDSS2/ASRR, Giant Report, and airport qualification videos (if available).
- 6.3.4. Organized Track Systems. Minimum Navigation Performance Specifications (MNPS) Airspace requirements; North Atlantic and Pacific Region Track Systems procedures.
- 6.3.5. Review tasking, itinerary, and altitude reservation (ALTRV) requirements.
- 6.3.6. Review applicable OPORD, SPINS, Virtual Risk Assessment (VRA), Country Risk Assessment (CRA), and FLIP.
- 6.3.7. Review the FCG for areas of operation (to include classified portion). Obtain necessary diplomatic clearances where required.
- 6.3.8. Obtain required customs forms.
- 6.3.9. Coordinate with combat crew communications for worldwide FLIP and sufficient communications security (COMSEC) materials for the duration of the mission.
- 6.3.10. Ensure physiological training, annual physical, immunizations, and flight evaluations will remain current throughout the TDY period.
- 6.3.11. Ensure visas have been received, if required.
- 6.3.12. Obtain terrain charts for unfamiliar destinations if available.
- 6.3.13. Compile sufficient spare forms, flight orders, etc. to cover the TDY period.
- 6.3.14. Release available seats to passenger terminal.
- 6.3.15. Consider and factor in foreseeable safety risks and risk mitigation factors in accordance with Operational Risk Management (ORM).

6.4. Aircrew Publications Requirements. Aircraft commanders will ensure the publications specified in **Table 6.1** are carried on all missions. “P” designates the publication is required to be carried in paper format. “D” designates the publication may be carried in either paper or digital format. If publications are carried in a digital format, the unit will provide the media to view the digital publications. The unit may specify additional publications in their unit supplement to this instruction.

Table 6.1. Aircrew Publications.

PUBLICATION	FORMAT
TO 1C-17A-1	P
TO 1C-17A-1-1	P
TO 1C-17A-1-2	D
Abbreviated Checklists	All crewmembers will carry the abbreviated checklist(s) for their crew position.
TO 1C-17A-1-35	P
TO 1C-17A-9	P
AFI 11-202V3	D
AFI 11-2C-17V3	P
AFI 13-217	D
AFI 11-231	D (Airdrop wings only)
AFI 11-299 (FOUO)	P (PNAF Only)
TO 1C-17A-16-1/2	P (PNAF Only)
AFI 11-2C-17V3 Addenda B	P (SOLL II Only)

6.5. Airfield Review. Aircrews will consult the web-based airfield database maintained by HQ AMC/A36AS (Airfield Suitability Branch) and comply with the GDSS/GDSS2/ASRR for updates to airfield operability and weight bearing capacity.

6.6. Aircrew Intelligence Briefing. Before leaving home station on missions departing the United States, crews will receive an intelligence briefing that will emphasize terrorist, enemy, and friendly political and military development in the area in which they will be flying. Crews must also receive an intelligence brief prior to entering specific area of operations (AOR). In theater, aircrews should receive intelligence updates on initial arrival at a forward operating location (FOL), or en route stop, and thereafter when significant developments occur. Report information of possible intelligence value to the local intelligence officers as soon as possible to ensure timely dissemination of mission reports (MISREPs) at the completion of each mission.

Section 6B—Predeparture

6.7. Integrated Management Tool (IMT) Account. Pilots will obtain an IMT account prior to operating on IFM-planned sorties. Download aircrew departure papers using the IMT account, at locations without an AMC C2 presence. For operational missions, ensure IMT account passwords are active prior to departing home station.

6.8. Flight Crew Information File (FCIF).

6.8.1. Crewmembers will review FCIF, Volume 1, before all missions or ground aircrew duties, and update the FCIF currency record with the latest FCIF item number, date, and crewmember's initials.

6.8.2. Crewmembers delinquent in FCIF review or joining a mission en route will receive an FCIF update from a primary aircrew member counterpart on the mission.

6.8.3. Crewmembers not assigned or attached to the unit operating a mission will certify FCIF review by entering the last FCIF number and their initials behind their name on the file copy of the flight authorization or file copy of their crew orders.

6.9. Flight Crew Bulletins (FCB). Items in the FCB may include local procedures and policies concerning equipment and personnel generally not found in any other publications

6.10. Mission Kits. Carry mission kits on all operational missions. Suggested items include:

NOTE: * Indicates mandatory for all missions away from home station.

6.10.1. Publications:

6.10.1.1. *AFI 11-401, *Aviation Management*

6.10.1.2. *AFI 23-202, *Buying Petroleum Products and Other Supplies and Services Off-Station.*

6.10.1.3. *AFMAN 24-204, *Preparing Hazardous Materials for Military Air Shipments.*

6.10.1.4. *AMCI 11-208, *Tanker/Airlift Operations.*

6.10.1.5. ATP-56, *NATO Air to Air Refueling.*

6.10.1.6. *Airfield Suitability and Restrictions Report (ASRR)

6.10.1.7. *AMC Aircrew Border Clearance Guide.

6.10.1.8. *FCB

6.10.1.9. AFI 11-289, *Phoenix Banner, Silver, Copper Operations.*

6.10.1.10. Integrated Flight Management Aircrew Flimsy

6.10.2. Forms:

6.10.2.1. DD Form 1351-2, **Travel Voucher or Sub Voucher**

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

6.10.2.3. *CF 6059B, **US Customs Accompanied Baggage Declaration**

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

- 6.10.2.5. *DD Form 2131, **Cargo/ Passenger Manifest**
 - 6.10.2.6. *CF 7507, **General Declaration Outward/Inward**
 - 6.10.2.7. *AF IMT 15, **United States Air Force Invoice**
 - 6.10.2.8. *AF IMT 315, **United States Air Force AvFuels Invoice**
 - 6.10.2.9. AF IMT 457, **USAF Hazard Report**
 - 6.10.2.10. *AF IMT 651, **Hazardous Air Traffic Report (HATR)**
 - 6.10.2.11. *AFTO IMT 781, **ARMS Aircrew/Mission Flight Data Document**
 - 6.10.2.12. *AF IMT 1297, **Temporary Issue Receipt**
 - 6.10.2.13. AF IMT 3211, **Customer Comments**
 - 6.10.2.14. AMC IMT 43, **AMC Transient Aircrew Comments**
 - 6.10.2.15. AMC IMT 54, **Aircraft Commander's Report on Services/Facilities**
 - 6.10.2.16. AF IMT 711B, **USAF Mishap Report**
 - 6.10.2.17. *AF IMT 4075, **Aircraft Load Data Worksheet**
 - 6.10.2.18. *AMC IMT 97, **AMC In-Flight Emergency and Unusual Occurrence Worksheet.**
 - 6.10.2.19. *SF 44, **Purchase Order-Invoice-Voucher.**
 - 6.10.2.20. Japanese Customs Declaration
- 6.10.3. Orders:
- 6.10.3.1. DD Form 1610, **Request and Authorization for TDY Travel of DoD Personnel**
 - 6.10.3.2. AF IMT 1631, **NATO Travel Orders** (when required)
 - 6.10.3.3. *AF IMT 4327a, **Crew Flight Authorization** (or MAJCOM prescribed according to AFI 11-401, *Aviation Management*).
- 6.10.4. Miscellaneous:
- 6.10.4.1. *Box car seals.
 - 6.10.4.2. *Masking tape.
 - 6.10.4.3. PFPS laptop computer.
 - 6.10.4.4. Computer floppy disks.

6.11. Route Navigation Kits.

- 6.11.1. A route navigation kit is issued at home station and remains with the aircraft until return. Kits contain sufficient quantities of material to cover the planned mission and global operations as required.
- 6.11.2. Minimum contents of route navigation kits are in [Table 6.2.](#)
- 6.11.3. Local area navigation kits may be used in lieu of route navigation kits in [Table 6.2.](#) on local unit training sorties. The unit will determine contents of these kits.

Table 6.2. Route Navigation Kit Contents.

Item (applicable to area of operation):	Number
FLIP GP Planning (sections GP, AP/1, AP/1B, AP/2, AP/3)	1
FLIP IFR Supplement	2
FLIP Flight Information Handbook	1
FLIP En route (high and low)	2
FLIP Instrument Approach Procedures (high and low)	2
Standard Instrument Departures (East and West United States, volumes 1 and 2)	2
Instrument Departures Europe and North Africa (high and low)	2
Standard Terminal Arrival Routes (STAR)	2
Jeppesen Approach Procedures/Charts	As Required
Topographical and Sectional Charts for areas of operation (GNC/OPC/TPC/JNC/JOJ/Sectionals)	As Required
FLIP VFR Supplement	1
DoD Area Arrival Charts	2 if available
Navigation and Comm Database Disks	As Required

6.12. Briefing Requirements.

6.12.1. 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 OPOD procedure.

6.12.2. Pilot in Command Briefing. Cover all applicable items of the operations briefing, including MAJCOM, NAF, unit Special Interest Items (SIIs), and ORM level. Brief crewmembers on the specific mission details if not previously accomplished. Use MAJCOM approved briefing guides. For tactical missions, additional briefings may be required. Reference AFTTP 3-3.35A chapter 2 for additional briefing information.

6.12.2.1. In the en route system, the PIC will ensure that an aircrew briefing is conducted prior to the first sortie of the day. As a minimum, brief crewmembers on specific mission details for that day's sortie(s) and the ORM level for the mission. Complete this briefing prior to engine start.

6.12.2.2. NVG Briefing Requirements. For missions conducting NVG operations crews will review and coordinate NVG failure procedures for all phases of the mission. Any crewmember who experiences NVG problems will inform the rest of the crew. If unable to regain the use of NVGs, the PIC will consider crew experience, mission priority, and Intel, tactics and threat brief-

ings 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.

6.12.3. Specialized Briefing. Use specialized briefings to detail operating procedures or SII's peculiar to various crew positions, and to answer questions relating to those specialties. Use a MAJCOM approved specialized briefing guide.

6.12.4. Weather Briefings. The PIC will obtain a briefing on current weather, trends, and forecast for the proposed route, destination, and alternates. The PIC will brief primary crewmembers on appropriate weather conditions before departure.

6.12.4.1. Aircrews flying flight-managed sorties will use the weather briefing provided with the IFM aircrew departure papers. Local weather flights/agencies may update local takeoff weather data, but aircrews, working through their flight manager/dispatcher, will use 18 AF TACC weather operations (or the Operational Weather Squadron (OWS) supporting the theater AMOCC) as the final arbiter for weather-related issues and further updates.

6.12.4.2. On sorties not planned by a flight manager, crews should obtain weather information from their local weather flight or the OWS responsible for weather support at their location.

6.12.4.3. If adequate services are not available, and the crew cannot contact their home weather flight, OWS, or 18 AF TACC weather operations, obtain weather through any means available prior to mission accomplishment.

6.12.4.4. Weather information is permitted from US Military weather services, any FAA-approved weather source, or any host nation civil or military weather source.

6.12.4.5. Verbal weather briefings are authorized for local flights. Face-to-face briefings are not required.

6.12.5. Buffer Zone. Prior to operating an aircraft within or adjacent to an established buffer zone, the PIC will ensure primary crewmembers are briefed on current buffer zone procedures outlined in appropriate directives.

6.12.6. Peacetime and Wartime SAFE PASSAGE Procedures. Pilots must be familiar with peacetime and wartime safe passage of friendly military aircraft (if applicable).

6.12.7. IFM Briefing. PICs will thoroughly review the aircrew departure papers provided for IFM sorties. When time and circumstances permit, the PIC, or designated representative, will contact the flight manager before signing the flight plan.

6.13. Call Signs.

6.13.1. Training Missions. Aircraft will use the unit static call sign prefix followed by a 2-digit suffix assigned by the parent unit.

6.13.2. Operational Missions. Use call signs assigned by OPORD, FRAG, or diplomatic clearance. If no call sign has been assigned, use unit static call signs. When flying AMC missions, and no other call sign had been assigned, use the "REACH" call sign followed by the last digit of the year the aircraft was built and the last 3 digits of the aircraft tail number (or as required by diplomatic clearance). To complete flight plans, put the letters "RCH" followed by the last digit of the year the aircraft was built and the last 3 digits of the aircraft tail number.

EXCEPTION: For aircraft 97000041 through 97000045 use RCH 9741 through 9745.

6.13.3. The Reach 01 and 18 call signs are reserved for the AMC/CC and 18 AF/CC.

6.13.4. Aeromedical Evacuation (AE). For actual AE missions, use the call sign "Evac" followed by the five-digit aircraft number (example, Evac 12345) or mission designator. Refer to FLIP GP Chapter 4. When the AE portion of the mission is completed, normal call signs will be used. This does not alleviate the responsibility to use diplomatically cleared call signs when required.

6.14. Not Used.

6.15. Flight Plan/Data Verification. All waypoint data retrieved from a database should be verified by latitude/longitude from current FLIP, or by verifying bearing/distance from the mission computer matches the computer flight plan, or similar document, for each waypoint entered. Reference paragraph [11.2.](#) for additional procedures

6.16. Departure Planning. Use AFI 11-202V3, AFMAN 11-217V1, *Instrument Flight Procedures*, this chapter, and the appropriate MAJCOM supplements. Regardless of the type of departure flown (IFR/VFR), review the following (as appropriate): IFR Departure Procedure, instrument approach plate, NOT-AMS, GDSS/GDSS2/ASRR Giant Report, and suitable terrain charts.

6.16.1. VFR Departures.

NOTE: VFR departures will not be flown in lieu of obstacle clearance planning.

6.16.1.1. VFR departures are authorized when there is no authorized IFR departure method for the airport, when the aircraft cannot depart using one of the IFR departure methods contained in AFI 11-202V3 and AFMAN 11-217V1, when operational requirements dictate (i.e. tactical necessity), or when most of the mission is planned as a VFR flight for training. VFR departures require detailed planning to ensure obstacles and high terrain are avoided.

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

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

6.16.1.2.2. One Engine Inoperative (OEI) climb capability shall ensure departure or emergency return route provides obstacle avoidance.

NOTE: If unable to comply with any of the above conditions, download cargo/fuel or delay until conditions that are more favorable exist.

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

6.16.1.4. When departing VFR, maintain VFR cloud clearances until obtaining an IFR clearance or reaching the IFR MEA.

6.16.2. IFR Departures: Aircrews must use an approved IFR departure method as outlined in AFI 11-202V3 and AFMAN 11-217V1.

6.16.2.1. If the airport does not have an authorized IFR departure method, depart VFR IAW paragraph [6.16.1.](#) An IFR departure is not authorized at airfields without an instrument approach.

6.16.2.2. IFR departures require detailed planning to ensure obstacles and high terrain are avoided. Adhere to screen height/departure end of runway (DER) requirements for IFR departure planning (AFMAN 11-217V1).

NOTE: Screen height requirements for departures depend on the agency that wrote the departure and/or the airfield where the departure is being flown. There is no standard or easy way for crews to determine screen height requirements. Therefore, when using departures other than those listed below, or when any doubt exists about which screen height to use, plan to cross the DER at 35 feet (minimum) unless you can ascertain a different screen height requirement from an appropriate authority.

6.16.2.2.1. Special Departure Procedure: Published on SDP.

6.16.2.2.2. USAF/USN produced SID or USAF/USN/USMC airfield: Zero feet.

6.16.2.2.3. US Army, FAA SID, and Joint Use Airfield within the US: 35 feet unless published.

6.16.2.2.4. NATO Countries (except US and Canada) Military Airports: 35 feet.

6.16.2.2.5. NATO Countries (except US and Canada) Civil Airports: 16 feet or as published.

6.16.2.2.6. Other ICAO nations: 16 feet or as published.

6.16.2.2.7. All others: 35 feet unless published.

6.16.2.3. Aircraft must meet the published climb gradient for the departure runway with all engines operating. If no minimum climb gradient is published, 200 ft/nm will be used.

NOTE: In the event the aircraft is unable to meet the published ALL ENGINE climb gradient, download cargo/fuel or delay until more favorable conditions exist.

6.16.2.4. Use one of the following methods to ensure the aircraft can vertically clear all obstacles along the planned departure route with OEI:

6.16.2.4.1. Special Departure Procedure (SDP). SDPs are MDS-specific OEI escape procedures intended only for emergency use. They are applicable after the loss of an engine and, where available, will be used for engine-out departure planning. Retrieve current SDPs from the Jeppesen AF Opsdata website. 'Ad hoc' requests for fields not currently listed may be requested through OGV. OGV will forward requests to HQ AMC/A37V NLT 48 hrs prior to scheduled departure. HQ AMC/A37V authorizes the use of Ad Hoc SDPs for a maximum of 30 days after the analysis date. The SDP analysis date is located in the upper left-hand corner of the takeoff performance sheet.

6.16.2.4.2. Minimum climb gradient. The TERPS standard minimum climb gradient is 200 ft/nm, which is based on the standard obstacle clearance surface (OCS) of 152 ft/nm plus the required obstacle clearance (ROC) of 48 ft/nm. If an SDP is not available, the crew must ensure compliance with any obstacle-based minimum climb gradients for the selected departure, with one-engine inoperative. Minimum climb gradients may be published as a 'Trouble T' restriction in the IFR Take-off Minimums section of FLIP or on a SID. When required for mission accomplishment, crews may subtract 48' /nm from published climb gradients before computing engine-out takeoff data. Minimum climb gradients do not take into account low, close in obstacles (obstacles or terrain 200' AGL and below) which should normally be pub-

lished as a NOTE on the SID or IFR departure procedure (Trouble T). Crews must also ensure the aircraft can clear these close in obstacles.

NOTE: If the requirements of 6.16.2.4. cannot be met, download cargo/fuel or delay until more favorable conditions exist.

6.17. Weather Minimums for Takeoff. Departures with weather below landing minimums is authorized IAW AFI 11-202 Vol 3, Ch 8. When weather is below approach and landing minimums (ceiling and visibility) a departure alternate is required (see paragraph 6.19.). For operational missions, touchdown RVR must be at least 1200 and roll out RVR must be at least 1000, for all others it is 1600, see Table 6.3. for additional guidance.

Table 6.3. Weather Minimums for Takeoff.

Mission	Visibility	Remarks
Operational	RVR 1200/1000	When RVR is less than 1600, but equal to or greater than RVR 1000, the crew may take off if mission priority dictates, provided the runway has dual RVR readouts and displays a minimum of RVR 1200 on the touchdown end and RVR 1000 on the rollout end and runway centerline lighting is operational. For any takeoff below RVR 1600, the crew must be fully qualified.
All Others	RVR 1600	Touchdown RVR will be used to determine visibility requirements

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

6.18. Alternate Planning. Select alternate airports meeting the requirements of AFI 11-202V3. Choose alternates that best meet mission requirements and conserve fuel; they should not be within the same terminal area, if terminal forecasts are marginal. Select alternates that are not restricted by FLIP, FCG, or diplomatic clearances, and are compatible with the mission load and performance characteristics of the aircraft. The PIC retains final authority in the choice of alternates; however, selection by support agencies normally should be used if they meet the above criteria and the aircraft has already been serviced.

6.19. Departure Alternates.

6.19.1. A departure alternate is required if ceiling or visibility is below landing minimums for an available approach (at departure aerodrome). Do not use Category II ILS minimums to determine if a departure alternate is required.

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

6.19.2.1. Existing weather at an alternate within 30 minutes flying time must be equal to or better than the published approach minimums and forecast to remain so until 1 hour after takeoff, but in no case forecast to be lower than 200-1/2 (RVR 2400), or;

6.19.2.2. The existing weather at an alternate within 2 hours flying time must be at least 500-1 above the lowest compatible published approach minimums, but not less than 600-2 for a precision approach or 800-2 for a non-precision approach, and forecast to remain so for 1 hour after ETA at the alternate.

6.20. Destination Requirements (*for filing purposes*). The forecast destination weather will be according to AFI 11-202V3 and the following:

6.20.1. File two alternates when:

6.20.1.1. The forecast visibility (intermittent or prevailing) is less than published for an available DoD or National Aeronautical Charting Office (NACO) precision approach.

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

6.20.1.3. The forecast surface winds (intermittent or prevailing) exceed limits corrected for RCR.

6.20.2. File an alternate, regardless of forecast weather, when the departure or destination aerodrome is outside the CONUS. (**EXCEPTION:** Intra-theater flights outside CONUS that do not exceed 3-hours, comply with basic AFI 11-202V3.)

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

6.20.3.1. The prevailing surface winds, corrected for RCR, must be within limits at ETA and forecast to remain so for 2 hours thereafter, and

6.20.3.2. The prevailing ceiling and visibility must be equal to or greater than published minimums for an available non-precision approach, for ETA plus 2 hours. However, if a precision approach is available, the ceiling or visibility may be intermittently below non-precision approach minimums (excluding ASR), but not below precision approach minimums (for ETA plus 2 hours).

NOTE: Use 1+15 holding fuel when filing to an island or remote destination. This includes the normal 45 minutes of reserve/holding fuel, and 30 additional minutes in lieu of an alternate

6.20.4. When filing to a destination where the alternate is located in Alaska or at latitudes greater than 59° North, use 1+15 holding fuel.

6.21. Adverse Weather.

6.21.1. Flight into areas of forecast or reported severe turbulence is prohibited.

6.21.1.1. Crews should confirm the type of aircraft the forecast turbulence applies to, or what type of aircraft reported the encounter, to gain a more accurate picture for their route of flight. The C-17 is a category 3 aircraft for turbulence.

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

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

6.21.2.1. Do not takeoff under conditions of freezing rain. Do not takeoff under conditions of freezing drizzle except when the aircraft has been properly de-iced/anti-iced IAW flight manual procedures.

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

6.21.2.2.1. Aircrews will only use de-ice and anti-ice fluids listed in their respective flight manual. Aircrews will be familiar with, and follow all restrictions in their associated flight manual with respect to anti-ice/de-ice procedures and holdover times.

6.21.2.2.2. MIL-A-8243 Type I and Type II de-icing fluids do not provide any anti-icing benefit, and therefore do not have holdover times. As a guide, for approved anti-icing fluids, crews may use published anti-icing holdover times IAW TO 42C-1-2, Aircraft Anti-icing Procedures, and AFFSA holdover tables located at the HQ AFFSA website. The holdover time begins when anti-icing fluid is first applied and the PIC shall use time, temperature, and dilution of mixture to determine when times are exceeded and re-apply fluid if required.

6.21.2.2.3. In all cases, PICs will ensure a visual inspection of the aircraft is completed within 5 minutes of departure.

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

6.21.3.1. 20NMs at or above flight level FL230.

6.21.3.2. 10NMs below FL230.

6.21.3.3. 5NMs for tactical low-level operations provided the outside air temperature is at or above 0°C at flight altitude.. Avoid gust fronts and winds preceding a rapidly moving thunderstorm.

CAUTION: Aircraft damage may occur 20NMs or more from any thunderstorms. Aircrews must familiarize themselves with information on thunderstorm development and hazard.

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

6.21.4.1. Changing routing.

6.21.4.2. Diverting to alternate.

6.21.4.3. Declaring an emergency and requesting priority assistance.

6.21.5. Aircrews should avoid flying in areas of recently dissipated thunderstorms and advected clouds (horizontal movement of clouds caused by wind) downwind of thunderstorms.

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

6.21.6.1. Attempt to maintain VMC.

6.21.6.2. Maintain at least 5NMs separation from heavy rain showers.

6.21.6.3. Avoid areas of high lightning potential, i.e., clouds within plus or minus 5,000 feet of the freezing level or plus or minus 8°C of the freezing level.

NOTE: Approaches or departures may be accomplished when thunderstorms are within 10NMs. The thunderstorms must not be producing any hazardous conditions (such as hail, lightning, strong winds, gusts fronts, heavy rain, wind shear, or microburst) at the airport, and must not be forecast or observed to be moving in the direction of the route of flight (to include the planned missed approach corridor, if applicable).

6.21.7. When performing approaches and landings at locations where temperatures are 0°C or below, refer to the *Flight Information Handbook* (FIH) Section D, Temperature Correction Chart, to correct MDA, DH, and other altitudes inside the FAF.

6.21.8. Do not fly into an area of known or forecast moderate or greater mountain wave turbulence.

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

6.21.10. Volcanic Dust Precautions. Aircraft flight operations in areas of forecast or known volcanic activity or dust is prohibited. Plan all missions to avoid volcanic activity by at least 20 NMs.

6.21.11. Lightning Avoidance. The following conditions are most favorable for lightning strikes and prolonged flight in them should be avoided:

6.21.11.1. Within 8°C of freezing.

6.21.11.2. In clouds or in any intensity of precipitation or turbulence associated with thunderstorms.

6.22. Operational Risk Management (ORM). ORM is a logic based, common sense approach to making calculated decisions on human, material, and environmental factors before, during, and after all operations. USAF policy on ORM is contained in Air Force Policy Directive 90-9, *Operational Risk Management*. PICs will accomplish ORM worksheets IAW MAJCOM and local guidance as part of pre-flight activities. (see paragraph [6.3.15.](#))

Section 6C—Preflight

6.23. AFTO Forms 781, Series.

6.23.1. Review AFTO Forms 781 series before applying power to the aircraft or operating aircraft systems. The exceptional release must be signed before flight. A maintenance officer, maintenance superintendent, or authorized civilian normally signs the exceptional release. If one of these individuals is not available, the PIC may sign the exceptional release. Ensure that the DD Form 1896, **Jet Fuel Identaplate**, and AIR card is aboard the aircraft.

6.23.2. One-Time Flights. An aircraft may be released for a one-time flight with a condition that might be hazardous for continued use, provided the aircraft is airworthy for one flight to another station. Refer to T.O. 00-20-1, *Aerospace Equipment Maintenance Inspection, Documentation, Policies, and Procedures*, for downgrade authority and procedures. AFRC crews also see AFI 11-202V3/AFRCSUP1. After the maintenance release is obtained, coordinate mission requirements with the controlling agency. The PIC's concurrence is required before the aircraft can be flown.

6.23.3. For Red X clearing procedures at stations without maintenance support refer to **paragraph 12.3**.

6.24. Aircraft Servicing and Ground Operations. Reference paragraph **12.4**.

6.25. Aircraft Recovery Away from Main Operating Base. Reference paragraph **12.6**.

6.26. Life Support Requirements.

6.26.1. Oxygen. Oxygen on board 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. Calculate crew requirements using the 100 percent Oxygen Duration Chart in the flight manual. Calculate crew and passenger requirements based on flight at FL 250 from the ETP to the nearest suitable recovery base.

6.26.1.1. Crewmembers occupying a crew station will have an oxygen mask connected and readily available for use from before engine start until engine shutdown.

6.26.1.2. Normally, unpressurized flight will not be planned above 18,000 feet cabin altitude (except HALO). Aircrews required to fly unpressurized missions above 18,000 will prebreathe 100 percent oxygen in accordance with AFTTP 3-3.35A. Reference TO 1C-17A-1-4 for additional high altitude prebreathing restrictions.

6.26.2. Rafts. On over water flights do not carry more passengers and crewmembers than life rafts will accommodate.

6.26.3. Life preserver units (LPUs). The loadmaster will ensure an LPU is within easy reach of each seated passenger and aircrew member prior to takeoff on over water flights (outside gliding distance to land). Ensure the appropriate number and type of life preservers are aboard for over water missions carrying children and infants.

6.26.4. Parachutes and Survival Kits:

6.26.4.1. Aircraft will be configured with parachutes and ML-4 survival kits for contingency and airdrop missions.

6.26.4.1.1. Operations Group Commanders retain the option of requiring parachutes and survival kits to remain onboard for other missions.

6.26.4.2. Personnel performing duties near an open (or suspected open) door/hatch/ramp in-flight will be restrained by a safety harness, or be wearing a parachute. If a troop door and/or the door/ramp is open and the aircraft is below 800 feet AGL or above 14,000 feet MSL, loadmaster(s) will wear a restraint harness. The restraint harness will be hooked up no further aft than fuselage station 1188.

6.26.4.3. Either wear, or pre-fit and pre-position parachutes and helmets during specified combat conditions or exercises.

6.27. Fleet Service. Ensure required fleet service items are aboard the aircraft early enough to permit inventory prior to engine start.

6.28. Cargo Documentation. Proper cargo or mail documentation will accompany each load.

6.28.1. Load Data Information (Applicable to AFRC/ANG completing 18 AF TACC-directed mission). At stations where there is no mobility air transportation function, the aircrew will collect the required load information on each leg, and submit it to the first station, which has such a function. The report will be submitted on AF IMT 4075, **Aircraft Load Data Worksheet**.

6.29. Procedures for Airlifting Hazardous Cargo.

NOTE: Installed flares do not constitute hazardous cargo. However, any additional loads of flares are not considered aircraft equipment and shall be properly packaged and prepared IAW AFMAN 24-204.

6.29.1. The term "hazardous cargo" as used in conjunction with airlift operations, applies to the following classes and types of materials covered by AFMAN 24-204, *Preparing Hazardous Materials for Military Air Shipment*, and contains detailed instructions on packaging, marking, labeling, and certification requirements associated with the airlift of hazardous materials. Hazardous materials/cargo not properly packaged and documented in accordance with AFMAN 24-204 will be rejected for air shipment.

6.29.2. Briefing Requirements. As a minimum, the PIC and/or designated crewmember must be briefed at the base of departure concerning onboard hazardous materials, including the following information: (Nuclear weapons, nuclear components, and inert devices are covered in AFI 11-299 (FOUO)).

6.29.2.1. Proper shipping name (PSN), Hazard Class or Division and United Nations (UN), North America (NA), or Identification (ID) number.

6.29.2.2. Quantity of each hazard class by gross weight.

6.29.2.3. DoD class or division when any type explosives are involved.

6.29.2.4. The Net explosives weight (NEW) for Division 1.1 through 1.3 explosives.

6.29.2.5. Total net quantity of any toxic chemical ammunition or highly toxic substances.

6.29.2.6. Location on aircraft.

6.29.2.7. Passenger restrictions.

6.29.2.8. Special requirements, i.e., couriers, escort team, protective equipment, etc.

6.29.2.9. Cargo being carried under DOT exemptions, or other approvals/waivers.

6.29.2.10. Written notification indicating "prior permission required" (PPR), obtained from the next base to be transited.

6.29.2.11. Isolated parking and taxiing requirements.

6.29.2.12. Security classification, if appropriate.

6.29.2.13. Notification of the requirement to contact the next base to be transited at least 30 minutes prior to landing

6.29.2.14. Placard requirements.

6.29.2.15. Other special handling requirements.

6.29.3. Cargo documentation and loading procedures.

6.29.3.1. The loadmaster will ensure proper documentation, certification and identification of cargo is furnished. AFMAN 24-204 contains detailed instructions on packaging, marking, labeling, and certification requirements associated with the airlift of hazardous materials.

6.29.3.2. Hazardous materials/cargo falls into many categories and the utmost precautions must be observed when handling or transporting these items. Load all hazardous material to permit easy access in-flight without moving other cargo. Load jettisonable hazardous material to facilitate jettisoning. Adhere to the following appropriate safety precautions when loading hazardous cargo as appropriate:

6.29.3.2.1. Ventilate the aircraft.

6.29.3.2.2. Placard the aircraft.

6.29.3.2.3. Fire extinguishers must be available.

6.29.3.2.4. Thoroughly inspect the cargo.

6.29.3.2.5. Stow cargo away from heater outlets.

6.29.3.2.6. Notify medical personnel in case of damage to radioactive materials.

6.29.3.2.7. Use protective clothing and equipment.

6.29.4. Flight Planning.

6.29.4.1. Enter "Hazardous Cargo" in the remarks section of DD Form 175, or other information section of DD Form 1801, when any amount of the following is transported:

6.29.4.1.1. Division 1.1 through 1.3 explosives.

6.29.4.1.2. Division 1.4 explosives which transit United Kingdom or Italy.

6.29.4.1.3. Toxic chemical ammunition (Compatibility Group K).

6.29.4.1.4. Highly toxic substances.

6.29.4.1.5. Division 6.2 infectious substances which require technical escorts and/or special protective equipment.

6.29.4.1.6. Nuclear weapons.

6.29.4.1.7. Class 7 Radioactive Material (Yellow III label).

6.29.4.1.8. All other hazardous materials, except Class 9 and ORM-D when aggregate gross weight exceeds 1,000 pounds (454 kgs).

6.29.4.2. Border Clearance and Diplomatic (DIP) Clearances. Aircrews are required to check the Foreign Clearance Guide (FCG) for DIP Clearance requirements prior to departure on international flights transporting Hazardous Materials. If DIP Clearance is required the crew will verify that clearance has been granted prior to departure.

6.29.5. Departure/Arrival Notifications.

6.29.5.1. Prepare a departure message at stations when a C2 center is not available. The remarks section of the departure message will include: Class of hazardous material, DoD class or division for explosives, net explosive weight (NEW), and gross weight. If required, request special handling (e.g., isolated parking, security, technical escort teams, etc.).

6.29.5.2. If estimated time en route (ETE) is less than 1 hour, or if other circumstances preclude timely message receipt at destination, notify the next destination of the ETA and information listed in paragraph [6.29.5.1](#). If available, C2 will relay required information to next destination.

6.29.5.3. At least 30 minutes prior to ETA, check with destination to verify that hazardous material notification information, if required, was received.

6.29.5.4. If not, unless specifically prohibited by the theater commander, FLIP, or FCG, contact the agency specified in FLIP/FCG, base operations dispatcher, control tower or approach control. If landing at a United States civil airport without a tower, provide information to the nearest FAA flight service station. Transmit the following information:

6.29.5.4.1. PSN.

6.29.5.4.2. Hazard class.

6.29.5.4.3. UN, NA, or ID number.

6.29.5.4.4. NEW for Class 1 (Explosives).

6.29.5.4.5. Net quantity of chemical ammunition and toxic substances.

6.29.5.4.6. Special handling requirements.

6.29.6. Aircraft Parking.

6.29.6.1. Parking of aircraft carrying hazardous materials is the responsibility of the host airfield.

6.29.6.2. The following is provided for information only:

6.29.6.2.1. Aircraft transporting Division 1.1 and 1.2 explosives, nuclear weapons, and Hazardous Materials requiring a SAAM, i.e., Toxic Chemical Ammunition, are normally parked at remote (Hot) spots.

6.29.6.2.2. Divisions 1.3/1.4 explosives may or may not require "HOT" spot parking depending on quantity of explosives.

6.29.6.2.3. Transit aircraft with explosives, when cargo is not handled, may be parked at isolated locations other than "HOT" spots.

6.29.6.2.4. Other hazardous materials normally do not require remote or isolated parking.

6.29.6.2.5. Military installations are responsible for proper placarding of aircraft. If non-DOD airfields are used, it may be necessary for the aircrew to placard aircraft. Placards resemble hazard labels.

6.29.7. **Unscheduled Landing Due to In-flight Emergency.** Transmit unclassified information to the appropriate ATC facility as follows:

6.29.7.1. Nature of emergency and intent to land.

6.29.7.2. Aircraft position and ETA.

6.29.7.3. Number of personnel and location in aircraft.

6.29.7.4. Fuel on board.

6.29.7.5. Hazardous materials aboard, location of the cargo, and information listed in paragraph **6.29.5.6.**

6.29.8. **After Unscheduled Landing.** Contact the appropriate C2 center by telephone, HF radio, or message, giving arrival notice, hazardous materials information, and other pertinent information, as required.

6.30. Handling of Classified Cargo, Registered Mail, Mission Capable (MICAP) Parts, Very, Very Important Part (VVIP), Forward Supply System (FSS) Shipments, and Courier Material.

6.30.1. MICAP, VVIP, sensitive cargo, courier materials, and registered mail moving within the normal airlift system are receipted at the on and offload stations using the air cargo manifest. For unit moves operated in accordance with Defense Transportation Regulation (DTR), Part III, Mobility, classified or sensitive cargo movement is normally manifested utilizing the DD Form 2130-2, or similar automated product, and will normally be accompanied by a unit courier. However, if classified/sensitive unit cargo is offered without an accompanying courier, the DD1907, **Signature and Tally Record**, must be used.

6.30.1.1. Defense Courier Service (DCS) couriers coordinating with the PIC are authorized to designate officer or enlisted, (E-5 and above) crewmembers on military aircraft as couriers to escort and safeguard courier material when other qualified personnel are not available. Qualified passengers, if carried, are designated before designating crewmembers. The following restrictions apply:

6.30.1.1.1. Primary crewmembers will not be designated couriers without the consent of the PIC.

6.30.1.1.2. Crewmembers on aircraft scheduled to make an extended en route stop at a location where DCS couriers cannot provide en route support will not be designated as couriers.

6.30.2. During stops at en route locations supported by DCS stations, DCS couriers are required to meet designated couriers, guard and protect the material.

6.30.2.1. During unscheduled en route stops crewmembers may place courier material in temporary custody of the following agencies in descending order of priority.

6.30.2.1.1. DCS courier.

6.30.2.1.2. TOP SECRET control officer of the US armed forces.

6.30.2.1.3. US Department of State Diplomatic Courier.

6.30.2.1.4. US Department of State activity.

6.30.2.1.5. US military guards.

6.30.2.1.6. US DOD civilian guards.

6.30.3. If unable to follow the itinerary to the destination of the courier material, or material is lost, stolen or otherwise compromised, report circumstances to the nearest Defense Courier Station and notify the local US military commander or US Government activity.

6.30.4. Life or death urgency shipments consist of biological or other medical supplies of such urgency that human life is dependent upon immediate receipt. Shipments will be manifested separately and the manifest annotated with the words LIFE OR DEATH URGENCY. All shipments will be handled on a hand-to-hand receipt basis, using either the air cargo manifest or the DD1907, for unit moves. The PIC, or designated representative, will be briefed on the urgency of the shipment and be made the custodian during flight.

Section 6D—Departure

6.31. On Time Takeoffs. Mission departures are on time if the aircraft is airborne within -20/+14 minutes of scheduled takeoff time or as specified in a MAJCOM supplement.

6.31.1. Scheduled takeoff time may be adjusted to make good a time over target (TOT) or time of arrival (TOA). PICs shall notify C2 agency before takeoff to adjust the scheduled takeoff time.

6.31.2. Early Departures. Early departures are authorized to prevent a delay due to weather, ATC restrictions, airfield or aircraft operational limitations, to adjust mission flow during a large-scale operation, or if approved through C2 channels provided the impact on local and downrange facilities and crew duty is evaluated.

6.32. NVG Departures.

6.32.1. NVG Departure Weather Minimums. Weather minimums for NVG departures for crewmembers who are non-current and/or unqualified is 1500/3. Current and qualified NVG aircrews may fly NVG departures weather down to 600/2 (OG/CC or equivalent may approve down to 300/1). Crews must give careful consideration to potential hazards during the critical phase of flight. Other weather limitations are IAW this instruction and AFI 11-202V3. NVGs 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 NVG operations.

6.32.2. NVG Crosswind Limits for Departure.

6.32.2.1. Runways 90-120 feet wide. Maximum allowable crosswind component is 15 knots.

6.32.2.2. Runways wider than 120. Maximum allowable crosswind component is 20 knots. **EXCEPTION:** with OG/CC (or equivalent) approval, up to 30 knots crosswind component is authorized.

6.32.3. NVG Malfunctions During Takeoff. During an NVG takeoff, if the PF experiences NVG failure, the takeoff may be continued at the discretion of the PIC; otherwise an abort will be initiated.

Consider using the overt nose lights to continue the takeoff. If NVG malfunctions occur after V_{go}, takeoff will be continued with the PF transitioning to IMC takeoff, transfer control of the aircraft as necessary. If either pilot's NVGs fail after takeoff, continue the climb out and follow the appropriate procedures for loss of NVGs. The PNF will be ready to immediately assume aircraft control if the PF experiences spatial disorientation or an NVG malfunction. Pilots must exercise sound and conservative judgment to continue NVG operations with aircraft malfunctions.

Section 6E—En route

6.33. Flight Progress.

6.33.1. Data entered into the MC will be verified by another pilot. Check both the coordinate information and the distances between waypoints against the flight plan.

6.33.2. Crews will use the Master Document (Computer Flight Plan) and an appropriate plotting chart to plot all oceanic waypoints from entry to exit. As a minimum, annotate the chart with the mission number, PIC's name, and date. If practical, the chart may be reused. Retain the chart and master document in unit Stan/Eval for 120 days following mission completion.

6.33.3. In-Flight, use all available navigational aids to monitor MC performance. Immediately report malfunctions or any loss of navigation capability which degrades centerline accuracy to the controlling ARTCC. Use the following procedures for flight progress:

6.33.3.1. When possible, perform a gross error MC check using available NAVAIDs prior to, or immediately upon entering the Category I Route/over water segment.

6.33.3.2. On a Category I route, when approaching each waypoint, recheck coordinates for the next waypoint.

6.33.3.3. Approximately 10 minutes after each waypoint, plot aircraft position, and compare plotted position to expected track. Annotate latitude/longitude and time of plot.

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

6.33.4. Operations in International/Territorial Airspace. (See FLIP, FCG, and AP, for further guidance). US military aircraft and DoD personnel entering another nation to conduct US government business must have the approval of the foreign government concerned to enter their airspace. Foreign clearances for US international air operations are obtained through US officials known as Defense Attaché Officers (DAOs).

6.33.4.1. There are essentially two types of airspace: international airspace and territorial airspace. International airspace includes all airspace seaward of coastal states' territorial seas. Military aircraft operate in such areas free of interference or control by the coastal state. Territorial airspace includes airspace above territorial seas, archipelagic waters, inland waters, and land territory, and is sovereign airspace. Over flight may be conducted in such areas only with the consent of the sovereign country.

6.33.4.2. Consistent with international law, the US recognizes sea claims up to 12NMs. Diplomatic constraints and/or a lack of diplomatic clearances usually result in missions operating in international airspace. Therefore, it is imperative sufficient information be provided far enough in advance to allow compliance with FCG requirements established by the countries concerned. The

US does not normally recognize territorial claims beyond 12NMs; however, specific guidance from certain US authorities may establish limits, which differ from the standard.

6.33.4.3. Flight Information Region (FIR). An FIR is an area of airspace within which flight information and related services are provided. An FIR does not reflect international borders or sovereign airspace. Aircraft may operate within an established FIR without approval of the adjacent country, provided the AC avoids flight in territorial airspace.

6.33.4.4. Aircrews on a flight plan route, which takes them from international airspace into territorial airspace, for which approved aircraft clearances were obtained, should not amend entry point(s).

6.33.4.5. Violations of foreign sovereignty result from unauthorized or improper entry or departure of aircraft. Aircrews should not enter into territorial airspace for which a clearance has not been duly requested and granted through diplomatic channels.

6.33.4.6. ATC agencies are not vested with authority to grant diplomatic clearances for penetration of sovereign airspace where prior clearance is required from the respective country. Aircraft clearances are obtained through diplomatic channels only.

6.33.4.7. In the event ATC agency challenges the validity of a flight routing or attempts to negate existing clearances, ACs must evaluate the circumstances. The normal response will be to attempt to advise the ATC agency that the aircraft will continue to planned destination, as cleared in international airspace. The key phrase is "in international airspace." Safety of flight is paramount in determining mission continuation. Under no circumstances should aircrews construe a clearance, which routes their mission over sovereign airspace, which was not approved through diplomatic channels before mission departure, as being valid authorization.

6.33.4.8. Aircrews operating missions requiring unique or specially developed routing will normally be briefed at home station, onload station, and/or by the last C2 facility transited before performing the critical portion of the mission.

6.33.4.9. Aircrews (except on weather reconnaissance missions) normally are not tasked to and should not fly "due regard" routings unless coordinated with the appropriate MAJCOM C2 and specifically directed in the mission FRAG. The "due regard" or "operational" option obligates the military AC to be their own ATC agency to separate their aircraft from all other air traffic. If operational requirements dictate, ACs may exercise the "due regard" option to protect their aircraft. Aircraft will return to normal air traffic services as soon as practical.

6.34. Navigational Aid Capability. The following airspace categories are each defined in FLIP, and are considered special qualification airspace: MNPS, RVSM, RNP, and BRNAV.

6.34.1. Should any required equipment fail before entering such airspace, request a new clearance to avoid this airspace.

6.34.2. Should any required equipment fail after entry into such airspace, immediately notify ATC and coordinate a plan of action.

6.34.3. Document (in the aircraft forms) malfunctions or failures of required equipment, including the failure of this equipment to meet tolerances.

6.34.4. Required Navigation Performance (RNP) Airspace. C-17 aircraft equipped with integrated GPS navigation systems are approved in RNP airspace without time limitations.

6.34.4.1. RNP-10. If all updating capability is lost, C-17 aircraft are certified to operate for 6.2 hours (after entering NAV mode) in RNP-10 airspace. If any in-flight update is accomplished (GPS or Radio Nav), the aircraft may continue in RNP-10 airspace until the figure of merit exceeds "8" (approximately 6 hours after last update).

6.34.4.1.1. Preflight Procedures. Review maintenance logs to ascertain status of RNP-10 equipment.

6.34.4.1.2. En route. Before entering Oceanic Airspace, the aircraft position should be checked as accurately as possible by using external navigation aids (coast-out fix). Periodic crosschecks will be accomplished to identify navigation errors and prevent inadvertent deviation from ATC cleared routes. Advise ATC of the deterioration or failure of navigation equipment below navigation performance requirements and coordinate appropriate actions.

6.34.4.1.3. Document (in the aircraft forms) malfunctions or failures of RNP required equipment, including the failure of this equipment to meet RNP tolerances.

6.34.5. Basic Area Navigation (BRNAV) Airspace. BRNAV navigation accuracy criteria is RNP-5. C-17 aircraft with GPS UPDATE selected are approved for BRNAV operations with no restrictions. If GPS UPDATE is unavailable, select RADIO UPDATE and ensure the FOM remains 7 or better.

6.34.6. Reduced Vertical Separation Minimum (RVSM) Airspace. Airspace where RVSM is applied is considered special qualification airspace. Both the operator and the specific aircraft type must be approved for operations in these areas. Pilots will refer to FLIP AP/2 and the following for RVSM requirements:

6.34.6.1. 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.

6.34.6.2. Engage the autopilot during level cruise.

6.34.6.3. Crosscheck the altimeters before or immediately upon coast out. Record readings of both altimeters.

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

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

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

6.34.6.7. Document in the aircraft forms malfunctions or failures of RVSM required equipment.

6.35. CIRVIS and Other Reports. Report all vital intelligence sightings from aircraft as indicated in FLIP planning or FLIP En route Supplement.

6.35.1. In-flight harassment or hostile action against C-17 aircraft. Aircraft subjected to harassment or hostile action by foreign aircraft will immediately contact the nearest USAF air and ground voice facility and report the encounter. Include aircraft nationality, type, insignia, or any other identifying

features; note position, heading, time, speed when harassed, and the type of harassment. Request relay of the report to the nearest C2 agency. Also, attempt to contact the nearest command post when in UHF and VHF range.

6.36. In-flight Meals. Pilots should not eat meals at the same time, and their meals should consist of different menu items.

6.37. Communications. See paragraph [5.12](#).

6.38. In-flight Emergency Procedures. The PIC shall report deviations from directives that may occur as a result of an emergency according to AFI 11-202V3. Time and conditions permitting, inform passengers of the situation and intentions as appropriate.

6.38.1. Notification of Controlling Agencies. When practical after completing the aircraft emergency action checklists and associated actions, crews should furnish the controlling agency and appropriate C2 agencies with a description of the difficulty, assistance required, intentions, and any other pertinent information.

6.38.2. The PIC may initiate a CONFERENCE HOTEL/SKYHOOK when additional expertise is necessary. Communications procedures are as follow:

6.38.2.1. Local Area. When in UHF or VHF range, initiate the conference over appropriate frequencies.

6.38.2.2. En route. When out of UHF range, use HF/AERO-I to establish a phone patch with the nearest or controlling C2 center as appropriate.

6.38.2.3. Provide the following information when time permits.

6.38.2.3.1. Narrative description of the situation to include actions taken by the crew and the intentions of the PIC.

6.38.2.3.2. What assistance is being requested.

6.38.2.3.3. Fuel on board and hours of endurance.

6.38.2.3.4. Position.

6.38.2.3.5. Altitude and flight conditions.

6.38.2.3.6. Type cargo, number of personnel and distinguished visitors (DV) on board.

6.38.2.3.7. Qualification of PIC.

6.38.2.3.8. Planned landing base.

6.38.2.3.9. ETA at landing base.

6.39. Need for Medical Assistance. When a person aboard the aircraft requires medical care, the PIC will notify the station of intended landing in sufficient time so the aircraft may be met by medical personnel. Notification will include the patient's sex, approximate age, and major complaint.

6.40. Weather Forecasts. It is the pilot's responsibility to obtain destination weather prior to descent. The primary sources are 18 AF TACC weather operations, OWSs, and USAF weather flights via

pilot-to-meteorologist service (PMSV) or through a USAF aeronautical station. For aircraft flying in EUCOM AOR (ENAME operations) contact USAFE/OWS at Sembach AB GE. SOUTHCOM AOR contact 25 OWS at Davis-Monthan AFB, AZ. The ATC system can provide weather information to en route aircraft.

Section 6F—Arrival

6.41. Descent. Before descent into unfamiliar areas, appropriate terrain charts ((Operational Navigation Chart (ONC), Sectional Aeronautical Chart, Tactical Pilotage Chart (TPC), or Joint Operations Graphic (JOG)) should be reviewed to increase aircrew situational awareness of obstructions. Primary crewmembers will not be involved in duties other than aircraft operations, descent and approach monitoring, and required checklist items from the initial descent point to landing.

6.41.1. Night and Marginal Weather Operations. Fly a precision approach, if available, at night or during marginal weather. If a precision approach is not available, fly any available approved instrument approach.

6.41.1.1. A visual approach may be flown during night VFR conditions if an approved instrument approach to the landing runway is not available or operational missions require a tactical approach.

6.41.1.2. On training/evaluation flights, pilots may fly non-precision approaches or VFR traffic patterns to accomplish required training and evaluations. The pilot not flying will monitor a precision approach when practical to enhance safety.

6.41.1.3. For recovery at home station, pilots may elect to fly a visual or non-precision approach, if weather minimums permit.

6.42. Instrument Approach Procedures.

6.42.1. Instrument approach RVR/visibility and, if required, ceiling minimums will be as published for a category "D" aircraft. If approach speeds exceed 165 knots, the minimums for category "E" will be used.

6.42.2. Prior to starting an instrument approach, pilots will confirm their aircraft can comply with the missed approach climb gradient requirements established in AFI 11-202V3. If unable to meet required climb gradients, pilots must coordinate alternate missed approach procedures with ATC, which will ensure terrain clearance, prior to commencing the approach. If this is not possible, do not attempt the approach.

6.42.3. Weather minimums. Before starting an instrument approach, or beginning an en route descent, pilots will confirm the existing weather is reported to be:

6.42.3.1. At or above required visibility for straight-in or sidestep approaches.

6.42.3.1.1. For PAR approaches, visibility will be no lower than RVR 2400 (730 meters) or 1/2 mile visibility (800 meters) with no RVR readout available.

6.42.3.2. At or above required ceiling and visibility for circling approaches.

6.42.3.2.1. For circling approaches with no published ceiling requirement, the required ceiling shall be computed by taking the published HAA plus 100 feet rounded up to the next one hun-

dred foot value. (For example, if the HAA is 747 feet, add 100 feet to get 847 feet and then round up to the next one hundred foot value which would be 900 feet. Your ceiling for the approach must be at or above 900 feet.) When circling minimums are published, but not by category, circling approach minimums will be as published, but in no case lower than 600 feet and 2 miles visibility.

6.42.3.3. Increase the published visibility minimums of an instrument approach by $\frac{1}{2}$ SM or as noted in NOTAMs, on ATIS, or on the approach plate, when the runway approach lighting system (ALS) is inoperative. (This applies only to the ALS itself, not to VASIs, PAPIs, and other lights that are not a component of the ALS.)

6.42.3.4. If ceiling is below the value depicted for published DoD or NACA precision approach, but visibility is at or above authorized minimums, the pilot will comply with fuel requirements of [Chapter 14](#), prior to initiating en route descent, penetration, or approach.

6.42.4. Flight Instrumentation Requirements.

6.42.4.1. Aircraft are limited to a DH/MDA based on a HAT of 300-feet and RVR 40, or $\frac{3}{4}$ -mile visibility (1220-meters) with no RVR if full flight instrumentation is not available and operational.

NOTES:

1. Full flight instrument for Category I ILS and precision approach radar (PAR) includes the flight director, a HUD or PFD and NAV display at each station, and no shared ADC or IRU.
2. Full flight instrumentation for a CAT II ILS includes the flight director, a HUD or PFD and NAV display at each station, and no "No CAT II" warning message. A HUD will be used by the PF position, if available.

6.42.5. Category I ILS Procedures. Decision height for precision approaches will be as published, but no lower than 200 feet height above touchdown (HAT).

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

6.42.5.1.1. Two operational VHF communication radios are required.

6.42.5.1.2. The approach must be briefed as an ILS/PRM approach.

6.42.5.1.3. If unable to accept an ILS PRM approach clearance, contact the FAA ATCSCC at 1-800-333-4286 prior to departure time to obtain a pre-coordinated arrival time. Pilots who arrive at a PRM airport unable to accept PRM approach clearance, who did not contact ATC prior to departure, should expect an ATC directed divert to a non-PRM airport.

6.42.5.1.4. All breakouts from the approach shall be hand flown. Autopilots shall be disengaged when a breakout is directed.

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

6.42.6. Category II ILS Procedures. DH is based on radar altitude. Minimum HAT is 100 feet. Minimum RVR is 1200. Maximum crosswind limitation is 10 knots.

6.42.6.1. Aircrews will not execute an actual Category II ILS to minimums unless both pilots are qualified and current in Category II ILS. The AC must have logged at least 100 hours in command since AC qualification.

6.42.7. NDB Procedures. NDB approaches may be flown during day, night, or IMC conditions after compliance with any airfield restrictions in GDSS/GDSS2/ASRR. Back up each approach with available nav aids/GPS to include loading the NDB coordinates in the Mission Computer (MC).

6.42.8. Established on a Segment of the Approach. When cleared for, or established, on a segment of the approach, and the weather is reported or observed to be below approach minimums, the PF has the option of continuing the approach to the missed approach point (MAP)/DH. If the approach is abandoned, level off (or descend if a lower altitude is required for the missed approach procedure). Comply with the last assigned clearance until a new or amended clearance is received. Do not continue a CAT II ILS if the weather is reported to be below CAT II minima.

6.42.8.1. Do not continue the approach below minimums unless the runway environment is in sight and the aircraft is in a position to make a safe landing.

6.42.8.2. 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.

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

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

6.42.9.1. 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 forecast to remain at or above alternate filing minimums for the period, including the holding time.

6.42.9.2. Destination weather is forecast to be at or above minimums before excess fuel will be consumed.

6.43. NVG Approach and Landing.

6.43.1. NVG Approach Weather Minimums. Weather minimums for NVG visual approaches and for crewmembers who are non-current and/or unqualified is 1500/3. Current and qualified NVG aircrews may fly IFR instrument approaches which transition to NVG landings with weather down to 600/2 (OG/CC or equivalent may approve down to 300/1) or approach minimums (whichever is higher). Crews must give careful consideration to potential hazards during the critical phase of flight. Other weather limitations are IAW this instruction and AFI 11-202V3. NVGs 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 NVG operations.

6.43.2. NVG Crosswind Limits for Approach.

6.43.2.1. Runways 90-120 feet wide. Maximum allowable crosswind component is 15 knots.

6.43.2.2. Runways wider than 120. Maximum allowable crosswind component is 20 knots. **EXCEPTION:** with OG/CC (or equivalent) approval, up to 30 knots crosswind component is authorized.

6.43.3. NVG Failures During Approach and Landing. If the pilot or copilot experience NVG failure or other malfunctions at or below 300 feet AGL, perform a go-around. If the PF's NVGs fail after touchdown, transfer aircraft control to the PNF for the landing rollout. Consider using the overt nose lights.

6.44. Unscheduled Landings. When an unscheduled landing or crew rest occurs at a base without a passenger facility, the AC should immediately advise the appropriate C2 agency and request assistance in arranging substitute airlift for passengers on board. The following procedures apply when obtaining support for service members, in a group travel status, who are transported on AMC organic aircraft flying a Transportation Working Capital Fund (TWCF) mission, which incur an unscheduled delay due to weather or maintenance problems, forcing the members to be lodged at that location until the aircraft can continue its mission.

6.44.1. If the delay is at a location where DoD facilities and AMC TWCF funds are available, payment for lodging (contract or on-base) will be made by the local accounting liaison/OPLOC citing TWCF funds. The appropriate TWCF fund cite may be obtained from the local financial analysis and/or accounting liaison office. Normally, a BPA contract or AF IMT 616 is already established at these locations to charge the routine lodging costs for transient or TDY individuals who are on TWCF funded travel orders.

6.44.2. If the delay is at a location where DoD facilities are available and AMC TWCF funds are not available, utilize AF IMT 15, **United States Air Force Invoice** authority to acquire the appropriate lodging accommodations. Upon return to home station, the PIC will send the AF IMT 15 to the local accounting liaison office. A copy of the service members' group travel orders, along with any other pertinent supporting data, must accompany the form (e.g., lodging invoice and/or receipts). When the AF IMT 15 has been validated, it will be forwarded for payment, citing the funds of the unit whose aircraft was delayed.

6.44.3. If the delay is at a location where both DoD facilities and TWCF funds are unavailable, the PIC will utilize AF IMT 15 authority to acquire the appropriate meals, quarters, and transportation to support the service members. Upon return to home station, the PIC will send the AF IMT 15 to the local accounting liaison office. A copy of the service members' group travel orders, along with any other pertinent supporting data, must accompany the form (e.g., lodging invoice and/or receipts). When the AF IMT 15 has been validated, it will be forwarded for payment, citing the funds of the unit whose aircraft was delayed.

NOTE: This policy does not apply to those passengers on delayed TWCF organic aircraft who are in a per diem or space available status, except for those duty passengers on TWCF funded travel orders delayed at locations where TWCF funds are available.

6.45. Maintenance Debrief. Complete the AFTO IMT 781 after each flight. After landing, crewmembers debrief maintenance personnel on the condition of the aircraft, engines, airdrop systems, avionics equipment, and all installed special equipment as required. At stations without maintenance support, when a maintenance requirement exists the PIC will ensure a thorough debrief is provided to the C2 agency. On AMC missions, notify 18 AF TACC Logistics Control (TACC/XOCL).

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

6.45.2. An entry will be placed in AFTO 781A, "Aircraft Operated on Semi-Prepared Runway" (state number of landings and takeoffs accomplished on the semi-prepared runway).

6.46. Customs and Border Clearance.

6.46.1. Normal operations.

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

6.46.1.2. Where designated personnel are not assigned, border clearance is the responsibility of the PIC. Duties may be assigned to ground personnel or to the loadmaster, but the PIC retains ultimate responsibility. When a C-17 aircraft is unloaded at a base without an air traffic function, the PIC is responsible for ensuring the following:

6.46.1.2.1. Crewmembers, troops, and passengers possess current passports and valid visas, when required.

6.46.1.2.2. Crewmembers, troops, and passengers have current certificates of immunization (shot record).

6.46.1.2.3. Cargo entry documents are in proper order.

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

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

6.46.1.2.6. Spraying the aircraft (see the FCG and paragraph [6.47.](#)).

6.46.2. Procedures for US Entry.

6.46.2.1. En route, the loadmaster will distribute personal customs declarations (when not accomplished by passenger services) to all passengers, troops, and crewmembers. The loadmaster will also brief passengers and crewmembers on customs regulations, and prepare and compile necessary border clearance forms for the PIC's signature.

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

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

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

6.46.3. Inspections of US aircraft by foreign officials.

6.46.3.1. Follow US Air Force policy on status of military aircraft as stated in the FCG, *General Information* (Chapter 3). In substance, this policy holds that US military aircraft are immune from searches, seizures, and inspections (including customs and safety inspections) by foreign officials. In addition, PICs must be aware of and adhere to any specific FCG provisions for individual countries.

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

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

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

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

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

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

6.46.4. Exercises and Contingency Operations.

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

6.46.4.2. Implementation. Implementation of the agreement is not automatic. Traffic and border clearing agencies implement all or part of the agreement as necessary for each operation. Inspection and clearance may be accomplished at the US onload or offload base, or at the foreign onload or offload base.

6.46.4.3. Customs Procedures.

6.46.4.3.1. Outbound: No requirement. Filing of Customs Form 7507, **General Declaration (Outward/Inward)**, is not required unless directed.

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

6.46.4.3.2.1. Customs Form 7507 (found at <http://www.customs.gov>) (Passenger list not required).

6.46.4.3.2.2. Cargo manifest.

6.46.4.3.2.3. For troops out of country less than 140 days:

6.46.4.3.2.3.1. Troop commander's certificate for examination of troop baggage.

6.46.4.3.2.3.2. One copy of the US Customs Baggage Declaration Form for each passenger, to include observers, support personnel, civilians, news reporters, and crewmembers.

6.46.4.3.2.3.3. Upon arrival at a CONUS offload base, a customs representative will meet the aircraft. Troop commander will turn individual declaration to custom representatives

6.46.4.3.2.3.4. Troops will debark under the observation of the customs representative with only a spot check of articles and baggage. The customs officer may elect to make a more extensive inspection.

6.46.4.3.2.4. For troops who are out of the country 140-days, or more:

6.46.4.3.2.4.1. One copy of the Customs Form 6059B US Customs Baggage Declaration Form for each passenger. This includes observers, support personnel, civilians, news media personnel, and crewmembers.

6.46.4.3.2.4.2. Upon arrival at a CONUS offload base, a Customs representative will meet the aircraft and collect all declarations. Troops will debark under the observation of the customs representative who may make discretionary examination of the baggage.

6.46.4.4. Public Health Procedures.

6.46.4.4.1. When operating from a base without a traffic officer, the PIC will ensure all crewmembers and passengers are properly immunized.

6.46.4.4.2. Spray the aircraft if required.

6.46.4.5. Immigration Procedures.

6.46.4.5.1. Outbound: No requirements.

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

6.46.4.5.2.1. One copy of Customs Form 7507 (found at <http://www.customs.gov>).

6.46.4.5.2.2. One copy of Immigration Form I-92, **Aircraft/Vessel Report**.

6.46.4.5.2.3. One copy/set of Immigration Form I-94, **Arrival/Departure Record**, for each foreign national.

6.46.4.6. Agriculture Procedures:

6.46.4.6.1. Outbound: No requirement.

6.46.4.6.2. Inbound: Consult AMC Border Clearance Guide.

6.46.4.6.2.1. The command being airlifted will instruct troops that no fresh fruit, milk, milk products, vegetables, plants, plant pests, soil samples, animals, meat, and animal products can be brought into the United States. All items of troop personal gear/cargo are to be thoroughly cleaned of mud, dirt, sand, and other foreign material before being brought aboard the aircraft. Personal gear and equipment must be examined for snails and other plant pests to prevent their accidental entry into the U.S.

6.46.4.6.2.2. Before loading, the command responsible for cargo being airlifted will clear vehicles and cargo of snails or other plant pests and of all mud and soil.

6.46.4.6.2.3. When required by agricultural quarantine regulations, the FCG, or higher headquarters, the aircraft will receive an aerosol treatment 30 minutes before landing.

6.46.4.6.2.4. On arrival, agricultural inspectors will inspect the aircraft after troops have disembarked. Crewmembers will assemble remains of in-flight lunches for prompt removal by fleet service personnel.

6.46.4.6.2.5. Inspectors examine baggage, equipment, vehicles, and cargo as offloaded. Any items, vehicles, or cargo found to be contaminated will be held for such treatment as the inspector may direct (washing, steam cleaning, physical cleaning, or fumigation).

6.46.5. Military Customs Pre-Clearance Inspection Program. All crew members will ensure compliance with Military Customs Pre-clearance requirements.

6.47. Insect and Pest Control.

6.47.1. Responsibility. PICs will ensure required spraying is accomplished according to AFJI 48-104, *Quarantine Regulations of the Armed Forces*, Department of Defense FCG, or as directed by higher headquarters. Certify the spraying on Customs Form 7507, or on forms provided by the country transited. Aircraft should never be sprayed with passengers on board. The only exception is when mandated by the FCG.

CAUTION: If the insecticide label directs disembarkation after use, spray before boarding crew or passengers. Close all doors and hatches for 10-minutes after dispensing and ventilate for 15 minutes before allowing anyone on board.

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

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

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

6.47.1.1.3. Spray the cabin, cockpit, and other spaces accessible from within the aircraft after the crew is aboard and after closing all doors, windows, hatches, and ventilation openings.

6.47.1.2. Spray for 3 minutes 20 seconds unless longer periods are specified for the country being transited.

NOTE: Keep used aerosol cans separate from other trash so they may be disposed of safely.

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

6.47.3. 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. Do not onload or offload cargo or passengers until the inspection is satisfactorily completed. 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 6G—Miscellaneous

6.48. Dropped Objects. If an externally dropped object is discovered, the flight crew will:

6.48.1. Notify the appropriate C2 agency as soon as practical; include details of routing, altitude, weather, etc.

6.48.2. Notify maintenance at the first military station transited.

6.49. Cockpit Voice Recorder (CVR). If involved in a mishap or incident, after landing and terminating the emergency, pull the CVR power circuit breaker.

6.50. Life Support and Dash 21 Equipment Documentation. The PIC or designated representative will:

6.50.1. Before departing home station or en route stations, ensure appropriate serviceable protective clothing, life support, survival, and dash 21 equipment for the entire or remainder of the mission are aboard the aircraft.

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

6.50.3. Before departing home station and following en route crew changes, review, sign, and date the AFTO Form 46, **Prepositioned Life Support Equipment**, to ensure all required protective clothing and life support and survival equipment have been certified as installed by aircrew life support and that configuration documents match mission requirements. Ensure appropriate number and type of life preservers are aboard for over-water missions carrying children and infants.

6.50.4. Missing Equipment. Aircrew members discovering equipment missing will accomplish the following:

6.50.4.1. Make an AFTO Form 781A entry for missing equipment. Additionally, ensure equipment removed from the aircraft at an en route station is documented in the AFTO Form 781A.

6.50.4.2. Annotate AF Form 4076 and AFTO Form 46 in the next vacant column indicating the quantity remaining for the item. Ensure the ICAO location designator is entered above the check number of that column. Leave AF Form 4076 and AFTO Form 46 on board the aircraft in the event of an en route crew change.

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

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

6.50.4.5. When possible, advise HQ AMC/A37TL (or MAJCOM life support office) and appropriate C2 agency (or airport management) before mission continuation.

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

6.51. Not Used.

6.52. Airfield Data Reports. Aircrews transiting unfamiliar airfields or airfields where conditions may adversely affect subsequent flight will:

6.52.1. Report airfield characteristics that produce illusions, such as runway length, width, slope, and lighting, as compared to standard runways, sloping approach terrain, runway contrast against surrounding terrain, haze, glare, etc., and previously unknown obstacles, airfield markings, or other safety critical items to HQ AMC/A36AS (Airfield Suitability Branch).

6.52.2. Debrief the next C2 center transited.

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

6.54. Cockpit Congestion and Loose Objects.

6.54.1. Store only the minimum amount of professional gear required to accomplish the mission on the flight deck. Additional items, to include personal bags, will be secured in the crew rest area or cargo compartment. All items will be secured before passing the combat entry point through the combat exit point.

6.55. Wake Turbulence Avoidance. Comply with wake turbulence avoidance criteria. Acceptance of traffic information, instructions to follow an aircraft, or a visual approach clearance is acknowledgment that the PIC will ensure takeoff and landing intervals and accepts responsibility of providing wake turbulence separation. Refer to FLIP General Planning (GP) section 5-37 for more information concerning wake turbulence separation

6.56. Over Flying En Route Stops. The C2 agency may approve a request to over fly a scheduled en route stop (ANG/DOD for ANG-directed missions, AFRC command center for AFRC-directed missions).

6.57. Hung Flare Procedures. Conduct the following procedures after the live firing of flares, if displayed flare quantities have decreased since block-out, or if the crew suspects aircraft battle damage:

6.57.1. After landing, taxi to the de-arm area or another suitable safe location to check for hung ordnance.

6.57.2. The loadmaster or another qualified crewmember will deplane the aircraft and check all flare dispensers for hung ordnance or damage.

NOTE: ALE-40/47 flare squibs that fail to fire are not considered hung ordnance.

6.57.3. 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.

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

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

6.58.1. Equipment. When classified equipment is onboard, ensure the C2 Center or base operations office is aware of the requirement for aircraft security according to **Chapter 7** of this AFI. At bases not under jurisdiction of the Air Force, ensure the aircraft and equipment are protected. AFI 31-401, *Information Security Program Management*, provides specific guidance concerning the security of various levels of classified equipment aboard aircraft. For classified aircraft components which cannot be removed and stored, seal the aircraft. If available, use Ravens to guard the aircraft; otherwise, use guards employed by the host country for flightline/airport area control. Do not leave unguarded classified information stored in navigation or radio equipment.

6.58.2. Material. Ensure Communications Security (COMSEC) and other classified materials are turned in at destination and receipts are obtained for COMSEC and classified material. The on-site C2 center will provide temporary storage for COMSEC and other classified materials during en route, turnaround, and crew rest stops. If a storage facility is not available, the aircraft gun storage box may be used for material classified up to and including SECRET. Encrypted COMSEC will only be transferred to authorized DoD personnel.

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

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

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

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

6.58.7. Ground and in-flight checks of the Mode IV, when conducted, are mandatory maintenance debrief items. Crews will annotate successful and unsuccessful interrogation of the Mode IV on all aircraft forms (AFTO IMT 781A).

6.58.8. Aircrews will carry COMSEC equipment and documents required to operate the Mode IV on missions when required for mission accomplishment. Before departing for any destination without COMSEC storage facilities, crews will contact their local COMSEC managers for guidance.

Chapter 7

SECURITY

7.1. General. This chapter provides guidance on aircraft security and preventing and resisting aircraft piracy (hijacking) of the C-17 aircraft. AFI 13-207, *Preventing and Resisting Aircraft Piracy (Hijacking)* (FOUO), AFI 31-101, *The Air Force Installation Security Program* (FOUO), 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-17 is a “Protection Level 3” resource. Aircraft security at non-United States military installations is the responsibility of the controlling agency.

7.3. Air Force Installation Security Program. The following security procedures will implement AFI 31-101 (FOUO), *The Air Force Installation Security Program*, requirements for C-17 aircraft:

7.3.1. The aircraft will be parked in an established restricted area and afforded protection via 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.

7.3.2. When no permanent or established restricted area parking is available, establish a temporary restricted area consisting of a raised rope barrier, and post with restricted area signs. Provide ESRT 5-minute response and the ISRT from existing areas can respond to this area if able to maintain 3-minute response within their primary area. Portable security lighting will be provided during the hours of darkness if sufficient permanent lighting is not available.

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 will depart 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 force support terminates only after the aircraft doors are closed and the aircraft taxis.

7.3.6. Sealing. Seal the aircraft during all RONs on non-secure ramps.

7.4. Standby Aircraft Security. The PIC shall ensure aircraft hatches and doors are secure to show unauthorized entry; seal the crew entrance door and aft exterior maintenance tunnel hatch with a boxcar seal. The PIC shall notify the C2 agency the aircraft is sealed and provide them a means to access the aircraft in an emergency. Annotate the forms with the time the aircraft was sealed. The C2 Senior Controller may grant access to a sealed aircraft, shall document time of entry and ensure it remains launch capable. The PIC or designated representative must be present if access to the aircraft is required and will ensure the aircraft is resealed. The aircrew pre-flight portion will remain valid if performed by one aircrew, sealed, and flown by another aircrew.

NOTE: WG/CCs should develop local procedures for documentation and management IAW TO 00-20-1 and MAJCOM Supplement.

7.5. En Route Security. The planning agency must coordinate with the execution agency to ensure adequate en route security is available. PIC will receive a threat assessment and en route security capability evaluation briefing for areas of intended operation prior to home station departure and should request updates from en route C2 as required. If required, a PHOENIX RAVEN team will be assigned to the mission.

7.5.1. The PHOENIX RAVEN team will consist of US Air Force security force members. The team travels in MEGP status and is responsible to the PIC at all times. In turn, the PIC is responsible for their welfare (transportation, lodging, etc.). Ensure security team members receive a mission briefing, aircraft egress/passenger briefing (as appropriate).

7.5.2. Arrival. On arrival, the PIC will assess the local situation and take the following actions as required:

7.5.2.1. Area patrol. Request area security patrols from local security forces. If local authorities request payment for this service, use AF IMT 15, USAF Invoice.

7.5.2.2. Aircrew surveillance. During short ground times, direct armed crewmembers to remain with the aircraft and maintain surveillance of aircraft entrances and activities in the aircraft vicinity.

7.5.2.3. Inadequate Security. If in the PIC opinion, airfield security is inadequate and the PIC determines the safety of the aircraft is in question, the PIC may waive the flight duty period limits and crew rest requirements and depart as soon as possible for a base considered reliable. Report movement and intentions to the controlling agency as soon as practical. If departure is not possible, the aircrew must secure the aircraft to the best of their ability. In no case, will the entire crew leave the aircraft unattended. Crew rest requirements will be subordinate to aircraft security when the airframe may be at risk. The PIC should rotate a security detail among the crew to provide for both aircraft protection and crew rest until relief is available. Request security assistance from the nearest DoD installation, US Embassy, local military or law enforcement agencies as appropriate.

7.5.3. Entry Control Procedures. Unescorted entry is granted to crewmembers and support personnel assigned to the mission who possess their home station AF Form 1199, **Air Force Entry Control Card**, supported by an Entry Access List (EAL) or aircrew orders. Crewmembers and assigned crew chiefs are authorized escort authority.

7.5.3.1. Normally, non-United States nationals, such as cargo handlers, can perform their duties under escort and should not be placed on the EAL.

7.5.3.2. Personnel not on the entry control list or aircrew orders must be escorted within the area.

7.6. Detecting Unauthorized Entry.

7.6.1. When parking on a secure ramp, the aircraft will normally be left unlocked/unsealed to allow ground personnel immediate access. If, in the PIC's judgment, the aircraft needs to be sealed in order to detect unauthorized entry, then:

7.6.1.1. Use available box car seals.

7.6.1.2. Secure the doors in a manner that will indicate unauthorized entry (e.g., tape inside of doors to airframe so that entry pulls tape loose).

7.6.1.3. Close and seal the crew entrance door (box car seal). Confirm the condition of the aft hatch seal. (See paragraph 7.6.3.)

7.6.1.4. Wipe the immediate area around lock and latches clean to aid in investigation of a forced entry.

7.6.1.5. Report any unauthorized entry or tampering to the OSI, security forces or local authorities, and the C2 agency. Have aircraft thoroughly inspected prior to flight.

7.6.2. Security awareness is crucial to effective mission accomplishment. Aircrews must always remain vigilant to their surroundings, especially at high threat, low security locations. During pre-flight activities, aircrews will inspect accessible areas, to include aircraft wheel wells, air conditioning compartments, and cargo compartment under floor area (IAW 7.6.3.) for unauthorized packages, personnel, or other unfamiliar devices. Report any suspicious items to host security forces. Aircrews will maintain a heightened security posture throughout all pre-takeoff activities.

7.6.3. Under floor Hatch Security. The following procedures are to be used when inspecting/securing the under floor maintenance area. Crewmembers will not enter the under floor area unless specifically required for the mission. Crewmembers will not pin the aft hatch from inside the aircraft. Prior to all home station departures, crewmembers will ensure both the forward and aft under floor maintenance tunnel access hatches are sealed. If the aft hatch is not sealed, open the aft hatch and visually inspect the under floor area from the aft hatch. Close and seal the aft hatch (tape, boxcar seal, or suitable alternate) and ensure the forward hatch is secured with a boxcar seal. Enter the date, time and initials of the individual accomplishing these procedures on the tape (if used). Annotate the aircraft forms with the method sealed, (tape or seal), the seal number if applicable, date and time. Prior to each off station flight, the loadmaster will check the forward hatch seal and the pilot will inspect aft hatch seal during the exterior inspection. Verify the tape/seal on the aft hatch is intact and agrees with the write up in the aircraft forms. If the seal/tape has been removed/tampered with, notify security personnel immediately. Prior to entering crew rest, check the condition of the seal/tape and reapply if necessary. Local missions: no inspection/seal is required for either hatch.

7.7. Preventing and Resisting Hijacking.

7.7.1. In taking action during an aircraft hijacking situation, military forces will act under military command within the scope of their duties.

7.7.2. In the event an aircraft involved in an aircraft hijacking situation is carrying documents, equipment, or material that DoD has determined to be highly sensitive, or weapons of mass destruction, DoD will provide FAA, and where appropriate, the FBI, with all pertinent information. Where possible, the FAA will consult and cooperate with DoD prior to directing any law enforcement activity.

7.7.3. An aircraft is most vulnerable to hijacking when the aircrew is aboard and the aircraft is operationally ready for flight.

7.7.4. A concerted effort must be made to prevent the hijacking of military or military contract aircraft by detecting potential hijackers before they board the aircraft.

7.7.5. Should preventive efforts fail, any actual attempt to hijack a military aircraft must be resisted in a manner appropriate to the situation.

7.7.6. Since air piracy may be committed by political terrorists or by individuals to whom the threat of death is not a deterrent but a stimulus, ordinary law enforcement procedures may be ineffective.

Thus, successful conclusion of a hijacking situation and apprehension of the hijackers may require use of specialized law enforcement techniques and procedures.

7.7.7. Delaying actions have been most successful in overcoming hijackings without loss of life or property.

7.7.8. In the case of an aircraft carrying passengers, the primary concern is the safety of the passengers.

7.7.9. Assistance to hijacked civil or military contract aircraft will be rendered as requested by the pilot in command of the aircraft and the authority exercising operational control of the anti-hijacking effort.

7.8. Preventive Measures. Commanders at all levels must ensure preventive measures are taken to minimize access to the aircraft by potential hijackers. When a C-17 is operating away from home station, the PIC will ensure provisions of this chapter and AFI 13-207 (FOUO), as supplemented, are complied with.

7.8.1. Preventive measures include the following: The host station passenger processing or manifesting facility should conduct anti-hijacking inspections. Do not board passengers until the PIC is fully satisfied with inspection results. In the absence of qualified passenger service representatives, the PIC will ensure the anti-hijacking inspection of passengers and baggage is accomplished.

7.8.2. Medical facility commanders are responsible for anti-hijacking inspection of patients. When patients are delivered to the aircraft by civilian sources, the aircrew will perform required inspections prior to loading.

7.8.3. During exercises or contingencies in support of combat operations involving the movement of large groups of personnel, the unit being supported should manifest passengers and perform anti-hijacking inspections.

7.8.4. Passengers will not carry weapons or ammunition on their person or in hand-carried baggage aboard an aircraft. **EXCEPTION:** Special agents, guards of the Secret Service or State Department, RAVEN Team Members, and other individuals specifically authorized to carry weapons.

7.8.4.1. Troops or deadhead crewmembers will not retain custody of ammunition on an aircraft. They will turn it in to the troop commander or PIC. Troops may carry unloaded weapons and ammunition aboard the aircraft during combat operations. When the tactical situation dictates (in coordination with the aircrew), weapons may be loaded at the order of the troop commander or team leader.

7.8.4.2. Dummy clips that can be easily identified may be loaded for training at the order of the team leader in coordination with the aircrew.

7.8.4.3. RAVENs will only be armed in-flight on specifically designated missions identified on the mission "frag" as "RAVEN in-flight arming required".

7.8.5. If weapons must be loaded/cleared, the individual/s will:

7.8.5.1. Move to a safe, clear area at least **50 feet** from any aircraft, equipment, or personnel before un-holstering or un-slipping their weapons.

7.8.5.2. Clear weapons in accordance with standard safety procedures.

7.9. Initial Response. When an act of air piracy involves an Air Force installation or aircraft within the United States, response will be according to the following guidelines until such time as FAA assumes active direction of anti-hijacking efforts. Resist all attempts to hijack a military aircraft. Resistance may vary from simple dissuasion, through deception and subterfuge, to direct physical confrontation, including the prudent use of weapons.

7.9.1. The following guidelines should be used to counter a hijacking, actual or threatened, while the aircraft is on the ground:

7.9.1.1. Delay movement of the aircraft to provide time for ground personnel and the aircrew to establish communication and execute coordinated resistance actions.

7.9.1.2. The authority for determining when ground resistance will be discontinued is vested in the highest available level of command. When adequate communication cannot be established, or when time does not permit, this authority is delegated in the following order:

7.9.1.2.1. MAJCOM commander exercising operational control of the aircraft.

7.9.1.2.2. MAJCOM commanders in whose Area Of Responsibility (AOR) the airfield lies.

7.9.1.2.3. Senior operational commander on scene.

7.9.1.2.4. PIC in compliance with MAJCOM directives.

7.9.2. A hijacked aircraft carrying weapons of mass destruction will not be allowed to takeoff. Refer to DoD 5210.41M, chapter 7, for additional guidance.

7.10. In-Flight Resistance. After airborne, success in thwarting a hijacking depends on the resourcefulness of the aircrew. Many variables of a hijacking preclude use of any specific counter-hijacking procedure. Some key factors should be evaluated before deciding a course of action to be taken, including the nature of the threat, danger to life or crippling damage to the aircraft in-flight, destination indicated by the hijacker, and the presence of sensitive material onboard. Some counter-hijacking actions the aircrew may consider are:

7.10.1. Engage the hijacker/s in conversation in an attempt to calm them and to evaluate what course of action might be effective.

7.10.2. Dissuade the hijacker.

7.10.3. Use facts or subterfuge to convince the hijacker intermediate stops are necessary.

7.10.4. Propose more favorable alternatives, such as landing in a neutral, rather than a hostile, country.

7.10.5. Exploit any reasonable opportunity to incapacitate or overcome the hijacker physically, including the prudent use of firearms.

7.11. Communications Between Aircrew and Ground Agencies. Crews facing a hijacking threat will notify ground agencies by any means available as soon as practical and follow-up with situation reports as circumstances permit.

7.11.1. If possible, transmit an in-the-clear notification of hijacking to ATC. Controllers will assign IFF code 7500 (does not preclude subsequent selection of code 7700).

7.11.2. If in-the-clear transmissions are not possible, report "am being hijacked" by setting transponder to code 7500. If unable to change transponder code, or when not under radar control, transmit a radio message to include the phrase "(call sign) transponder seven five zero zero."

7.11.3. Controllers will acknowledge receipt and understanding of transponder code 7500 by transmitting "(call sign) (facility name) verify squawking 7500." An affirmative reply or lack of reply from the pilot indicates confirmation and proper authorities are notified.

7.11.4. To report "situation appears desperate; want armed intervention," after code 7500 is used, change to code 7700. If unable to change transponder code to 7700, or when not under radar control, transmit "(aircraft call sign) transponder seven seven zero zero."

7.11.4.1. When changing from code 7500 to code 7700, remain on 7500 for at least 3 minutes or until a confirmation of code 7500 is received from ATC, whichever is sooner, before changing to code 7700. ATC acknowledges code 7700 by transmitting "(call sign) (facility name) now reading you on transponder seven seven zero zero."

7.11.4.2. Aircraft squawking 7700, after squawking 7500, which are not in radio contact with ATC, are considered by ATC to have an in-flight emergency (in addition to hijacking), and the appropriate emergency procedures are followed. Notification of authorities in this case includes information that the aircraft displayed the hijack code as well as the emergency code.

7.11.5. To report "situation still desperate, want armed intervention and aircraft immobilized," leave flaps full down after landing, or select landing flaps while on the ground. To facilitate message distribution, transmit "(aircraft call sign) flaps are full down."

7.11.6. To report "leave alone, do not intervene," retract the flaps after landing. Pilots who retract flaps after squawking 7700 should return to code 7500 and remain on code 7500 for the next leg of the hijacked flight unless the situation changes. Transmit "(call sign) back on seven five zero zero" to emphasize the fact intervention is no longer desired.

7.12. Forced Penetration of Unfriendly Airspace. Refer to FIH for international signals for air intercept.

7.13. Arming of Crewmembers. When crews are directed to carry weapons (IAW mission directive, Form 59, OPOD, etc.) a minimum of one pilot and one loadmaster will be armed. All crewmembers should know who is armed. The following procedures apply when arming is directed:

7.13.1. Weapons Issue. Before departing home station, obtain weapons, ammunition, box, lock and key. Crewmembers will be armed according to AFI 31-207, *Arming and Use of Force by Air Force Personnel* and MAJCOM publications. If an armed crew member must leave the crew en route, transfer the weapon to another authorized crew member using AF IMT 1297.

7.13.2. Wearing of Weapons. Wear weapons in a holster, concealed at all times to prevent identifying armed crewmembers. Crewmembers will be armed before beginning preflight, on-load or off-load duties and until completion of all post-flight duties. Do not wear weapons off the flight line except to and from the C2, armories, and other facilities associated with aircrew activities. In general, at overseas locations, weapons are not to be brought off the aircraft. In countries where FCG/SOFA authorizes such action, every effort should be made to keep all firearms onboard the Sovereign US vessel unless appropriately responding to a hostile event or being moved to/from storage at an armory.

RAVEN weapons are not to be brought off the aircraft unless responding to hostile action or being moved to/from storage at an armory.

7.13.2.1. AMC Passenger Terminal Procedures. Armed crewmembers must discreetly identify themselves to AMC passenger service personnel upon arrival at security checkpoints. One crewmember will present a valid set of crew orders, military identification card, and AF Form 523, **USAF Authorization to Bear Firearms**, authorizing the carrying of concealed weapons. Once terminal personnel verify this, they will allow the crewmember to vouch for the remaining crewmembers. The entire crew will then proceed through the magnetometer without removing objects from their pockets. This will prevent passengers from determining which crewmembers are armed.

7.13.3. Weapons Storage In-Flight. When no passengers are aboard, weapons may be stored in the aircraft gun box in-flight after a satisfactory stowaway check. Crewmembers will rearm before landing. Weapons will not be unloaded before placing them in the aircraft gun box.

7.13.4. Weapons Storage on the Ground.

7.13.4.1. Aircrews, including stage crews, will store weapons and ammunition in the most secure facility available, normally the base armory.

7.13.4.2. Non-stage aircrews may store weapons and ammunition in the aircraft gun box.

7.13.5. When storing weapons in the gun box:

7.13.5.1. Weapons should normally not be unloaded.

7.13.5.2. Inform C2 which crew member has the gun box key/combination.

7.13.6. Crew members will ensure they are reissued the same weapon until mission termination at home station.

7.13.7. Loading and Transfer of Weapons. Load and unload weapons at approved clearing barrels if available. Do not use a hand-to-hand transfer of loaded weapons to another crew member; place the weapon on a flat surface.

7.14. Force Protection. Crews must be alert to possibility of terrorist activities at all times. Reference AFMAN 10-100, *Airman's Manual*, Joint Service Guide 5260, *Service Member's Personal Protection Guide: Combat Terrorism While Overseas*, and AFI 10-245, *Air Force Antiterrorism Standards*, for Force Protection measures.

7.14.1. Personal conduct. Crews must realize their conduct can make them a target for individuals dissatisfied with US foreign involvement in their national affairs. Local foreign nationals may or may not condone a military presence - crew conduct will be watched and judged. Therefore, utilize the following:

7.15. Protecting Classified Material. The Aircraft Commander is responsible for protection of classified materials aboard their aircraft. As a minimum, insure the IFF equipment is set to zero and classified information in the mission computer is cleared before leaving the aircraft.

7.15.1. Hand receipt classified material to properly cleared personnel. If in question, these people should be able to produce a clearance authorization document from the U.S. State Department or sim-

ilar office. If necessary, properly cleared individuals may also safeguard classified aircraft components to ensure constant oversight during ground operation.

7.15.2. If transferring materials to properly cleared personnel is not feasible, steps will be taken to secure classified materials on the aircraft. Place materials in a pouch, then lock and seal the pouch. The pouch should be issued with the COMSEC/classified material. As it is a controlled item, it must be returned to the issuing agency upon mission completion. Store the locked and sealed pouch in the installed aircraft gun box/locker. Secure the gun box with a GSA approved lock then seal the aircraft.

Chapter 8

OPERATIONAL REPORTS AND FORMS

8.1. General. This chapter provides guidelines for worksheets, reports, and forms associated with AMC operational activities. Consult governing instruction or contact wing, unit, or local flight safety officers for assistance with safety forms.

8.2. AF IMT 457, USAF Hazard Report. The AF IMT 457 is a tool to notify supervisors and commanders of a hazardous condition that requires prompt corrective action. For hazardous weather, complete the front side of an AF IMT 457 and send it to the parent wing flying safety office. If addressing a computer flight plan deficiency, attach a copy of the AF IMT 72, **Air Report (AIREP)**. Send your report so the parent unit receives it within 5 days of the event. For more information, see AFI 91-202, *The US Air Force Mishap Prevention Program*.

8.3. AF IMT 651, Hazardous Air Traffic Report (HATR). The AF IMT 651 is a tool to report near midair collisions and alleged hazardous air traffic conditions. See AFI 91-204, *Safety Investigations and Reports*, and AFMAN 91-223, *Aviation Safety Investigations and Reports* for more information concerning the HATR program.

8.3.1. AFI 91-204 and AFMAN 91-223 list HATR reportable incidents.

8.3.2. The PIC shall report the hazardous condition to the nearest ATC agency (e.g. center, Flight Service Station (FSS), control tower, or aeronautical radio station) as quickly as safety allows. Include the following information in the radio call (as appropriate)

8.3.2.1. Aircraft identification or call sign.

8.3.2.2. Time and place (radial/DME of NAVAID, position relative to the airfield, incident, etc).

8.3.2.3. Altitude or flight level.

8.3.2.4. Description of the other aircraft or vehicle.

8.3.2.5. Advise controlling ATC agency that the PIC will file a HATR upon landing.

8.3.3. Deadline to file a HATR is 24 hours after event via any communication mode available. If landing airport has a USAF airfield management function, submit completed AF IMT 651 to the airfield management officer for forwarding to wing safety office. If landing airport does not have an airfield management office, notify the safety office of the Air Force base nearest to location where the condition occurred, PIC's home base safety office, or as prescribed by overseas MAJCOM. In that case, provide contact sufficient information to prepare AF IMT 651.

8.3.4. Grant individuals who submit a HATR immunity from disciplinary action provided:

8.3.4.1. If they were the offending party, their violation was not deliberate.

8.3.4.2. They committed no criminal offense.

8.3.4.3. Their actions did not result in a mishap.

8.3.4.4. They properly reported the incident using procedures above.

8.4. AMC IMT 97, AMC In-Flight Emergency and Unusual Occurrence Worksheet. The AMC IMT 97 is a tool to notify appropriate authorities of any mishap involving crewmembers or aircraft. PICs shall complete all appropriate areas of the form in as much detail as possible. When notified, AMC C2 agents will inform their supervisor/commander to start investigation and reporting activities IAW AFI 91-204, *Safety Investigations and Reports*, and Operation Report 3 (OPREP-3) procedures. In addition, PICs will preserve all mission and flight related documents, e.g. flight plans, weather briefings, NOT-AMS, Weight and Balance form, etc. for collection by appropriate safety officials

8.4.1. PICs will report crewmember or passenger injury, aircraft damage, or injury/damage to another organization's people or equipment caused by PIC's aircraft/crewmember. At a minimum, report the following:

8.4.1.1. Any physiological episode (physiological reaction, near accident, or hazard in-flight due to medical or physiological reasons).

NOTE: Crewmembers and passengers involved in a physiological episode will see a flight surgeon to be evaluated and to ensure the incident is reported in the Air Force Safety Automated System (AFSAS) as soon as practical.

8.4.1.2. A human factor related situation, e.g. misinterpretation of instruments; information overload (i.e. tactile, aural, and visual input too fast to permit reasonable analysis/decision); aircrew task saturation (i.e. too many responses/actions required in a short period of time); or confused switchology (i.e. adjacent switches where actuation of wrong switch creates dangerous situation). Anonymous reports are acceptable.

8.4.1.3. A condition that required engine shutdown, in-flight flameout, engine failure, suspected engine power loss, or loss of thrust that required descent below MEA. Engine failures include, but are not limited to, shrapnel from a failed internal engine component penetrating the engine case, engine case rupture/burn-through, engine nacelle fire, substantial fuel leak, or unselected thrust reversal. Consistent with safety, immediately report incidents that involve multiple engines (may report single-engine incidents upon landing). **NOTE:** Exclude intentional shutdowns for training and/or FCF unless the engine fails to restart.

8.4.1.4. A flight control malfunction (including the autopilot and trim systems) that results in an unexpected or hazardous change of flight attitude, altitude, or heading. Enter the flag words, "Reportable Flight Control Malfunction" in the AFTO 781A.

8.4.1.5. A landing gear malfunction aggravated by failed emergency system or procedures.

8.4.1.6. An in-flight loss of all pitot-static or gyro-stabilized attitude/directional instrument indications.

8.4.1.7. Any spillage/leakage of radioactive, toxic, corrosive, or flammable material from aircraft stores or cargo.

8.4.1.8. Conditions that required pilot to depart takeoff or landing surface.

8.4.1.9. All in-flight fires regardless of damage.

8.4.1.10. All bird/wildlife strikes regardless of damage.

8.4.1.11. Incidents that, in the PIC's judgment, are in the interest of flight safety.

8.4.2. Always provide your home station safety officer a copy of relevant information. Make every effort to preserve all mission and flight related documents, such as flight plans, weather briefings, NOTAMS, Weight and Balance form, etc., for collection by appropriate safety officials. PICs shall use the following precedence to report mishaps (as soon as feasible after event):

- 8.4.2.1. MAJCOM flight safety officer (FSO).
- 8.4.2.2. Any FSO.
- 8.4.2.3. The nearest USAF C2 center.
- 8.4.2.4. Any USAF Airfield Management Operations.

8.5. Report Violations, Unusual Events, or Circumstances. PICs shall document events that require them to deviate from AFI 11-202V3 (unless waived by competent authority) or alleged navigation errors (include over-water position errors over 24NMs, border, or ATC violations). Do not release names or personal aircrew information to non-USAF agencies.

8.5.1. Describe deviation(s) using the following report format:

- 8.5.1.1. Facts. Report pertinent details of the event.
- 8.5.1.2. Investigation and analysis. Report circumstances which required/drove deviation(s).
- 8.5.1.3. Findings and conclusions.
- 8.5.1.4. Recommendations to prevent recurrence.
- 8.5.1.5. Corrective actions taken.

8.5.2. Include the following attachments with the report:

- 8.5.2.1. Formal notification of incident.
- 8.5.2.2. Approved crew orders.
- 8.5.2.3. Crewmembers' official statements (if applicable).
- 8.5.2.4. Other pertinent documents submitted in evidence (logs, charts, etc.).

8.5.3. In addition to above (when aircraft is equipped), PIC shall download original flight plan to a floppy disk and turn it in to the C2 center or parent standardization and evaluation office.

8.5.4. OG/CC shall send the original investigation report to the appropriate MAJCOM within 45 days of the event/notification. ANG/AFRC OG/CCs shall send original investigation report through channels to HQ AFRC/IGI within 35 days of the event/notification. HQ AFRC/IGI will send the investigation report to MAJCOM within 45 days of event/notification.

8.5.5. Use OPREP-3 reporting procedures contained in AFI 10-206, *Operational Reporting*, for navigation errors over 24 NMs.

8.5.5.1. When notified of a navigation position error, the PIC (or agency that receives initial notification) shall document the circumstances surrounding the incident (using report format below) and ensure C2 agents submit an OPREP-3.

8.5.5.2. Include the following information in the report:

8.5.5.3. The name and location of agency/unit submitting report.

8.5.5.4. Effected mission identification number.

8.5.5.5. Reference OPREPs-3 to determine type of event (i.e., state "navigation position error").

8.5.5.6. The date, time (Zulu), and location (e.g., ARTCC area) of alleged infraction.

8.5.5.7. Describe facts and circumstances. Include aircraft type and tail number, unit (aircrew's wing or squadron), home base, route of flight, point of alleged deviation, and miles off course.

8.5.6. PICs shall expeditiously report unusual events/circumstances that impact their mission to appropriate MAJCOM agencies. Reportable events include, but are not limited to, spectrum interference, interception, fuel dumping, multiple engine failure, hostile fire, injury to passenger or aircrew member, etc. This list is not all exhaustive. Most events require C2 agents to forward OPREP reports to higher headquarters. In all cases, pass the "who, what, when, where, why, and how" of the incident to a C2 agency.

8.5.6.1. The Spectrum Interference Resolution Program, covered in AFI 10-707, *Spectrum Interference Resolution Program*, establishes procedures to combat the effect of meaconing, intrusion, jamming, and interference. PICs who encounter electromagnetic interference (EMI) will report the event to the nearest C2 agency as soon as practical.

8.5.6.1.1. Address EMI reports to: HQ AMC SCOTT AFB IL//A63// and addressees listed in AFI 10-707. Send reports via electronic message format with the following information in plain text:

8.5.6.1.1.1. Frequency selected when EMI occurred.

8.5.6.1.1.2. Equipment affected by EMI. Location of the system. The system function, name, nomenclature, manufacturer with model number or other system description. The operating mode of the system, if applicable (frequency agile, pulse doppler, search, etc.).

8.5.6.1.1.3. Description of EMI (noise, pulsed, continuous, intermittent, on so forth).

8.5.6.1.1.4. Effect EMI had on system performance (reduced range, false targets, reduced intelligibility, data errors, etc.).

8.5.6.1.1.5. Date(s) and time(s) of EMI.

8.5.6.1.1.6. Location where EMI occurred (coordinates or line of bearing, if known, otherwise state as unknown.)

8.5.6.1.1.7. Source of the EMI if known.

8.5.6.1.1.8. List other units that received interference (if known) and their location or distance and bearing from your location.

8.5.6.1.1.9. A clear, concise narrative summary on what you know about the EMI, with any actions taken to resolve the problem.

8.5.6.1.1.10. Whether or not PIC wants expert/technical assistance (include level of security clearance expert requires).

8.5.6.1.1.11. Specify impact the EMI had on your mission.

8.5.6.1.1.12. Provide a POC (Name, Rank, DSN/Commercial Phone Number, and Duty hours).

8.5.6.1.2. C2 agents must prepare an OPREP-3 if EMI is suspected meaconing, intrusion, or jamming, interference sufficient to cause a hazard, or if, in the PIC's judgment, the situation warrants such a report.

8.5.6.1.3. PICs shall serve as classification authority for EMI reports. Evaluate an adversaries' ability to exploit certain systems using EMI and protect information accordingly. PICs on a non-sensitive mission or who judge the EMI to be interference from a non-hostile source need not classify EMI reports unless that report would reveal system vulnerability. Classify interference report(s) at stations located in combat areas or during sensitive military missions.

8.6. Petroleum, Oil and Lubricants (POL) - Aviation Fuels Documentation. This section prescribes aviation POL (AVPOL) procedures that ensure correct documentation, form and invoice processing, and program supervision. Reference AFI 23-202, *Buying Petroleum Products and Other Supplies and Services Off-Station*. Use the Multi Service Corporation (MSC) air card for the purchase of aviation fuel and ancillary ground services at commercial airports (and some military installations) worldwide. The air card is authorized for use by all U.S. government aircraft, state, and local law enforcement aircraft, and some foreign government aircraft. All PICs should plan to use the "platinum" MSC card. In most cases, there will be no changes when refueling at non-Defense Energy Support Center (DESC) contract locations. The MSC card is accepted at approximately 4,800 locations worldwide. A list of all MSC-accepting merchants can be found at <https://www.airseacard.com>. It replaces the Standard Form (SF) 44, **Purchase Order-Invoice-Voucher**, at locations that accept the MSC card.

8.6.1. Responsibilities. Aircrew and maintenance personnel will be familiar with AVPOL procedures and documentation requirements of this chapter. Improper use of the MSC card could create financial liability for the purchaser.

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

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

8.6.2.2. Foreign government air forces.

NOTE: DoD FLIP en route supplements identify locations with into-plane contracts.

8.6.3. AVPOL Forms Documentation and Procedures.

8.6.3.1. The DD1898, **Fuel Sale Slip**, is the fuel transaction receipt used for purchases at other DoD locations, including DFSC into-plane contract locations. Log and place the DD1898 inside the AF IMT 644. The PIC or designated representative shall complete this form. **NOTE:** If the contractor insists on a unique invoice along with the DD1898, annotate the vendor's invoice with "DUPLICATE DD1898 ACCOMPLISHED."

8.6.3.2. The AF IMT 664, **Aircraft Fuels Documenting Log**, is a tool to log and store all AVPOL transaction forms. Record all off-station transactions on the front of the form and insert the original form inside the envelope. Turn in the AF IMT 664, with supporting forms, to maintenance debriefing or as directed by local procedures. The PIC or designated representative shall complete this form when appropriate.

8.6.3.3. The SF 44, **Purchase Order-Invoice-Voucher**, may be used to purchase fuel, ground services and/or other authorized products when no MSC card contract is in place.

8.6.3.3.1. SF 44 fuel purchases where FBO agrees to invoice DESC for payment.

8.6.3.3.1.1. The aircrew shall present the SF 44 as the purchase invoice when an FBO refuses to accept the MSC card. The aircrew shall complete the SF 44 and attach it to the FBO vendor ticket/invoice when the FBO also declines use of the SF 44 and uses its own invoice/receipt. Fuel purchases shall be documented on a separate SF 44 from ground services and other authorized products since the FBO must invoice DESC for the fuel and the customer for non-fuel product and services.

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

8.6.3.3.1.3. Copy 3 of the SF 44 and one copy of the FBO commercial invoice, if applicable, shall be provided to the aircrew. Log and place a copy inside the AF IMT 664. Aircrews shall present all fuel purchase receipts to the designated aviation squadron Certifying Official and/or Accountable Official upon return to home station to enable timely validation and financial obligation processing into the Fuels Automated System (FAS).

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

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

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

8.6.3.3.2.1.2. Aircrews shall complete the SF 44 and obtain the FBO fuel vendor annotation in block 11 of the SF 44 to confirm total cash amount and also sign and date the SF 44 blocks 20 and 21. Log and place a copy inside the AF IMT 664. Aircrew shall return unused cash to their local DoD Finance source upon return to home station. Present the completed SF 44 (for non-fuel charges only) to the appropriate home station administrative personnel for processing (e.g., Wing Refueling Document Control Officer, Finance Office, etc.)

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

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

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

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

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

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

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

8.6.3.6. AF Form 1994, **Fuel Issue/Defuel Document**, records fuel purchases at USAF bases using a valid DD Form, 1896, Jet Fuel Identaplate. The PIC or designated representative shall complete the form then log and place a copy inside the AF IMT 664, **Aircraft Fuels Documentation Log**.

8.6.3.7. AFTO Form 781H, **Aerospace Vehicle Flight Status and Maintenance Document**, records POL actions for particular airframe IAW applicable directives. The PIC or designated representative shall complete the form and turn it in to maintenance debrief following the mission.

8.6.3.8. DD Form 1896, **Jet Fuel Identaplate**, is the aircraft fuel and oil charge card.

8.6.3.9. For off-station missions, the PIC will complete or verify accuracy of the AF IMTs 15, 315, 664, AFTO Form 781H, DD Form 1898, and associated fuels receipts then place them in the AF IMT 664 (use eight digits for all USAF aircraft tail number entries). The PIC will transmit all AF IMT 664 information via phone, fax, or message if mission causes him/her to be off-station past the last day of the month.

8.6.3.10. C-17 Loadmasters will accurately record, and Aircraft Commanders will verify, fueling actions on the AFTO Form 781H, and AF IMT 664. When available, record tanker refueling information (i.e., tail number, unit of assignment, and home station).

8.7. Not used.

8.8. AMC Form 54, Aircraft Commander's Report on Services/Facilities. The AMC Form 54 is a tool to report level of excellence for services encountered during mobility operations. Be quick to identify outstanding performers and attempt to resolve problems at lowest level practical. PICs should advise affected agency on their intent to submit an AMC Form 54. Provide a copy of the completed form to local station AMC C2 agency. Upon return to home station, PICs will coordinate form with SQ/CC and OG/CC. For Forms 54 that require AMC coordination, OG/CCs shall review and submit AMC Form 54 to 18AF/CC.

8.9. AMC Form 196, Aircraft Commander's Report on Crew Member. The AMC Form 196 is a tool to document an aircrew member or mission essential ground personnel's outstanding, below average, or

unsatisfactory performance during a mobility mission. Be quick to identify outstanding performers and attempt to solve problems at lowest level practical (provide local senior leaders opportunity to resolve problems as they occur). Send the report to subject's unit commander.

8.10. AMC Form 43, Transient Aircrew Facilities Report. The AMC Form 43 is a tool to report level of excellence for transient facilities. Any crewmember may submit this report whether or not the PIC includes an unsatisfactory item in the trip report. Send completed AMC Form 43 to HQ AMC/MWPS, or MAJCOM equivalent.

8.11. Not used.

8.12. DD Form 1748-2, Airdrop Malfunction Report (Personnel-Cargo), is a tool to document any airdrop malfunction IAW AFJI 13-210. Consistent with safety, immediately report off-Drop Zone (DZ) drops/extractions to the controlling agency and proper safety channels. PIC or designated representative shall complete 1748-2 before entering crew rest.

8.13. AF IMT 4096, Airdrop/Tactical Airland/Air Refueling Mission Recap, SKE/ZM Debrief, is a tool to document details of airdrop, tactical airland, A/R, or station keeping equipment (SKE) missions. PIC or designated representative shall complete Form 4096 (or command supplement) and submit same to home-station tactics office.

8.14. SF 368, Product Quality Deficiency Report. Aircrew members shall work with their OGV to submit a Product Quality Deficiency Report to record an unacceptable condition such as component/item failure, or to recommend an enhancement that impacts the operational safety, suitability, or effectiveness of a system, subsystem, or component. See TO 00-35D-54 for detailed information.

Chapter 9

TRAINING POLICY

9.1. Passengers on Training Missions.

9.1.1. Carrying of passengers during initial or re-qualification training will be IAW with AFI 11-401 and this instruction.

9.1.2. Mission qualification, upgrade training, evaluations, off station trainers, and JA/ATTs may carry passengers only if the individual in training is qualified (completed aircraft check ride with a valid AF IMT 8). Air refueling is authorized if the pilot flying is A/R qualified.

9.1.3. If passengers are onboard, touch-and-go landings, Night Vision Goggle (NVG) training and airdrops are prohibited, and all doors will remain closed. (This does not apply to MEGP.)

9.1.4. Multiple practice approaches will not be accomplished with passengers.

EXCEPTION: When approved by the MAJCOM, maintenance and civilian employees, under direct contract to the DoD and engaged in official direct mission support activities, considered “mission essential” may be onboard when touch-and-go or stop-and-go landings are performed providing the mission is a designated training flight and an IP or EP is in command.

9.2. Touch-and-Go Landing Limitations.

9.2.1. Three quarter flap touch-and-go landings will only be accomplished under the direct supervision of an IP or AC certified by the unit commander to perform touch-and-go landings. AC touch-and-go certification will be in accordance with AFI 11-2C-17 Vol 1, *C-17 Training*.

9.2.2. Full flap touch-and-go landings may be accomplished under the direct supervision of an IP.

9.2.3. Limitations.

9.2.3.1. Comply with all flight manual restrictions and procedures.

9.2.3.2. Minimum runway length: 7000' with an IP, 9000' for ACs.

9.2.3.3. Minimum runway width: 120'

9.2.3.4. Minimum ceiling/visibility: 300 ft and RVR 40 (3/4 SM visibility) with an IP, 600 ft ceiling and 2 miles visibility for ACs

9.2.3.5. RCR will be 12 or higher

9.2.3.6. Do not accomplish touch-and-go landings on slush covered runways.

9.2.3.7. Maximum crosswind component: 25 knots with an IP, 15 knots for ACs.

9.3. Training on Operational Missions.

9.3.1. Crews may perform multiple approaches and touch-and-go landings on operational airlift (TWCF) missions provided the following requirements are met:

9.3.1.1. Normal touch-and-go limitations apply and MEGPs will be briefed of the activity.

9.3.1.2. All transition training will be accomplished during the first 12 hours of the FDP only.

9.3.1.3. Pre-mission coordination requirements. As part of pre-mission planning, PICs will contact parent wing current operations and obtain training mission number(s) for use at each en route location(s) where training events are planned. In addition, PICs will coordinate with and receive approval from the airfield(s) where training is to be accomplished. They will then coordinate with the 18 AF TACC to ensure adequate ground time is available at planned training locations to allow for planned training events, clearing customs, required crew rest, etc. Once complete, wing current operations will coordinate with 18 AF TACC to re-cut the mission and add the training mission number(s) in GDSS/C2IPS or GDSS2.

9.3.1.4. Upon initial arrival at the training location, close out the current line on the AFTO IMT 781 and log the training time on the next line using the appropriate training mission symbol and number.

9.3.2. Crews may accomplish aerial refueling training provided the following requirements are met:

9.3.2.1. A qualified AC (or higher) must onload all mission required fuel prior to commencing any training.

9.3.2.2. Passengers and MEGPs are briefed of the activity. If passengers are on board, actual contacts will only be made by qualified pilots. (Not applicable to MEGPs).

9.4. Simulated Emergency Flight Procedures. Simulated emergency flight procedures will be conducted IAW AFI 11-202V3 and this instruction. Do not practice emergency procedures that degrade aircraft performance or flight control capabilities (in-flight). Emergency procedures training with degraded aircraft performance or non-standard configurations will only be accomplished in the simulator.

9.5. Flight Pilot (FP)/ Copilot (CP) Training.

9.5.1. FPs and CPs may practice air refueling from either seat (to include the contact position) with the following restrictions:

9.5.1.1. Accomplished under direct IP supervision.

9.5.1.2. No passengers are authorized.

9.5.1.3. Contacts by non-A/R qualified pilots will only be made after receiving acknowledgment from the tanker pilot and boom operator.

9.5.2. An FP/CP may perform any tactical maneuver, to include tactical descents and assault landings, under the direct supervision of an IP.

9.6. Night Vision Goggle (NVG) Training.

9.6.1. Airland Training.

9.6.1.1. First pilots are authorized to enter initial NVG airland training (PF duties). Copilots may accomplish NVG landings under the direct supervision of an IP.

9.6.1.2. Ground Operations Training. NVG combat offloads and ground maneuvering are approved. Combat offloads may be conducted with cargo compartment blacked out.

9.6.1.3. Takeoff and Landing Restrictions.

9.6.1.3.1. Maximum Crosswind; 15 knots.

9.6.1.3.2. Both HUDs must be operational.

9.6.1.3.3. Weather minimums NVG visual pattern work is 1500/3.

9.6.1.3.4. 1 RA and 1 GPS must be operational.

9.6.1.3.5. NVG touch-and-go landings and Go Around After Touchdown (GOAT) are authorized. See paragraph 9.11. for GOAT restrictions.

9.6.1.3.6. Runway should be lit with an authorized covert lighting pattern.

9.6.2. Airdrop Training.

9.6.2.1. Restrictions.

9.6.2.1.1. Pilots are authorized to fly single ship or formation and perform airdrop operations while wearing NVGs at standard night NVG en route and drop altitudes as defined in **Chapter 16** and in AFTTP 3-3.35A. Drop zones will be lit IAW AFI 13-217 Lighting Patterns (Covert or Overt).

9.6.2.1.2. Loadmasters are authorized to perform heavy equipment and container delivery system airdrops with minimum lighting while wearing NVGs as necessary to assist with operations. Lights will be kept to a minimum during all NVG operations. Blacked out (no-light) operations in the cargo compartment are not authorized. Use of NVGs during static line personnel operations are not authorized. (Restriction applies to the cargo compartment only.)

9.7. Prohibited In-Flight Maneuvers. Stalls and approach to stalls, abnormal configuration approaches, and unusual attitudes will not be practiced or demonstrated in-flight.

9.8. Evaluator/Instructor Pilot Briefing. Before all training/evaluation missions, aircraft commanders or instructors/flight examiners should brief their crew on the following additional items:

9.8.1. Training/Evaluation requirements. Instructors/evaluators (for each crew position) will outline requirements and objectives for each student or examinee. Brief the training objectives IAW AMC C-17 Aircrew Training System syllabus.

9.8.2. Planned training area and seat changes.

9.9. Debriefing. Review and evaluate overall training performed. Each student or aircrew member should understand thoroughly what training has been accomplished. Ensure all training is documented.

9.10. Simulated Instrument Flight. Artificial vision restricting devices are not authorized for any phase of flight. Simulated instrument flight may be flown and logged without the use of a vision-restricting device.

9.11. Planned Go Around After Touchdown (GOAT). A GOAT is a planned training maneuver, accomplished in conjunction with a full flap approach to an Assault Landing Zone (ALZ) or simulated ALZ, used to train pilots to accomplish spot landings. The approach and landing for the GOAT are accomplished IAW the approach and assault landing sections of TO 1C-17A-1. Upon main gear touchdown, a go-around will be initiated IAW TO 1C-17A-1.

9.11.1. An instructor pilot must occupy a primary pilot position during the maneuver.

9.11.2. The following parameters must be met:

9.11.2.1. Landing data must support a full stop.

9.11.2.2. TO 1C-17A-1 requirements for landing gear cooling periods following consecutive landings apply.

9.11.2.3. Sink rate reduction and FPV movement associated with the landing phase must be accomplished in addition to the power advance for the go-around.

9.11.2.4. The go-around will be initiated no later than main gear touchdown.

9.11.2.5. A "TAKEOFF" or "LANDING" cannot be logged for currency.

9.11.2.6. Will not be accomplished on Semi-Prepared Runways.

Table 9.1. Flight Restrictions.

Maneuver	Altitude	Remarks
Instrument Missed/low approaches	MDA/DH	Initiate practice instrument missed approaches no lower than the minimum altitude for the type of approach executed.
Visual Low Approach/ Planned Go Around	Initiate no lower than 100 ft AGL	
Men and equipment on runway	Initiate above 500 ft AGL	
CAT II ILS		Weather: 15 knot crosswind, Ceiling and vis of 200 and ½ are required
Tactical Descents	Complete above 2000 ft AGL	Due to high descent rates, ensure ATC understands crew intentions. Minimum cloud ceiling is 5000 feet AGL. NVG tactical descents must remain VMC at all times.
Assault Landing Zone Operations		Max brake temperature 150°C.

NOTE: These restrictions do not apply to operational missions.

Chapter 10

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

10.1. Overview. The proliferation of Chemical, Biological, Radiological, Nuclear, and High-Yield Explosive (CBRNE) weapons and the means to deliver them present serious security threats to the global operations of air mobility forces. This chapter describes the CBRNE threat, passive defense measures to mitigate that threat, and guidance for ground and flight operations in a contaminated environment.

10.2. Understanding the CBRNE Threat.

10.2.1. Chemical Weapons. Militarily significant chemical weapons include nerve, blister, choking, and blood agents. A key point for aircrew members to remember is that time is on your side. The ultra-violet (UV) rays of the sun, high temperatures, and high absorption rates of chemicals all decrease their lethality. Most chemical agents will either evaporate or absorb into surfaces. For decontamination, cleaning with hot soap and water and/or a 5 percent bleach solution currently appears to be the best and most practical method of removing chemical agents that may remain as a contact hazard on glass, and unpainted metal. Currently, the only decontaminant authorized for use on aircraft is soap and water. **NOTE:** Recent tests indicate that as a decontaminated aircraft dries, the absorbed chemical warfare agent (CWA) may resurface from painted surfaces causing contact and vapor hazards.

10.2.2. Biological Weapons. Biological warfare agents (BWA) are normally divided into three areas: bacteria (i.e., Anthrax) that live outside the cell, reproduce, and are normally susceptible to antibiotics; toxins (i.e., Ricin), that are poisons produced by living organisms or plants; and viruses (i.e., Smallpox) that normally require the host of a living cell to survive and reproduce. Viruses and toxins do not respond to antibiotics. It is probable that the medical community would be the first to recognize that an upsurge in “flu-like symptoms” is actually a bio attack. Although BWA are degraded by UV rays, humidity and high/low temperatures, some BWA (i.e., Anthrax spores) may have a long life, lasting decades under the right conditions. Current immunizations and good personal hygiene help prevent infection.

10.2.3. Radiological Weapons. The radiation dispersal device (RDD), or so-called “dirty bomb,” is the typical radiological weapon. RDD is any device that disseminates radioactive material without using a nuclear detonation. Key points to remember are that shielding and distance are the best defenses against radiation exposure.

10.2.4. Nuclear Weapons. The threat from a nuclear device is from the initial blast, heat, radiation, and residual fallout. In addition, the Electromagnetic Pulse (EMP) from a nuclear detonation can damage electronic equipment. The best protection is a combination of shielding, distance from the blast, and limited time of exposure.

10.2.5. High-Yield Explosives. High-yield explosives are conventional weapons or devices that are capable of a high order of destruction or disruption. Passive defense measures include hardening of facilities and establishing stand-off distances for personnel and key assets.

10.3. CBRNE Passive Defense Measures. Passive defense measures are those activities conducted to negate, contain, and manage the effects of CBRNE attack. Passive defense measures include pre, trans,

and post-attack actions designed to mitigate the CBRNE threat through contamination avoidance, protection, and contamination control.

10.3.1. Contamination Avoidance. Contamination avoidance is the most important passive defense measure. Techniques for contamination avoidance include: inflight diversion, survival launch, and minimizing exposure to contaminated cargo, aerospace ground equipment (AGE), and material handling equipment (MHE).

10.3.1.1. Inflight Diversion. When advised that a destination airfield is under CBRNE attack or has been contaminated, the aircrew will divert to an uncontaminated airfield, if at all possible. Authority to land at a contaminated airfield will be specified in the controlling OPORD.

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

10.3.1.3. Avoiding Cross Contamination from AGE, MHE, and Cargo. All formerly contaminated equipment and cargo must be marked to facilitate contamination avoidance and the use of protective measures. Additionally, the air shipment of formerly contaminated cargo requires special precautions and must be specifically authorized by the senior transportation commander.

10.3.2. Protection. When exposure to chemical and/or biological agents cannot be avoided, protection provides the force with the ability to survive and operate in a CBRNE environment. Protection is afforded by individual protective equipment, collective protection, and hardening of facilities.

10.3.2.1. Individual Protective Equipment. The current in-flight protective gear for aircrew members is the Aircrew Chemical Defense Ensemble (ACDE). The ACDE includes the newer Aircrew Eye-Respiratory Protection System (AERPS) above the shoulders and the CWU-66/P or CWU-77/P Integrated Aircrew Chemical Coverall (IACC). The Ground Crew Ensemble (GCE) consists of the protective mask, C2 series canister (or filter element for MCU-2A/P protective mask), and over garment, boots, and gloves. The ACDE and GCE provide protection against chemical and biological agents. They do not provide blast or radiation protection from an RDD or nuclear detonation. The ACDE requires care during donning using "buddy dressing" procedures and Aircrew Life Support (ALS) expertise during processing through the Aircrew Contamination Control Area (ACCA). **NOTE:** AECMs will utilize the MCU-2A series mask.

10.3.2.1.1. ACDE/GCE Issue. Aircrews will be issued sized ACDE and GCE at home station. Aircrews will ensure their ACDE and GCE are available at all times while in a CBRNE threat area. Aircrew members will confirm the mobility bag contents and correct sizes.

10.3.2.1.2. ACDE Wear During Ground Operations. Because aircraft contamination is unlikely to occur during flight, ground operations represent the highest threat to aircrew safety. Protection from enemy attacks and exposure to liquid chemical agents is paramount. Aircrew should limit activities to essential duties only, and separate ground duties from air duties.

10.3.2.2. **Collective Protection.** Collective protection provides a temperature-controlled, contamination-free environment to allow personnel relief from continuous wear of IPE such as the ACDE. The basic concept for most facility collective protective solutions is to employ overpressure, filtration, and controlled entry/exit. The intent is to provide rest and relief accommodations, as well as provide medical treatment in contamination free zone. All pressurization systems should be shut down and doors sealed if the crew finds itself in need of immediate protection. Crewmembers should avail themselves of facilities, if provided, on the airfield.

10.3.2.3. **Hardening.** Permanent and expedient hardening measures are used to strengthen buildings and utility systems or provide barriers to resist blast effects. To reduce the potential of vapor exposure in facilities without collective protection seal windows and doors, turn off HVAC systems and use rooms above the first floor whenever possible.

10.3.3. **Contamination Control.** In the post-attack environment, contamination control measures limit the spread of chemical, biological, and radiological contamination through disease prevention measures, decontamination, and use of Exchange Zone (EZ) operations. Effective contamination control helps sustain air mobility operations by minimizing performance degradation, casualties, or loss of material.

10.3.3.1. **Disease Prevention.** Up-to-date immunizations, standard personal hygiene practices, and the use of chemoprophylaxis are effective biological warfare defensive measures.

10.3.3.2. **Decontamination.**

10.3.3.2.1. **Inflight Decontamination.** Air washing is a useful inflight decontamination technique for removing most of the liquid agent from aircraft metal surfaces. However, vapor hazards may remain in areas where the airflow characteristics prevent complete off-gassing (i.e., wheel wells, flap wells, rivet and screw heads, joints, etc.). Flights of at least 2 to 4 hours are recommended, and lower altitudes are more effective than higher altitudes. Fly with the aircraft configured (gear, flaps, and slats extended) as long as possible to maximize the airflow in and around as many places as possible. Be advised that exterior contamination may seep into the aircraft interior creating a vapor hazard for aircrews. Use of ACDE is recommended.

10.3.3.2.2. **Limits of Decontamination.** Complete decontamination of aircraft and equipment may be difficult, if not impossible, to achieve. Formerly contaminated assets will be restricted to DOD-controlled airfields and not released from US government control.

10.3.3.3. **Exchange Zone (EZ) Operations.** The AMC Concept for Air Mobility Operations in a Chemical and Biological Environment (CB CONOPS) describes a method for continuing the vital flow of personnel into a contaminated airfield while limiting the number of air mobility aircraft and personnel exposed to the contaminated environment. The purpose of the EZ is to minimize the spread of contamination within the air mobility fleet, preserving as many aircraft as possible for unrestricted international flight. The EZ is an area (located at uncontaminated airfield) set aside to facilitate the exchange of uncontaminated (clean) cargo/passengers to a contaminated (dirty) airframe, or visa versa, without cross-contamination. Additional information on the EZ is available through HQ AMC/A35.

10.4. Flight Operations.

10.4.1. **Mission Planning.** Aircrews must be mentally prepared to face the dangers of CBRNE weapons. Flight/mission planning must be thorough. Aircraft commanders should emphasize ACDE wear,

crew coordination, CBRNE hazards and countermeasures, inflight diversion, plans for onload/offload in the event of a ground attack, and plans for the return leg in the event of aircraft contamination. Alternative scenario plans should also be considered in the event mission-oriented protective posture (MOPP) conditions change.

10.4.2. Establishing the Threat Level. Aircrews should monitor command and control channels to ensure they receive the latest information concerning the destination's alert condition. Diversion of aircraft to alternate "clean" locations may be required, unless operational necessity otherwise dictates. The 18 AF TACC or theater C2 agency (normally through the controlling OPORD) will direct aircrew pre-exposure activities such as medical pre-treatment for chemical/biological exposure.

10.4.3. Fuel Requirements. Extra fuel may be needed to compensate for altitude restrictions as the result of CB agent exposure. During purge periods, the aircraft will be unpressurized. Although the aircrew can use the aircraft oxygen systems, passengers wearing GCE cannot, thus restricting the aircraft cruise altitude and increasing fuel requirements accordingly.

10.4.4. Oxygen Requirements. Operating a contaminated aircraft will increase oxygen requirements. Aircrew wear of ACDE will require use of the aircraft oxygen system to counter actual/suspected contamination. Using the 100 percent oxygen setting offers the greatest protection in a contaminated environment. Appropriate oxygen reservoir levels must be planned to meet higher consumption rates. Use the aircraft Dash 1 charts to calculate the required reservoir levels.

10.4.5. Donning Equipment. Aircrew will don ACDE based on the alarm condition (See Airman's Manual (AFMAN 10-100). Use the "buddy dressing" procedures, and refer to AMCVA 11-303, and AMCVA 11-304 to ensure proper wear. When wearing the ACDE, Atropine and 2 PAM Chloride auto injectors will be kept in the upper left ACDE pocket. If the integrated survival vest/body armor is worn, the Atropine and 2 PAM Chloride auto injectors may be kept in the lower right flight suit pocket. This standardized location will enable personnel to locate the medication should an individual be overcome by CWA poisoning. M-9 paper on the flight suit will facilitate detection of liquid chemical agents and ACCA processing. M-9 paper should be placed on the flight suit prior to entering the CBRNE threat area or when an alarm "yellow" or higher has been declared. When inbound to a CBRNE threat area, prior to descent, the aircraft commander will ensure crew and passengers don appropriate protective equipment IAW arrival destination's MOPP level and brief aircrew operations in the CBRNE threat area. As a minimum, this briefing will include: flight deck isolation, oxygen requirements, air conditioning system requirements, IPE requirements, ground operations, and MOPP levels. Aircrew members must determine if the wear of the integrated survival vest/body armor and LPUs will restrict dexterity and mobility to the point that it becomes a safety issue. If the aircrew deems the equipment to create a safety of flight concern, then the items may be pre-positioned (instead of worn) on the aircraft to be readily available to the aircrew.

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

10.5. Ground Operations.

10.5.1. Crew Rest Procedures. Operational necessity may require the aircrew to rest/fly in a contaminated environment. If the mission is not being staged by another aircrew or pre-flight crews are not available, the aircrew may pre-flight, load, and secure the aircraft prior to entering crew rest. The departing aircrew will perform necessary crew preparations and pre-flight briefings. Then, they will report to the ACCA for processing with assistance from ALS personnel. If possible, aircrew transport should be provided in a covered vehicle. Aircrews should avoid pre-flying the aircraft prior to departure to prevent contamination spread to them and/or the aircraft. As aircrews proceed to fly, they will require assistance from ground support personnel in removing their aircrew protective overcape and overboots prior to entering the aircraft.

10.5.2. Onload and Offload Considerations. Extreme care must be exercised to prevent contamination spread to the aircraft interior during ground operations, particularly to the flight deck area. Reduce the number of personnel entering the aircraft. Contaminated engine covers, safety pins and chocks will not be placed in the aircraft unless sealed in clean plastic bags and properly marked IAW technical order requirements. Aircrew members entering the aircraft will remove plastic overboots and overcape portions of the aircrew ensemble and ensure flight/mobility bags are free of contaminants and placed in clean plastic bags. Prior to entering the aircraft all personnel should implement boot wash/decontamination procedures. Aircrew exiting aircraft into a contaminated environment will don plastic overboots and overcape prior to leaving the aircraft.

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

10.5.4. Airlift of Retrograde Cargo. Only CRITICAL retrograde cargo will be moved from a contaminated to an uncontaminated airbase. Critical requirements are pre-designated in theater war plans. Onload cargo will be protected prior to and while being transported to the aircraft. If contaminated, protective cover(s) will be removed/replaced just prior to placing the cargo on the aircraft. It is the user's responsibility to decontaminate cargo for air shipment. The airlift of contaminated or formerly contaminated cargo requires the approval of the senior transportation commander.

10.5.5. Passenger/Patients. A path should be decontaminated between the aircraft and the ground transportation vehicle to reduce interior contamination when loading/unloading passengers/patients. Normally, externally contaminated patients and those infected with contagious biological agents will not be transported onboard AMC or AMC-procured aircraft. The AMC/CC is the waiver authority to this policy. **NOTE:** An altitude below 10,000 feet is recommended due to AECM use of the ground chemical mask.

10.5.6. Physiological Factors. Aircraft commanders must be very sensitive to the problems resulting from physical exertion while wearing ACDE. The aircraft commander should consider factors such as ground time, temperature and remaining mission requirements when determining on/offload capabilities. Individuals involved should be closely monitored for adverse physiological effects.

10.5.7. Work Degradation Factors. Work timetables need to be adjusted to minimize thermal stress caused by wearing the ACDE. Aircrews must weigh all factors when performing in-flight and ground duties. The following are degradation factors for wearing full GCE, and may also be used to represent the Task Time Multipliers for the ACDE. To estimate how much time it takes to perform a task or operation, (1) take the Task Time Multiplier (**Table 10.1.**) for the appropriate Work Rate and ambient

air temperature and (2) multiply it by the time it normally takes to perform the task. For example, given a heavy work rate and an air temperature of 70F, the crewmember should expect a normal one hour task to take 2.1 hours while wearing ACDE. A more extensive discussion of this subject is found in AFMAN 32-4005, *Personnel Protection and Attack Actions*.

Table 10.1. Task Time Multipliers.

Work Rate	Temperature		
	20-49 F	50-84 F	85-100 F
	-6 to 9 C	10 to 28 C	29 to 38 C
Light	1.2	1.4	1.5
Moderate	1.3	1.4	3.0
Heavy	1.7	2.1	5.0

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

10.5.9. Documenting Aircraft Contamination. When it is suspected or known that an aerospace vehicle or piece of equipment has been contaminated with a radiological, biological or chemical contaminant, a Red X and detailed description will be entered in the AFTO Form 781, and an annotation will be made in historical records for the lifecycle of the equipment.

10.5.10. 10-Foot Rule. The 10-foot rule was developed in order to provide guidance for protecting personnel using or handling contaminated resources (such as pallets) or working in locations with materials that might retain a residual chemical. The 10-foot rule embodies a safety factor that goes beyond current OSD guidance (which allows removal of IPE whenever detectors no longer detect a chemical agent vapor hazard). There are two phases associated with the 10-foot rule.

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

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

10.5.10.3. Table 10-2 shows estimated times associated with initial and follow-on phases of the 10-foot rule. To simplify response processes, commanders may choose to use the worst case scenario as the foundation for all 10-foot rule actions, i.e., 24 hours for the initial phase and all periods of time greater than 24 hours for the follow-on phase.

Table 10.2. Ten-Foot Rule Time Standards (Source: AFMAN 10-2602).

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

Chapter 11

NAVIGATIONAL PROCEDURES

11.1. Flight Planning:

11.1.1. Normally, mission planning is accomplished and verified while still in a flight planning facility/base operations and then electronically transferred to the aircraft mission computer. Use the latest weather, description of the load, landing zone/drop zone, and waypoint description information for this planning.

11.1.2. Prior to filing a flight plan, verify computer products and overprinted flight planning forms with current charts and FLIP, as well as NOTAMs, organized track messages, etc. If a computer flight plan is not available, complete flight planning and print an AFMSS flight plan or other approved form for in-flight use as a navigation and fuel management log.

11.1.3. Sources for obtaining IRU PPOS coordinates will be in the following priority:

11.1.3.1. GPS PPOS IAW flight manual.

11.1.3.2. FLIP/Jeppesen Airfield diagrams or MAJCOM approved parking spot handouts.

11.1.3.3. DoD FLIP En Route Supplement.

11.1.3.4. Best available chart.

11.2. Flight Plan/Data Verification.

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

11.2.1.1. 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.

11.2.1.2. 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 TACC/XOCZF if the average wind for a route segment exceeds either 30° error in direction or 25 knots in speed.

11.3. En Route:

11.3.1. Use all available FLIP en route charts, and prior to departures and arrivals, terrain charts, to ensure navigational accuracy and terrain clearance. Periodically crosscheck navigation solution (i.e., MC FOM, GPS ERR).

11.3.2. After loading the flight plan, both pilots will use the ND CHART format in conjunction with the DEFINE/REVIEW WAYPOINT pages to insure the proper coordinates were loaded for all points in the flight plan, especially the destination.

11.3.3. If a revised clearance is received, revise the flight plan in the mission computer and review the new course.

11.3.4. Low-level Navigation. When the flight plan and navigation databases are properly loaded into the mission computer, the aircraft map Navigation Display (ND) and the MCD flight plan become the primary sources of navigation information for tactical low-level missions.

11.4. Low-Level Navigation. Threat and emission control requirements permitting, use all available aids (e.g. mission computer data, navigational aid fixes, map reading) to remain position oriented.

11.4.1. While aircraft systems provide a self-contained adverse weather, day/night, worldwide navigation capability, pilots assume ultimate responsibility for en route navigation, terrain avoidance, and time control. During low level operations, attention should be focused outside the aircraft, emphasizing threat detection and situational awareness. Limit duties that distract attention from outside the aircraft to mission essential items only.

11.4.2. A navigation display (ND) map format should be displayed on at least one MFD at all times.

11.4.3. Time of Arrival (TOA) control is primarily accomplished by airspeed adjustments. If necessary and appropriate to the situation, use planned alternate legs to gain or lose time, use timing triangles, fly inside or outside course line (within mission computer route parameters), or use time control holding patterns.

11.4.4. Means of Navigation.

11.4.4.1. The mission computer navigation solution, backed-up with map reading, is the primary means of navigation on VFR low level routes. If conditions permit, ground-based navigational aids can be used as additional information sources.

11.4.4.2. The mission computer is the primary means of route navigation in IMC. If conditions permit, onboard radar, ground-based radar, and/or bearing/distance fixes should be used as backups.

11.4.5. Flight at low altitude can be an effective defensive tactic; however, never fly lower than the altitude dictated by the threat or mission. Navigation and objective area identification become increasingly difficult when threat avoidance requires low ingress/egress altitudes, operations at night, or operations during marginal weather conditions.

11.4.6. Low level modified contour flight is flown with momentary deviations above and below the base altitude for smoothness of flight. The radar altimeter used by the pilot flying will be operational and the radar altimeter altitude reference marker will be set to 50 feet below base contour altitude.

11.4.7. During IMC or night operations, maintain en route altitude by using the best available barometric altimeter setting and radar altimeter information. If reported barometric settings are unavailable, use GPS barometric settings (found on the MC APPROACH PAGE). When the next leg (or segment) altitude is higher than the leg (or segment) being flown, cross the waypoint at the highest altitude. If the next leg (or segment) altitude is lower than the leg (or segment) being flown, descend when past the waypoint.

11.5. Post Flight.

11.5.1. For legs in which suspected navigational error, procedural deviation, or other abnormality have occurred, download and retain a copy of the M-PLAN and mission HISTORY diskette and all pertinent forms including, but not limited to DD Form 175, DD Form 175-1, DD Form 1801, CFP, charts, and navigation log. Units will maintain all operational mission data on file (hard disk, diskette file, paper copy, oceanic plotting chart, etc.) for 120 days.

11.5.2. For suspected malfunctions or off-DZ drops, record AIRDROP RECALL information before leaving the aircraft.

11.6. Mission Computer Directed Approaches.

11.6.1. The C-17 mission computer directed approach, using the MC APPROACH page of the mission computer, does not ensure obstacle clearance. It only mathematically derives a final approach course and glide path from pilot input data.

11.6.2. AFJMAN 11-226, *United States Standard for Terminal Instrument Procedures (TERPS)* establishes the following planning and flight procedures.

NOTES:

Using these procedures does not imply these procedures will comply with all TERPS criteria. Approaches into rapidly sloping terrain, or where planning documents have significant errors will still pose potential flight hazards. Thorough planning and precision flying is a must.

Reference AFTTP 3-3.35A, chapter 7 for techniques on programming Mission Computer approaches.

11.7. Restrictions on Mission Computer Directed Approaches.

NOTE: C-17 Mission computer approach procedures are intended to be used only in contingency situations when no other published approach procedure is available. Specific authorization from MAJCOM/A3/DO (HQ AMC/A3) is required before performing these procedures in IMC. All crews are authorized to use these procedures for training in VFR conditions IAW AFI 11-202 Vol 3.

11.7.1. C-17 crews are not authorized to fly RNAV approaches.

11.7.2. If a published non-precision (VOR, NDB, TACAN, etc.) approach exists, the crew may program the MC to mirror the published approach. You may use MC guidance to back-up the ground NAVAIDs. In the event the ground navigation aids become unreliable, the crew is not authorized to continue the approach procedure using MC guidance.

11.7.3. In a contingency, the crew will be provided an approved (TERPS'ed) mission computer approach procedure. All data required to program the approach in the mission computer will be included on the approach procedure. This will include any high-precision waypoints, weather minimums, and missed approach instructions required to safely execute the approach. Use the following procedures when authorized to execute a MC approach.

11.7.3.1. Mission computer FOM of 3 or better is required to fly the approach.

11.7.3.2. The PNF will confirm that the MC FOM is 3 or better prior to departing the IAF, and again prior to sequencing the FAF.

11.7.3.3. The PNF will monitor the approach on the MFD map display from the IAF until VMC with the runway in sight with the rings set at 1 nm. If the aircraft symbol deviates from the magenta line by more than 1/2 nm, as displayed on the MFD map display, the PF will execute the missed approach, unless the runway is in sight.

11.7.3.4. It is highly recommended that the approach be flown with the autopilot coupled until VMC.

11.7.3.5. If “DEGRADED NAV ACC” or “INSUFF NAV ACC” is displayed on the WAP during the approach, execute the missed approach, unless the runway is in sight.

11.7.3.6. Weather minima will be no lower than 600-2.

11.7.3.7. All of the waypoints required to fly the approach and missed approach must exist in the current navigation database. If the waypoints are not in the permanent navigation database, then unit tactics will provide a disc with the required waypoints to be loaded into the custom navigation database. Aircrew will not manually enter or alter the latitude and longitude coordinates for any portion of the approach, or missed approach.

11.7.3.8. Enter all of the waypoints for the approach up to and including the FAF in the primary flight plan.

11.7.3.9. Enter all of the waypoints for the missed approach, starting with the missed approach point (MAP), in the secondary flight plan. Special attention should be paid to whether each waypoint is an “over fly” or “under fly”. The MAP is usually an “over fly” waypoint.

11.7.3.10. Both pilots will review the entire procedure in the mission computer, verifying both the coordinates and the MFD map display for accuracy, prior to commencing the approach/departure. If any portion does not agree with the published procedure, the approach/departure will not be flown.

11.7.4. If no published approach exists, develop training approaches IAW paragraphs [11.8.](#) and [11.9.](#)

11.8. Mission Computer Approach Planning Guidance.

11.8.1. Straight-in approaches:

11.8.1.1. Ensure the runway is properly defined in either the permanent or custom airfield database.

11.8.1.2. Minima (DH/MDA) will be 500 feet above the highest man-made obstacle or terrain feature/spot elevation, or 400 feet plus one contour interval above the highest depicted terrain contour whichever is highest, within three nautical miles from the FAF to the MAP.

11.8.1.3. Determine the final approach course (note any difference from runway azimuth).

11.8.1.4. Draw a corridor 3 NM each side of the final approach course.

11.8.1.5. Plot an IAF, 15 NM from the touchdown zone, along the final approach course.

11.8.1.6. Plot a FAF, 5 NM from the touchdown zone, along the final approach course.

11.8.1.7. Plot the MAP.

11.8.1.8. Determine the controlling obstacle from the FAF to the MAP.

11.8.1.9. Determine the preliminary DH.

11.8.1.10. Using **Chapter 16** and AFTTP 3-3.35A criteria, determine the ingress altitude from the IAF to FAF. Use this, or the highest traffic pattern altitude the weather or threat will allow as the GS INTCP ALT.

11.8.1.11. At the aircraft, crosscheck predicted MC APPR PATH with the GS INTCP ALT and ensure that the FAF distance is 5 NM or less from the touchdown zone. If not, use the MC FAF distance and determine if a new DH is required.

11.8.1.12. Use the predicted times and MC slowdown points for time control. See AFTTP 3-3.35A, table 7.2 for slowdown planning.

11.8.1.13. Plan the missed approach.

11.8.2. Circling approaches:

11.8.2.1. Determine the final approach course (note any difference from runway azimuth).

11.8.2.1.1. Determine the geographic center of the airport. Plan the circling maneuver based on airfield restrictions, a threat, etc. Determine a level off point no earlier than 2.5 NM from the center of the airport, along the final course inbound. Plan to be at circling minima at this point. Use the airport coordinates as the MAP.

11.8.2.1.2. Minima (MDA) will be 500 feet above the highest obstacle within 5 NM of the geographic center of the airport, or 600 feet above the airport elevation, whichever is higher.

11.8.2.2. Draw a 5 NM (radius) circle around the geographic center of the airport.

11.8.2.3. Plot an IAF, 15 NM from the airport, along the final approach course.

11.8.2.4. Plot a FAF, 5 NM from the airport, along the final approach course.

11.8.2.5. The airport is the MAP.

11.8.2.6. Determine the controlling obstacle within the 5NM circle.

11.8.2.7. Determine the MDA.

11.8.2.8. Using **Chapter 16** and AFTTP 3-3.35A, determine the ingress altitude from the IAF to FAF. Use this, or the highest traffic pattern altitude the weather or threat will allow as the GS INTCP ALT.

11.8.2.9. Plot a level off point 2.5 NM from the airport, along the final approach course. Using 500 feet/NM (no wind) from the level off point to the GS INTCP ALT, confirm the FAF distance is 5 NM or less from the touchdown zone. If not, compute a new FAF distance (new radius) and determine if a new MDA is required.

11.8.2.10. Plan the circling maneuver.

11.8.2.11. Use the predicted times and MC slowdown points for time control. For manual slow-downs from 300 KCAS, using SBK 2, slow down approximately 10 NM from the FAF (4 minutes ETE). For a pop-up from 300 AGL to 1500 AGL, plan 6 NM (2.5 minutes ETE). See AFTTP 3-3.35A, table 7.2 for slowdown planning.

11.9. Planning the Missed Approach Segment of Mission Computer Approaches.

11.9.1. Determine the missed approach point.

11.9.2. Determine the missed approach course, and develop a waypoint to fly to 5 NM from the geographic center of the airport.

11.9.3. Determine the altitude required at this first waypoint using **Chapter 16** and AFTTP 3-3.35A low level criteria, MEA or MOCA if applicable, or an ATC required altitude, whichever is higher.

11.9.4. Using 250 feet/NM ensures this altitude can be obtained with one engine inoperative.

11.9.5. At the aircraft, crosscheck coordinates, courses and distances to ensure accuracy.

Chapter 12

AIRCREW MAINTENANCE SUPPORT TASKS

12.1. General. This chapter contains aircrew procedures not contained in the flight manual, other portions of this AFI, or other publications.

12.2. Responsibilities. Aircrew may assist the normal maintenance function when critical contingency tasking dictate their use, provided this action does not impact crew duty and crew rest limits specified in [Chapter 3](#) of this AFI.

12.3. Authority to Clear a Red X. Pilots are not normally authorized to clear a Red X. If a situation is encountered where the aircraft is on a Red X and qualified maintenance personnel are not available to clear it, the PIC may obtain authorization to clear the Red X from the home station MXG/CC or designated representative, in accordance with TO 00-20-1. Other crew members are not authorized to clear a Red X. **EXCEPTION:** The PIC may clear Red Xs for engine covers, pitot covers, gear pins and SPR drains when qualified maintenance personnel are not available, unless prohibited by the home station MXG/CC or OG/CC.

12.4. Refueling/Defueling.

12.4.1. Aircraft Refueling. Aircrew members qualified in ground refueling may perform refueling duties. Crewmembers will normally make a AFTO Form 781 red diagonal entry rather than draining the SPR sumps. Aircrews will only refuel in cases when maintenance support is not readily available and the mission would be delayed. Crewmembers may augment maintenance refueling teams at en route stops.

12.4.1.1. Avoid refueling with JP-8+100 while transiting airfields with JP-8+100 capabilities. AMC aircraft are not allowed to operate on JP-8+100, except in emergency conditions. All JP-8+100 locations are required to maintain a clean JP-8 capability to support transient aircraft. If inadvertent refueling with JP-8+100 occurs, de-fuel the aircraft prior to flight, and make an AFTO Form 781 entry stating “**CAUTION:** Aircraft refueled using JP-8+100, preventative measures must be taken when de-fueling.”

12.4.2. Refer to TO 1C-17A-1 and TO 1C-17A-2-12JG-28-1. For normal refueling, two qualified personnel are required. If aircrew refueling is required at a base with AMC support, the PIC will submit an AMC Form 54, describing the circumstances. Only special operations qualified aircrews are authorized to hot refuel/defuel.

12.4.3. Concurrent Servicing. Concurrent ground operations (simultaneous refueling or de-fueling while cargo or maintenance operations are being performed) are authorized in accordance with TO 00-25-172, *Ground Servicing of Aircraft and Static Grounding/Bonding*. Aircrews performing Dash-1 preflight inspections or cargo loading concurrent with servicing must have cooperation and close coordination with the Concurrent Servicing Supervisor (CSS). Crewmembers may act as CSS. The CSS will remain in continuous intercom contact with fuel servicing team members during the entire servicing operation.

12.4.3.1. Movement into or within the safe area must be under control of the CSS. Individuals must properly ground themselves before boarding the aircraft or handling fuel servicing equip-

ment. Concurrent servicing, loading, and maintenance must be conducted according to TO 00-25-172 and current checklists, which will be reviewed before concurrent operations. Current checklist procedures take precedence over TO 00-25-172 procedures.

12.4.3.2. Simultaneous fuel and oxygen servicing is not authorized.

12.4.3.3. Winching of rolling stock and non-spark producing (i.e. 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 on-loaded or off-loaded without having to stop fuel flow.

EXCEPTION: Passengers are prohibited in the cargo compartment during winching.

12.4.4. The following guidance will be used for fuel servicing (refuel) operations only:

12.4.4.1. Passengers are not allowed on board unless expressly directed by MAJCOM/A3/DO, DIRMOBFOR, or in combat. (**EXCEPTION:** For AE see [Chapter 20](#)) One crewmember is required to monitor the passenger compartment when passengers are on board.

12.4.4.2. Electric and electronic equipment may be left on provided it does not radiate energy; but it must not be turned on or off during refueling.

12.4.4.2.1. TACAN, Radar Altimeters, and HF radios must be turned off.

12.4.4.2.2. Radar may be in standby but, if time permits, should be turned-off.

12.4.4.2.3. IFF SIF may be in standby but, if time permits, should be turned-off.

12.5. Maintenance Monitor Panel.

12.5.1. Aircrews will not erase any fault unless specifically directed by maintenance.

12.5.2. COMP FANS will be selected to operate the OBIGGS compressor fans when any crewmember needs to go beneath the cargo floor. The upper ON legend is illuminated when the switch is depressed, the lower FANS legend will illuminate when both fans are open. When selected closed, the OPEN light will extinguish when both fans are off, then the ON light will go out.

12.6. Aircraft Recovery Away from Main Operating Base (MOB). When an aircraft will land at a base other than the MOB, a crew chief should accompany the aircraft. The PIC is responsible for ensuring the aircraft is turned to meet subsequent mission taskings. If qualified maintenance specialists are unavailable, the aircrew is responsible for turning the aircraft to meet subsequent mission taskings.

12.6.1. Recovery items the aircrew may be responsible for include, but are not limited to, the following:

12.6.1.1. Parking and receiving.

12.6.1.2. Aircraft servicing.

12.6.1.3. Supervision of minor maintenance within local capability.

12.6.1.4. Minor configuration changes to meet mission tasking.

12.6.1.5. Securing the aircraft before entering crew rest.

12.6.1.6. Coordinating aircraft security requirements.

12.6.1.7. AFTO 781-series forms maintenance.

12.6.2. In all cases where aircrews must service the without qualified maintenance specialist assistance, comply with procedures in this chapter.

12.6.3. 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 781A, **Aerospace Vehicle Flight Status and Maintenance Document**, updating current status and enter a red dash symbol and a discrepancy that reflects that the applicable maintenance inspection (i.e. pre-flight, thru-flight, basic post-flight) is overdue.

12.7. Aircraft Servicing Requirements. When adequate maintenance support is not available, the aircrew may need to perform certain maintenance tasks. Use the job guides (JG) in **Table 12.1**. If aircrew servicing is required at a base with AMC support, the PIC will submit an AMC Form 54 describing the circumstances.

NOTE: Aircrews should consult a qualified maintenance facility when questions/concerns arise as to performing any maintenance task.

Table 12.1. Job Guides.

TO Number	Title
1C-17A-2-10JG-10-1	Ground Handling—Parking/Mooring
1C-17A-2-10JG-30-1	Ground Handling—Quick Turn-Around
1C-17A-2-10JG-50-1	Ground Handling—Launch
1C-17A-2-10JG-60-1	Ground Handling—Servicing Equipment Positioning
1C-17A-2-10JG-70-1	Ground Handling—Mission Reconfiguration of Cargo Compartment
1C-17A-2-12JG-28-1	Servicing—Fuel
1C-17A-2-12JG-29-1	Servicing—Hydraulic
1C-17A-2-12JG-79-1	Servicing—Engine Oil
1C-17A-2-40JG-20-1	System Integration—Displays (BIT)
1C-17A-2-00GV-00-1	General Vehicle Manual
1C-17A-2-1	Aircraft Cross Servicing Guide
1C-17A-6	Inspection Requirements Manual

12.8. Ground Inspections. 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 781A, **Aerospace Vehicle Flight Status and Maintenance Document**, updating current status and enter a red dash symbol and a discrepancy that reflects that the applicable maintenance inspection (i.e. pre-flight, thru-flight, basic post-flight) is overdue. Reference TO 00-20-1/AMC1.

Chapter 13

CARGO AND PASSENGER HANDLING PROCEDURES

13.1. General. The loadmaster coordinates loading or offloading with air terminal operations or shipping agencies; plans loads; and supervises loading or offloading operations. Performs preflight and post flight of aircraft and systems, and computes aircraft weight and balance. Provides for safety and comfort of passengers and troops, and security of cargo, mail, and baggage during flight. If airdrop qualified, prepares and rigs equipment for airdrop, and participates in the aerial delivery of equipment, supplies, and personnel.

13.1.1. Multiple Loadmaster CRM. Although the C-17 was designed to a one loadmaster requirement, situations will arise when more than one will be on board the aircraft. To ensure good CRM, the primary loadmaster will assume overall responsibility for completion of all checklists and ensure no confusion exists about what duties have been accomplished.

13.2. Responsibilities of Aircraft Loading.

13.2.1. AMC Designated Stations.

13.2.1.1. Air freight 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. They will also coordinate traffic activities affecting loading and offloading and assign sufficient air freight loading personnel for cargo handling. Air freight personnel are responsible for safe positioning of material handling equipment and cargo to or from the aircraft cargo door, ramp, or ramp toes. Under supervision of the loadmaster, air freight personnel prepare the aircraft for loading, stow loading/tiedown equipment if the aircraft is not to be reloaded, physically load the aircraft and tiedown cargo and equipment, and release tie-down and physically offload cargo.

13.2.1.2. The loadmaster is responsible for aircraft preflight, load planning; preparation of DD Form 365-4, **Weight and Balance Clearance Form F-Transport/Tactical**; certifying load plans; operating aircraft equipment; supervising and directing loading and offloading operations; and cargo tiedown. He or she coordinates with the loading crew supervisor to verify cargo against manifests. The loadmaster supervises 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. The loadmaster will brief the PIC on any hazardous cargo and cargo jettisonability prior to engine start.

13.2.1.3. 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. If cargo is refused or rearranged for these reasons, forward all applicable information, including a copy of the load plan, to MAJCOM standardization and evaluation through standardization channels. AMC personnel attach an AMC Form 54.

EXCEPTION: The aircraft loadmaster may deviate from load plans to facilitate ease of onload or offload of cargo, accommodate additional passengers, 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.

13.2.1.4. 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 or 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 (i.e., available loadmasters and squadron, group, wing, NAF, or MAJCOM standardization personnel).

13.2.1.4.1. Non-standard cargo/equipment not contained in the aircraft loading manual (TO 1C-17A-9) requires certification for air shipment. The shipper will provide a copy of the certification to the loadmaster prior to loading. If the certification letter with loading instructions/requirements is not provided to the loadmaster, the cargo will not be loaded. Contact Air Transportability Test Loading Agency (ATTLA) or ASC/ENFC at Wright Patterson AFB, OH, voicemail (937) 255-2330/2547 or HQ AMC/A37V for questions concerning cargo certification.

13.2.1.5. IAW with ATTLA memo, dated 7 May 2002, certification memos prior to 1993 are validated to include blanket airlift approval for C-17 airlift. This approval applies to cargo previously certified on C-130/C-141 aircraft and for those applications previously certified on C-5 aircraft that do not violate the limitations in TO 1C-17A-9 loading manual. The aircraft loadmaster is the final authority in determining the validity of certifications on C-17 aircraft. If the loadmaster determines the cargo is incompatible with aircraft dimensions/limitations or additional steps/special procedures are required to enable a safe onload, a Cargo On/Off Loading Validation Worksheet following the procedures in paragraph 13.12. will be required. State the reason for rejection or comments and recommendations that aided in a safe on/offload. Forward worksheet to HQ AMC/A37V.

13.2.2. At locations without AMC air terminal or traffic personnel, the shipper assumes responsibilities as described in paragraph 13.2.1.1. and provides sufficient qualified personnel and material handling equipment for loading or offloading. Loadmaster's responsibilities and authority are the same as described in paragraph 13.2.1.2. and 13.2.1.3..

13.2.3. During joint airborne air transportability training (JA/ATT), special assignment airlift mission (SAAM), USAF mobility, and contingency missions, the loadmaster can accept DD Form 2133, **Joint Airlift Inspection Record**, as a valid pre-inspection of equipment being offered for air shipment. This form, validated by two joint inspection signatures (user and transporting force), may be used in lieu of the applicable portions of the TO 1C-17ACL-2. The DD Form 2133 will not be used to document preparation of hazardous materials. This will be accomplished using the Shipper's Declaration for Dangerous Goods.

13.3. Emergency Exits and Safety Aisles. No part of the cargo load will extend over the edge of the walkway. Equipment such as spare tires, mirrors, etc., protruding from rolling stock may extend over the walkway. Netted palletized cargo will not extend beyond the vertical stacking line of the pallet unless specifically authorized in the loading manual or load certification letter or when authorized for oversized

cargo pallets used as a mobility platform. Dunnage may be required to raise the oversized cargo above the pallet to provide restraint rail clearance.

NOTE: All passenger hand-carried items must be of a size to fit under the seat and must not obstruct the safety aisle. Any items that do not fit under a seat or obstruct an aisle way will be stowed with checked baggage and secured for flight.

13.3.1. When the load consists of palletized netted cargo or is secured with straps, a 30-inch space will be maintained between the cargo and the nearest forward litter, occupied seat or nuclear cargo. 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 Aeromedical Evacuation (AE) missions, when carrying litters patients.

13.4. Pre-mission Duties.

13.4.1. Cargo Missions.

13.4.1.1. Aircraft 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. 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.

13.4.1.1.1. Duty Loadmaster Operations. Duty loadmasters are used as a means of flow control at stations with limited aerial port personnel and/or when units are deployed as part of an Expeditionary Airlift Squadron (EAS) or tactical/contingency operation. Duty loadmasters do not relieve the primary aircrew loadmaster of their duties. Duty loadmasters ensure items loaded on aircraft do not exceed aircraft limitations, and time permitting flight restraint will be applied to all cargo. Duty loadmasters will accomplish an Interior Safety Inspection, Basic Aircraft Pre-flight and all appropriate loading preparation checklists prior to conducting loading operations. After completion of aircraft loading, duty loadmasters will accomplish the BEFORE LEAVING AIRCRAFT Checklist unless maintenance personnel remain at the aircraft to monitor operating aircraft systems. Primary aircrew loadmaster(s) will complete all pre-departure checklists to include the AFTER LOADING GENERAL Checklist.

13.4.1.1.2. Phase II Loading Operations. Phase II is an aerial port loading program directly managed and supervised by air transportation personnel. It provides port units the flexibility to determine the best time to load or off-load aircraft when aircrew support is not available. The intent of the program is to allow aerial port management the ability to evenly distribute port workloads. It will not serve as an aircrew enhancement or alleviate the loadmaster's responsibility to on/off load aircraft. Phase II on/off load operations are not authorized for:

13.4.1.1.2.1. In transit aircraft with ground times less than 3+15 minutes

13.4.1.1.2.2. Loads requiring use of the aircraft winch

13.4.1.1.2.3. Wheeled equipment/rolling stock that exceeds 30,000 pounds

13.4.1.1.2.4. Aerial Delivery missions

13.4.1.1.2.5. Specific loads contained in TO 1C-17A-9, Sec VI, unless identified by an asterisk (*) (section VI F only)

13.4.1.2. Proper cargo documentation must accompany each load. A consolidated statement (manifest) will be delivered to the aircraft prior to departure unless one is not available due to a lack or failure of the manifest processing equipment. In this case, a cargo listing or floppy disks containing manifest information must accompany the load.

13.4.1.3. Make every effort to exchange tiedown equipment on a one-for-one basis. If this is not possible, annotate the AF IMT 4069, **Tiedown Equipment Checklist**. At non-AMC stations, 463L pallets will normally be exchanged on a one-for-one basis.

13.4.2. Passenger Missions. Maximize seat availability on all missions. It may be necessary for crews to perform passenger service functions at stations that do not have this capability. These functions include manifesting, anti-hijacking processing, and ensuring visa/passport requirements are met. Do not hesitate to contact TACC/XOGX, Aerial Port Control Center; DSN 779-0350/0355, commercial 618-229-0350/0355, if any questions arise such as to who may travel to specific locations or passport/visa requirements. Aircraft operating within other MAJCOMs which have operational command and control over that aircraft will contact the appropriate AMOCC for specific details. File a copy of the passenger manifest with the most responsible on-scene agency if there is no base operations, or other agency responsible for filing the manifest.

13.4.2.1. Manifesting. Passenger service or base operations personnel manifest passengers at locations with an AMC passenger processing activity.

13.4.2.1.1. The PIC and loadmaster are responsible to ensure all passengers are properly manifested. Loadmasters will brief passengers IAW TO 1C-17A-1 and should provide each passenger Air Force Visual Aid (AFVA) 11-300, *Passenger Safety Card*.

13.4.2.1.2. At locations without an AMC passenger processing activity, aircrew will manifest all passengers using DD Form 2131, **Passenger Manifest**, and leave a copy of the manifest with the flight plan. If not filed with the flight plan, annotate the location of the manifest on the flight plan IAW AFI 11-202V3.

13.4.2.1.3. When the aircrew accomplishes manifesting, anti-hijack-processing will also be completed by the aircrew IAW AFI 13-207 (FOUO).

13.4.2.2. Ensure all food items are removed from the aircraft by fleet and returned to the in-flight kitchen if an extended delay occurs. Ensure that a copy of AF IMT 129, **Tally In-Out**, is received from fleet to relieve the loadmaster of meal accountability.

13.4.2.3. Complimentary snacks and beverages are authorized on Transportation Working Capital Fund (TWCF) funded missions (including ANG and AFRC flown missions) for passenger consumption only. Complimentary snacks are not authorized on JA/ATT, Joint Chief of Staff (JCS) exercises, or SAAM missions. The squadron or port operations officer will ensure snacks and beverages are placed on board when departing AMC stations. When departing from other stations and no snacks or beverages are to be placed onboard, the loadmaster may obtain required snacks and beverages from the local in-flight kitchen. Direct the in-flight kitchen to bill the accounting and finance office at the aircraft's home station. Record all unused snacks and beverages on AF IMT 129 and return to the in-flight kitchen for turn-in credit.

13.4.2.4. Ensure the auxiliary power unit is shut down before boarding passengers unless adequate ear protection is provided. A passenger service representative or crew member will assist passengers at the bottom of the steps, and the loadmaster will assist in seating passengers.

13.4.2.4.1. Passenger Operation of Emergency Exits. Prior to each flight, loadmaster(s) will formulate a passenger emergency egress plan. Different cargo configurations will dictate procedures to be used. Only English-speaking, physically able adults (age 15 and older) will be seated next to an emergency exit. Loadmaster will brief those passengers seated next to troop door(s) or the forward emergency escape hatch on proper operation and to open the exit when directed. The intent of this briefing is to inform those passengers seated next to emergency exits of their duties and responsibilities in assisting the loadmaster(s)/crew during passenger/troop emergency egress

13.4.2.5. When children under the age of two are accepted as passengers, their sponsor has the option to either hold the child or place him or her in a Department of Transportation-approved infant car seats (ICS). Although the use of ICS for children processed through AMC-owned or controlled terminals (including gateways) is no longer mandatory, all passengers (duty and space A), regardless of age, are required to be assigned their own seat. This policy will provide an infant and their sponsor with a dedicated seat allowing the use of an ICS seat at the sponsor's discretion; this mirrors current FAA (commercial) standards. The FAA has banned the use of booster seats, harnesses, and vest child restraints.

13.4.2.5.1. Passengers may hand-carry their ICS. If used, these seats will be secured to a seat using the seat belt. Adults will not hold infant seats during any phase of flight.

13.4.2.5.2. If the mission aircraft is equipped with forward facing "airline style" seats, secure the seat in the same manner as in an automobile. However, if the aircraft is configured with side-facing seats, aircrew must ensure the ICS is adequately secured. The design of the side-wall seatbelt makes it difficult to remove enough slack to secure the ICS. When removing slack from the seatbelt 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 ICS is adequately secured.

13.4.2.6. Download the baggage of no-show passengers and those removed from a flight. In the case of SAAM or exercise missions at non-AMC locations, coordinate with tanker airlift control elements or deploying unit commanders to decide if downloading of baggage is necessary.

13.5. Passenger Handling.

13.5.1. The loadmaster is key to good passenger relations. The following common sense rules should be observed:

13.5.1.1. Address passengers by proper titles.

13.5.1.2. Avoid arguments and controversial subjects, national or international politics, criticism of other personnel or organizations.

13.5.1.3. Offer services or perform duties in a manner indicating a personal interest and willingness to help.

13.5.2. Comments by the loadmaster and the manner in which they are made often determine passenger attitudes about the flight. Always remember that passengers are individuals; address them collectively only when making announcements.

13.5.3. In-flight Procedures.

13.5.3.1. Passengers may move about the cabin after reaching cruise altitude; however, judgment must be exercised on the number of passengers allowed out of their seats at any one time. Encourage passengers to remain seated with their seat belts fastened. Due to concern for their safety, passengers are not allowed to lounge or sleep under or on cargo or baggage.

13.5.3.2. Make frequent checks on the following:

13.5.3.2.1. Cabin temperature.

13.5.3.2.2. Passengers with small children.

13.5.3.2.3. Cleanliness of the cabin and lavatories.

13.5.3.3. Do not allow passengers to tamper with emergency equipment. Passengers will not be permitted access to checked baggage.

13.5.3.4. On long flights, particularly during hours of darkness, use all possible means to make passengers comfortable. Dim and extinguish unnecessary compartment lights.

13.5.3.5. Passengers may visit the flight deck only when approved by the PIC. Use good judgment when requesting this authority.

13.5.4. Meal Service.

13.5.4.1. Meals are served at normal hours when practical, based on the local time at point of departure. Avoid waking passengers to offer meals. Ask the PIC about expected flight conditions prior to meal preparation.

13.5.4.2. Passengers having a boarding pass, AMC Form 148, **Boarding/Pass Ticket**, showing a meal was ordered are served meals in the following sequence:

13.5.4.2.1. Small children requiring assistance.

13.5.4.2.2. Distinguished Visitors (DV).

13.5.4.2.3. All other passengers.

13.5.4.3. Use the following procedures for box lunches:

13.5.4.3.1. After takeoff, distribute box lunches to passengers who boarded at the previous station. This lessens confusion when flight segments are short and passengers board at subsequent stations.

13.5.4.3.2. Ensure each passenger receives the meal ordered by verifying the passenger's AMC Form 148, **Boarding/Pass Ticket**.

13.5.4.4. Do not serve liquids or hot food during turbulence.

13.5.4.5. Turn in all meals unfit for consumption to the first in-flight kitchen. If in radio contact with the issuing station, relay aircraft tail number, mission identifier, number of spoiled meals (by

menu), issuing organization, and in the case of frozen meals, the manufacturing agency, and manufacturer's lot number.

13.5.4.6. When prepared meals have not been furnished to passengers, the loadmaster will annotate the individual's boarding pass to reflect reimbursement is authorized. Inform passengers they may receive refunds at the next station or the originating or destination terminal.

13.6. Over-Packed Meal Procedures.

13.6.1. Sign for over-packed in-flight meals and supplements delivered to aircraft. These meals have been inventoried and annotated showing the total number of meals in each container. Do not open containers for inventory.

13.6.2. Obtain sufficient blank copies of AMC Form 305, Receipt for Transfer of Cash and Vouchers

13.6.3. At the onload station, contact the troop commander or other individual responsible for the mission. The unit or user is responsible for collecting for the meals before the onload and for turning the money over to the loadmaster with two separate listings. One listing will contain the names of those not on separate rations who are authorized to receive a government meal at no charge. The other list will contain names of those on separate rations and who pay for their meals. Both listings must be certified by the troop commander or individual responsible for the mission. The loadmaster will count the money to ensure the total is correct and issue a receipt (DD Form 1081, **Statement of Agent Officer's Account**) to the user.

13.6.4. At en route, remain overnight, or terminating stations, turn in the money and both listings to the flight kitchen. If a flight kitchen refuses to accept the money or meals, have the PIC report the incident on AMC Form 54, Aircraft Commander's Report on Services/Facilities. (See **Chapter 8** for instructions.) Retain the money or meals and turn them in to the next available AMC flight kitchen. When a crew change occurs and the money or meals are transferred to the outbound loadmaster, the inbound loadmaster will retain the signed receipt as proof of money or meals transfer.

13.7. En Route and Post Flight Duties.

13.7.1. 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.

13.7.2. At crew stage points, brief relief personnel about passenger and aircraft equipment, any missing items, the location of through cargo, mail and baggage, and any information pertinent to through passengers. Point out cargo requiring special consideration (hazardous material, perishables, etc.).

13.7.3. Assist passengers to deplane. If BLUE BARKS, DVs, COIN ASSIST, or couriers are aboard, the loadmaster will inform the protocol or traffic representative respectively.

13.8. Loaded Weapons. Weapons are considered loaded if a magazine or clip is installed in the weapon. This applies even though the clip or magazine is empty.

13.8.1. Personnel who will engage an enemy force immediately on arrival (actual combat) may carry basic combat loads on their person. Weapons will remain clear with magazines or clips removed until immediately prior to exiting the aircraft. The troop commander will coordinate with the loadmaster

prior to directing personnel to load any weapons. This applies to airborne assaults and airland missions.

13.8.2. Personnel who will not immediately engage an enemy force will store basic ammunition loads in a centralized location for redistribution on arrival at the objective. Magazines or clips will not be inserted into weapons.

13.9. Weight and Balance. Accomplish weight and balance for this airplane according to TO 1-1B-50, *Weight and Balance*, and AFI 11-2C-17V3, Addenda A, *C-17 Configuration/Mission Planning*. The unit possessing the airplane maintains the primary weight and balance handbook containing the current airplane status and provides a supplemental weight and balance handbook for each airplane. 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.

13.9.1. The supplemental handbook will include TO 1C-17A-5-2, AFI 11-2C-17V3 Addenda A, sufficient copies of DD Form 365-4, **Weight and Balance Clearance Form F – Transport/Tactical**, to complete the mission and a certified copy of the current DD Form 365-3, **Chart C-Basic Weight and Balance Record**. Chart C will include the airplane's basic weight, basic moment, and center of gravity.

13.9.2. The weight and balance section of the unit possessing the airplane will maintain the required documents.

13.9.2.1. Ensure a sufficient amount printer paper is onboard to complete the mission.

13.9.2.2. The loadmaster will turn in the original DD Form 365-4 to be filed at the departure airfield and maintain a physical or electronic copy for the duration of the flight.

13.10. Cargo Validation Onloading and Offloading Procedures and Format. To assist in the cargo validation process, a cargo validation onloading and offloading format is provided in this chapter. After completion, send through standardization channels to HQ AMC/A37V. Use the following format when tasked to validate a new loading procedure or when encountering any cargo you feel requires special or specific onloading, offloading or tiedown procedures not currently listed in TO 1C-17A-9.

13.10.1. General Loading Data:

13.10.1.1. Nomenclature of item. Give military or civilian name, national stock number (NSN), and a brief description of the item, i.e., dump truck, medical van, etc.

13.10.1.2. Dimensions (in inches). Length, width, and height. Rough drawing or picture of the unit, pointing out critical dimensions, projections, overhangs, etc.

13.10.1.3. Weight (in pounds). Gross weight; individual axle weight; or data plate weight if possible.

13.10.2. Number of loading crew personnel and loadmasters required to onload or offload cargo and their position to observe clearances, if required.

13.10.3. Equipment and Material Requirements. Special equipment and material required to onload and offload cargo, i.e., cargo winch, prime mover, shoring requirements.

13.10.4. Aircraft Configuration Required.

13.10.5. Preparation of Cargo for Loading. Components that must be removed or reconfigured to onload and offload cargo, i.e., helicopter struts, exhaust stacks, cabs, etc

13.10.6. Loading Procedures.

13.10.7. Location of Tiedown Points.

13.10.8. Offloading Procedures.

13.10.9. Comments.

13.11. Emergency Airlift of Personnel. (See [Chapter 17](#).)

13.12. Rucksacks. The following procedures apply to loading of rucksacks.

13.12.1. In all cases, rucksacks will be loaded on the same aircraft as the individual.

13.12.2. Transported units must ensure that adequate space is provided on the load plan and aircraft to ensure all personnel have an unobstructed path to evacuate the aircraft during an emergency.

13.12.3. During administrative deployments, rucksacks may be loaded on deploying vehicles, palletized, or floor loaded. Placing rucksacks on the aircraft floor may increase loading and offloading times. Also, this method may require more space and reduce the number of personnel or equipment airlifted.

13.12.4. During tactical deployments into a FOB/OB, rucksacks not loaded on vehicles will be carried by the individual onto the aircraft. Normally, floor space will be allocated on the aircraft load plan for floor loading rucksacks.

13.12.4.1. When a flight is planned for a short duration, the following procedures apply:

13.12.4.1.1. The troops may wear the rucksacks in the seat provided the seats are placed in the paratroop configuration.

13.12.4.1.2. All troops must have quick release straps on their rucksacks.

13.12.4.1.3. Troops will be briefed to leave their rucksacks on the seat if an emergency evacuation is necessary.

13.12.4.2. The following procedures apply to transporting hazardous materials in rucksacks.

13.12.4.2.1. Personnel will only be permitted to carry their basic combat load or individual issue of hazardous material when they will engage an enemy force immediately upon arrival. Personnel may retain small arms ammunition (cartridge for weapons, DOT 1.4) and nuclear, biological, and chemical equipment as long as it is retained in a carrier (i.e., bandoleers, pouches, bags). Weapons will remain clear until the aircraft has landed or as directed by the loadmaster.

13.12.4.2.2. Munitions and other hazardous materials placed in rucksacks, field packs, or other authorized containers, removed from their shipping container, must be adequately protected from accidental functioning. For airland troops and airdrop troops who are not rigged prior to takeoff, all carriers will be consolidated in one central location on the aircraft (as directed by the loadmaster) and distributed to personnel after landing. Paratroopers rigged prior to takeoff may retain individual carriers containing hazardous materials.

13.12.4.2.3. The troop commander or load team chief will brief the loadmaster concerning the individual issue of hazardous materials. The loadmaster will brief the PIC.

13.12.4.2.4. Hazardous materials identified for sustainment must be prepared and certified according to AFJMAN 24-204.

13.13. Flight Station and Troop Compartment. Not Used.

13.14. Cargo and MHE Issues. Not Used.

Chapter 14

FUEL PLANNING

14.1. General. Fuel Plan IAW this chapter and TO 1C-17A-1-2. Additional fuel planning considerations can be found in AFTTP 3-3.35A, chapter 6.

14.2. Fuel Planning Profiles.

14.2.1. AMC CFP Fuel Planning Profile. Using the AMC CFP, AMC aircraft plan to be overhead the destination/Begin Descent Point with fuel to proceed to the alternate, holding at the alternate, and descent/approach and landing fuel. Normally, the divert profile is based on Long Range Cruise (LRC) speed at 10,000 feet for alternates 200 NM air distance or less, FL310 or 330 for alternates beyond 200 NM. Holding fuel is based on endurance holding at 10,000 feet for 45 minutes, or 20,000 feet for 1+15 at the overhead alternate gross weight. If a visibility only approach is planned, additional fuel is added to compensate for the climb to 10,000 feet. Approach and landing fuel is planned only once.

14.2.2. C-17 Mission Computer Profile. The C-17 mission computer plans a complete climb, cruise, descent and approach and landing based on the pilot inserted ROUTE DATA and PRFM factors. This fuel is "En route" fuel. The "Alternate" fuel is computed from destination to alternate as defined in TO 1C-17A-1-2.

14.2.3. The mission computer will be used to determine final fuel requirements.

14.3. Fuel Conservation.

14.3.1. Mission planners and PICs will ensure that fuel in excess of required ramp fuel load (RRFL) is kept to an absolute minimum. If actual ramp fuel exceeds RRFL by more than 10%, the PIC will notify the controlling agency and request defueling assistance. During contingencies or exercises in which ferrying fuel is operationally desired, the OPOD or OPLAN may authorize excess fuel.

14.3.2. Aircrews may conserve fuel using the following options:

14.3.2.1. Delay engine start.

14.3.2.2. Load to an aft CG.

14.3.2.3. Select the most expeditious taxi route.

14.3.2.4. Cruise at optimum altitudes at Long Range Cruise (LRC).

14.3.2.5. Plan an en route descent profile.

14.3.2.6. Delay configuration when possible (do not alter flight manual procedures).

14.4. General Fuel Planning Considerations.

14.4.1. Fuel Loads. Final servicing will be delayed until accurate fuel requirements are known. Standard ramp fuel loads may be used.

14.4.2. Planned Landing Fuel. Plan to land at destination with 16,000 pounds, minimum. Normally, this does not require additional fuel added to the flight plan.

14.4.3. For formation flights, plan using the most restrictive aircraft (i.e., heaviest aircraft for altitude restriction, or any other applicable restriction). Select formation on the CFG/OPER page.

14.5. Air Refueling (A/R) Fuel Planning.

14.5.1. Computer flight plans are available which incorporate the unique mission requirements of air refueling missions. The CFP system contains aircraft air refueling performance characteristics, which enable it to prepare a fuel computation. Items and terms unique to the A/R CFP are explained below.

14.5.1.1. Air refueling information block:

14.5.1.1.1. Departure date/time - Required takeoff time to meet the ARCT.

14.5.1.1.2. Departure/destination - Departure and destination ICAOs.

14.5.1.1.3. Alternate - Primary alternate used to compute flight plan.

14.5.1.1.4. Ramp GW - Total ramp GW (thousands of pounds).

14.5.1.1.5. Ramp fuel - Required ramp fuel load (thousands of pounds).

14.5.1.1.6. Payload - Total cargo/passenger weight (thousands of pounds).

14.5.1.1.7. Operational weight – Pre-stored aircraft operating weight. Should be 276.5 or 282.5.

14.5.1.1.8. ARCT-1/KC-135 Offload - ARCT, type of tanker used, and the fuel offload. Tanker can be a KC-135 or KC-10.

14.5.1.2. The column headings in lines three and four which differ from standard CFPs are listed below.

14.5.1.2.1. ETA/OW - Estimated time of arrival at each checkpoint based on required takeoff time and over water checkpoint time.

14.5.1.2.2. GWT - Aircraft GW at each checkpoint (thousands of pounds).

14.5.1.2.3. FLREM - Fuel remaining at each checkpoint (thousands of pounds).

14.5.1.2.4. ONLD - Fuel offloaded by tanker (thousands of pounds).

14.5.1.2.5. TDR - Total distance remaining

14.5.1.3. The body of the computer flight plan contains the ARIP, ARCP, BINGO, and exit point for the appropriate air refueling track. In addition to the waypoints and coordinates for the route of flight, the CFP contains the routing from the BINGO point to the primary air refueling alternate. (The MC profile assumes a BINGO point 150 NM from the ARCP). A separate fuel analysis is provided for each mission segment, departure to ARCP, ARCP to exit, and exit to destination.

14.5.2. In-flight Fuel Planning. For single and multiple A/R, PICs will compute recovery fuel requirements, and required on-load requirements. Reference AFTTP 3-3.35A, chapter 6 for techniques in making these computations.

14.6. Tactical Fuel Planning.

14.6.1. For a tactical mission, compute fuel required beginning from the final destination to determine appropriate gross weights and stored fuels. Ensure low level time and ground operations are accounted for.

14.7. C-17 Optimum Fuel Planning.

14.7.1. The amount of fuel consumed during a heavy airlift mission is greatly influenced by wind-optimized routing, cruise altitude, cruise airspeed, excess fuel, and takeoff and climb out profile.

14.7.1.1. Wind-Optimized Routing. The AMC Computer Flight Plan (CFP) System automatically provides aircrews a wind-optimized routing for each mission. After verifying valid times, payload accuracy, wind forecasts, etc. the CFP route of flight is generally assumed to be the most fuel efficient for the altitude wind conditions.

14.7.1.2. Cruise Altitude. For the C-17, higher is not always better in terms of fuel. The optimum cruise altitude is actually 2,000 to 4,000 feet below the maximum cruise ceiling. In fact, fuel efficiency is always higher 2,000 to 6,000 feet below the maximum cruise ceiling than at the maximum cruise ceiling because the C-17's large engine fan is more efficient at altitudes lower than maximum. Attempt to cruise at optimum altitudes, not maximum, for the appropriate aircraft gross weight. The mission computer (MC) does not provide optimum altitude for the current gross weight. It only provides a value for maximum cruise ceiling and assumes cruise at maximum altitudes if automatic step-climbs are enabled in the Route Data page. Consequently, optimum cruise altitude must be manually determined. Suggested methods for determining altitudes:

14.7.1.2.1. As a rule-of-thumb 35,000 feet is the optimal altitude for 430K; subtract/add 2,000 feet for every 50K increase/decrease.

14.7.1.2.2. Use MC Progress Page 2 or Performance Pages to determine maximum altitude; the optimum altitude is approximately 3,000 feet below this value.

14.7.1.2.2.1. If Cruise Performance page shows a Long-Range Cruise (LRC) speed of .75M, optimum altitude is 2,000 higher than the current altitude; if LRC speed is .74M, then optimum altitude is 4,000 feet higher.

14.7.1.2.3. If "held down" after flight and fuel planning for optimum altitudes, additional fuel consumption will be minimal up to 4,000 feet below the optimum altitude filed. Consider the following:

14.7.1.2.4. Request a Mach change and fly the Mach number corresponding to the LRC speed on the MC Cruise Performance Page 1. Not reducing Mach speed as gross weight decreases imposes substantial and unnecessary fuel penalties over long periods of time.

14.7.1.2.5. En route time will not change substantially from the CFP since TAS will be higher at the same Mach at the lower altitude.

14.7.1.3. Cruise Speed. Maximum Range Cruise (MRC) speed is the speed that will attain the maximum miles per unit of fuel at a given gross weight and altitude. MRC can be determined by referencing the specific range charts in Part 5 of TO 1C-17A-1-1 (Cruise Chapter). The MRC point is located at the apex of each specific range parabola. If, and only if, the aircraft is at the optimum cruise altitude for the gross weight, then MRC speed is approximately .74M. For example, at

FL290 and a gross weight of 400K, MRC is .67M. In this situation, flying .74M would be very fuel inefficient. Long-Range Cruise (LRC) speed is the speed where 1% of fuel range is sacrificed to obtain a 4-6% speed increase/time advantage over MRC. LRC is provided on the Cruise Performance page of the MC and is intended for use on most missions. It can also be determined by referencing the specific range charts in TO 1C-17A-1-1. If the aircraft is at the optimum altitude for the gross weight, LRC speed will equal approximately .76M. Winds may have a significant effect on LRC speed. The MC-computed LRC speed and TO 1C-17A-1-1 LRC charts assume no wind conditions. A good rule-of-thumb is to increase LRC speed by .02M for every 100 knots of headwind and decrease LRC speed by .02M for every 100 knots of tailwind. For example, with a 150-knot headwind, LRC speed should be adjusted from .76M to .79M. In nearly every case, the fuel difference between .74M and LRC will be negligible (1%) but the en route time difference will be significant (4-6%). At optimum altitude, LRC speed is approximately 440 KTAS (enter this number for the TAS on the DD Form 175 or 1801).

14.7.1.4. Selection of the alternate airfield is also an important factor in fuel conservation. In most cases, fuel plan to the closest suitable alternate to your destination. An obvious exception is situations requiring two-alternate flight plan filing. The decision to fuel plan to the closest alternate should be based on common sense and good judgment after a careful review of weather conditions, NOTAMs, fuel and NAVAID availability at the alternate airfield, load bearing capacity, etc. The important point is to not arbitrarily select distant alternates to "hide" fuel but rather to have good rationale and reason for the alternate you select for fuel planning purposes. If fuel planning to an alternate very close to your destination (e.g., Shaw AFB for Charleston AFB) don't forget to check the Progress Page 1 to ensure the predicted fuel at destination exceeds 16,000 pounds (per [14.4.2.](#)). If necessary, enter identified extra fuel into the fuel plan page.

14.7.1.5. When appropriate, enter identified extra fuel into the fuel plan page. [Table 14.1.](#) lists appropriate fuel penalties for conditions.

Table 14.1. Identified Extra Fuel Planning.

TEMPERATURE CORRECTION	+/- 3% of block 3 fuel for each +/- 10 degree C en route temp deviation
KNOWN HOLDING DELAYS	200 lbs/minute of expected delay
OFF COURSE MANEUVERING	500 lbs/minute based on the anticipated increase of flight time, not time spent maneuvering. Examples include terrain or weather avoidance, expected ATC delay, etc.
INSUFFICIENT/UNRELIABLE NAVAIDS (at destination)	5000 lbs
ENGINE ANTI-ICE ONLY	650 lbs/hr
WING ANTI-ICE ONLY	650 lbs/hr
BOTH ENGINE AND WING ANTI-ICE	1100 lbs/hr
ENVIRONMENTAL HI-FLOW	100 lbs/hr
GROUND OPERATIONS/ERO	100 lbs/minute

Chapter 15

AIR REFUELING

15.1. General. This chapter establishes procedures for aircrews to air refuel the C-17 and is in addition to procedures in the flight manual, and air refueling manual.

15.2. A/R Limitations. The following limitations apply

15.2.1. Tanker Autopilot. Tanker pilots will notify receiver pilots when any axis of the autopilot is not used. If the tanker copilot is required to fly autopilot-off for training, unqualified receiver pilots will not fly the aircraft (N/A FTU). Tanker pilots will notify the receiver when copilot autopilot-off training is conducted and receive confirmation that the receiver pilot flying the aircraft is qualified.

15.2.2. A/R Without Tanker Disconnect Capability. Without tanker disconnect capability means the boom operator cannot trigger an immediate disconnect. A/R will not be conducted after a loss of tanker disconnect capability.

EXCEPTION 1: Fuel emergency situation.

EXCEPTION 2: Contingency missions, JCS alert, ORI or CORI, Prime Nuclear Airlift Force (PNAF) support missions under normal conditions when the refueling is essential for home base recovery, or for any mission when authorized.

NOTE: When conducting A/R without tanker disconnect capability, limit contacts to the minimum number necessary to complete mission requirements. Do not accomplish boom limit demonstrations, or practice emergency separations while in the contact position.

15.2.3. Manual Boom Latching (MBL) (also referred to as Emergency Boom Latching (EBL), Override Boom Latching (OBL) and amplifier override). This is an emergency procedure. Normal tanker disconnect capability and automatic disconnect limits are inoperative. Use of this procedure must be authorized in the mission directive.

NOTE: The boom operator and receiver pilot will coordinate all actions as required by applicable directives and checklists when making A/R contacts using emergency boom latching procedures.

15.2.4. Reverse A/R procedures will be accomplished for operational necessity only.

15.2.5. Emergency Separations/Breakaways. Follow procedures in IAW TO 1-1C-1-35. When separation between receiver and tanker has been effected, the receiver pilot advises the tanker "WELL CLEAR" and states altitude passing. When the situation has stabilized, coordinate clearance back to precontact. Restrict all emergency separations/breakaways to 500' below individual tanker's altitude.

15.2.6. Practice Emergency Separations:

15.2.6.1. Prior to the actual accomplishment of a practice emergency separation, coordination between the tanker pilot, boom operator, and receiver pilot is mandatory. Coordination will include when the separation will occur and who will give the command of execution.

15.2.6.2. Prior to initiating practice emergency separations from the contact position, the receiver will ensure their A/R system is not in the override mode.

NOTE: Practice emergency separations will terminate no lower than 500' below tanker altitude.

15.2.7. Receiver A/R Training for Unqualified Receiver Pilots. (This includes copilots, aircraft commander upgrade candidates and aircraft commanders refueling from the right seat.) In-flight training will be accomplished under direct IP supervision. The following procedures apply:

15.2.7.1. The receiver pilot will inform and receive acknowledgment from the tanker. The boom operator at the controls will be qualified for the applicable category receiver. (This restriction does not apply during FTU training provided the student boom operator is under direct instructor supervision.)

15.2.7.2. For receiver pilot initial qualification or requalification, the receiver instructor / examiner pilot will be in one of the pilot seats with immediate access to the controls through all phases of the refueling from pre-contact until post air refueling.

15.2.8. If a change of pilot control is made, the receiver aircraft will move back to at least the pre-contact position except for immediate assumption of control by the instructor pilot.

15.2.9. If a receiver seat change takes place, move back to at least 100 feet in trail of the tanker and to a point where the receiver pilot can maintain visual contact with the tanker until the seat change is complete.

15.2.10. When conducting A/R behind a KC-135, tanker disconnect capability will be demonstrated by a boom operator initiated disconnect before conducting a limit demonstration or a practice emergency separation from the contact position.

15.2.11. Weather Limitations.

15.2.11.1. Turbulence: Do not launch if severe turbulence is forecast on the refueling track. Terminate refueling if moderate turbulence is encountered.

15.2.11.2. Visibility: Do not close from 1 NM range (2 NM for receiver or tanker formations) unless you have visual contact with the tankers. Discontinue refueling if in-flight visibility is insufficient to continue safe refueling operations.

15.2.11.3. A/R alternate airfields must meet the criteria of AFI 11-202, V3 for alternate airports.

15.2.12. NVG Use During A/R. Pilots may use NVGs during air refueling rendezvous to acquire the tanker but must remove goggles NLT one nautical mile from the tanker.

15.3. Communications Failure. Aircraft experiencing two-way communications failure during the conduct of A/R shall continue flight in accordance with the following procedures:

15.3.1. Squawk code 7600 for at least 2 minutes before exiting the track or anchor.

15.3.2. Aircraft that have not received altitude instructions beyond the exit point shall exit the track or anchor at the lowest altitude specified in the clearance for the refueling portion of the flight and proceed in accordance with "Procedures for Two Way Radio Failure IFR-VFR" set forth in DOD Flight Information Handbook.

15.4. Operational Reporting. Air refueling command and control reporting will be in accordance with [Chapter 2](#) of this instruction.

15.5. MARSAs Applicability for Aerial Refueling. MARSAs begins between the tanker and receiver when the tanker advises ATC that it is accepting MARSAs. MARSAs is not an ICAO recognized term. If in

doubt as to what separation is provided by ATC, or what separation the aircrew is responsible for, query the tanker and/or controlling agency.

15.5.1. If MARSAs has not been accepted by the tanker before the receiver reaches the air refueling initial point (ARIP), the receiver may be required to hold at the ARIP.

15.5.2. Once the rendezvous is completed, headings and altitude assignments may be made with the tanker concurrence with MARSAs remaining in effect.

15.5.3. Upon completion of the rendezvous, receiver aircraft will remain within 3 miles of the tanker until MARSAs is terminated.

15.5.4. MARSAs ends when normal separation standards are established, ATC accepts control at end of refueling and ATC advises MARSAs is terminated.

15.6. Altitude Reservations. An ALTRV is authorization by a central altitude reservation function (CARF, EUCARF, PACMARF, CARU) or the appropriate ARTCC/CERAP under certain circumstances, for airspace utilization under prescribed conditions. Air refueling on operational missions often utilizes an ALTRV under these conditions. ALTRVs may include all, a portion, or portions of the intended route of flight. Request and approval format can be found in FAA 7610.4J.

15.6.1. PICs will ensure ALTRV approval is received prior to mission execution. ALTRV status may be verified through the appropriate 18 AF TACC cell.

15.6.2. Aircraft must depart within the assigned AVANA (ALTRV Void if Aircraft Not Airborne) time for the purpose of providing separation between altitude reservations. Normal AVANA will be 1 hour. If a mission is to be delayed beyond the AVANA time, coordinate with the C2 authority as soon as possible. Rescheduling will normally be in 24-hour increments after the original schedule.

15.6.3. Aircraft on an ALTRV must operate within the altitude, time, and areas specified in the approval. An ALTRV APVL authorizes the aircraft to climb or descend as specified. Controllers are not required to issue a climb or descent clearance for the various flight segments. They may, however, request that the pilot advise them prior to initiating an altitude change.

15.6.4. In a non-radar environment, the aircraft shall advise ATC if actual fix timing will be more than plus or minus 5 minutes from the planned ALTRV en route fix estimate.

15.6.5. File flight plans (1801 or DD175) containing ALTRVs IAW FLIP GP. Include the name of the ALTRV in the remarks section of the flight plan. ALTRV requests or approvals do not eliminate the responsibility to obtain proper diplomatic clearance or file flight plans.

15.7. Receiver Aircraft Commander Responsibilities.

15.7.1. Receiver aircraft shall squawk normal when separation from the tanker is greater than 3 miles.

15.7.2. Receiver aircraft will maintain two-way radio contact with ATC until cleared to the refueling block altitude, established in that block, and cleared to the A/R frequency by ATC.

15.7.3. Pilots are reminded that oceanic clearances and an acknowledged readback are required for all flights within North Atlantic (NAT) controlled airspace. References for oceanic clearance procedures are FLIP Area Planning (AP)/2 and the NAT Minimum Navigation Performance Specification (MNPS) Manual.

15.7.3.1. Receiver pilots will not rely on the tanker to obtain and readback oceanic clearance. To the maximum extent possible, receiver pilots should obtain their own, individual clearance from the oceanic control authority of the airspace in which they intend to operate, prior to entering oceanic airspace. Pilots will request oceanic clearance prior to oceanic entry point IAW procedures established in AP/2 and NAT MNPS Manual. Consider obtaining clearance and providing readback prior to rendezvous and air refueling.

15.7.3.2. Tanker aircraft will not accomplish clearance readback for receiver aircraft. Receiver ACs are responsible for ensuring that oceanic clearance is always readback to the controlling authority by a member of their crew, and acknowledged by the oceanic controlling authority, prior to entering oceanic airspace.

15.8. Tanker Aircraft Commander Responsibilities. Tanker ACs are responsible for:

15.8.1. Remaining within the protected lateral, longitudinal, and vertical airspace of the refueling track or anchor including orbit patterns.

15.8.2. Notifying the appropriate ATC facility of all altitudes vacated and not anticipated for further use by refueling aircraft. Such altitudes shall not be reoccupied without further ATC clearance.

15.8.3. Receiver navigation, regardless of the number of tankers or receivers, after rendezvous completion through completion of refueling operations (A/R and MARSAs have been terminated) except when under control responsibility of a military radar facility while in an anchor area.

15.8.4. Maintaining communications with the appropriate ATC facility. All communications during refueling operations, including those concerning the receivers, shall be between the ATC facility or military radar unit and tanker. To the extent practical, receivers shall establish communications with the tanker prior to or when departing the ARIP on the specified A/R frequency. The tanker shall assume position reporting responsibility for the receivers upon rendezvous completion.

15.8.5. Coordinating altitude and route clearance:

15.8.5.1. From the ATC facility for receivers and tanker at least 5 minutes prior to refueling completion except when both aircraft are operating on an approved altitude reservation (ALTRV).

15.8.5.2. Through the radar controller when operating in refueling anchors with military ground radar. At least 5 minutes prior to completing refueling operations, the military radar facility shall forward requests to the assigned ATC facility and subsequently relay ATC clearances for the tanker and receiver aircraft from the ATC facility.

15.8.5.3. Tanker aircrews should not normally obtain oceanic clearances for receiver aircraft intending to operate in NAT oceanic airspace. This is a receiver AC responsibility.

15.8.5.4. Tanker aircrews will not readback receiver aircraft oceanic clearance. This is a receiver AC responsibility.

15.8.6. Vertically positioning aircraft prior to reaching the planned exit point, to facilitate the safe and efficient transfer of separation responsibility from the military, under the provisions of MARSAs, to the ATC facility on completion of refueling operations. Vertical separation of receivers and tankers shall be accomplished within the assigned altitudes.

15.8.7. Providing each receiver, upon request, with the aircraft's position at the completion of refueling operations. Additional information concerning amendments or changes to the receiver's ATC clearance shall also be provided as appropriate.

15.8.8. Coordinating all refueling formation operations to ensure all aircraft are in proper post air refueling formation prior to cell breakup. Prior to terminating air refueling, the lead tanker will confirm all aircraft in the formation are in proper post air refueling position with required lateral/vertical separation.

15.9. ATC Clearance. A/R operations are normally conducted on tracks or anchor areas published in DOD FLIP. Operational considerations may require A/R outside published areas or within an ALTRV. The tanker aircraft commander shall receive specific ATC clearance from the appropriate ATC facility for the following:

15.9.1. Entry to/exit from assigned aerial refueling altitude block (except on an approved ALTRV).

15.9.2. Altitudes requested for tanker and receiver aircraft upon completion of air refueling.

15.9.3. Routing for each aircraft or formation flight when exiting the refueling track prior to or beyond the exit point, or different from the flight plan routing.

15.9.4. Extending the refueling operations beyond the track or anchor exit point due to adverse winds, mission requirements, etc.

15.9.5. Use of altitudes in excess of those for which specific clearance has been granted (i.e., tobogganing).

Chapter 16

COMBAT MISSION PLANNING

16.1. General. This chapter provides general combat mission planning guidance for planners and aircrews, standardizing procedures for planning, briefing, and reviewing all missions. Planners and aircrews should reference AFTTP 3-3.35A for additional mission planning guidance.

16.1.1. Pilots require one full day of planning for any missions employing NVGs in the low-level environment.

16.2. Assault Landing Zones (ALZ). Assault landing zone operations are conducted to introduce or evacuate personnel and/or equipment to or from hostile, denied, or unsecured territory. As a general rule, DZ selection considerations also apply to ALZ selection. Aircraft performance limitations will be taken into account when selecting an ALZ location. Landing zone size, lighting patterns, and composition criteria are contained in AFI 13-217.

NOTE: OG/CC is the approval authority for the use of semi-prepared landing zones on missions within the U.S. to include Alaska and Hawaii. MAJCOM A3/DO approval is required in all other instances. Reference AMCI 11-208 for coordination process.

16.2.1. Plan approaches to the ALZ IAW AFTTP 3-3.35A and the airfield identification procedures published in the OPOD or SPINS. Brief any deviations from approaches described in AFTTP 3-3.35A. Where multiple options are available, select the approach which best minimizes exposure to the threat while still allowing a high probability of landing on the first approach. Remain unpredictable. If no published approach exists, mission computer approaches, when approved, may be built and flown IAW [Chapter 11](#) of this instruction.

NOTE: The PIC must ensure landing TOLD data reflects the possibility for a landing at the end of the zone, and any planned delay in braking due to heated brakes (subtract landing/safety zone distances from runway available to ensure adequate runway exists for rollout).

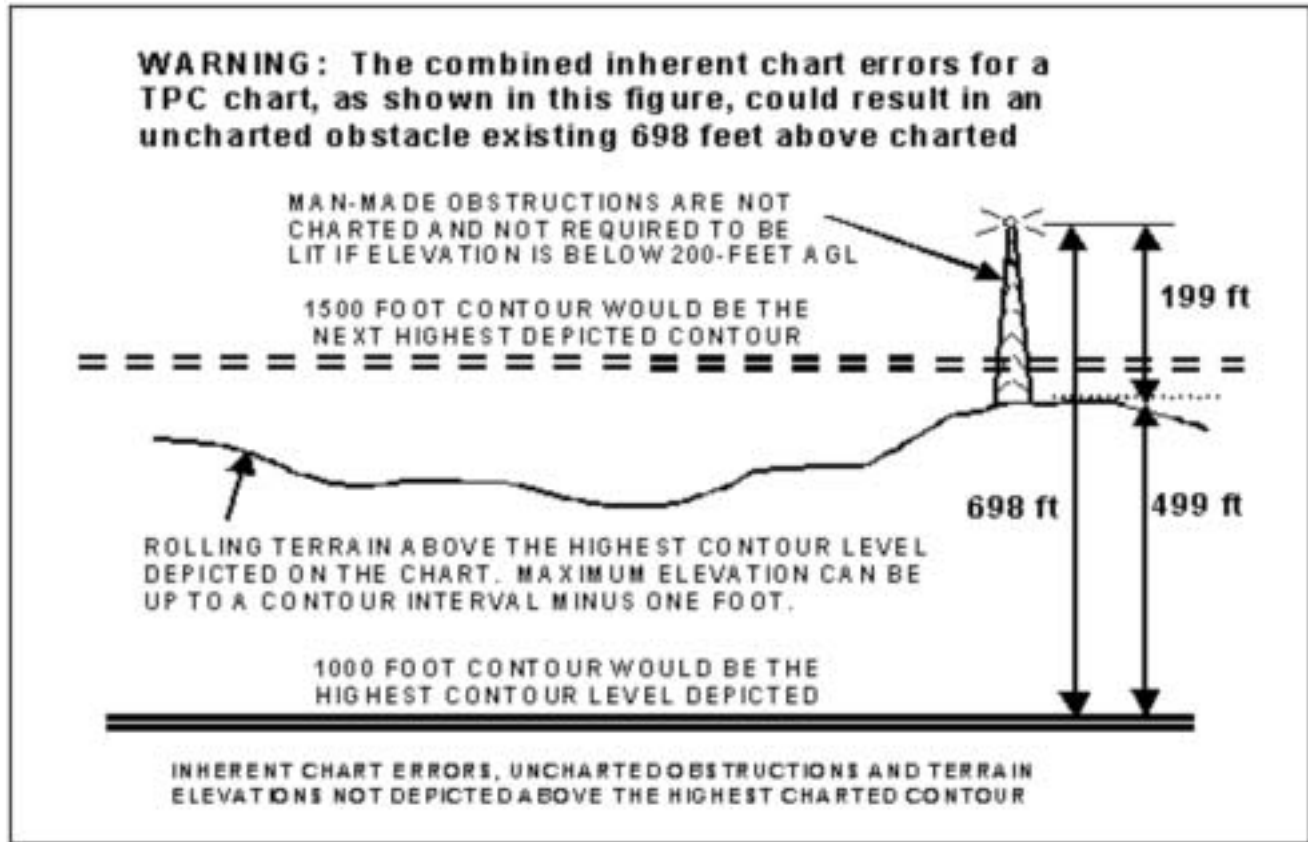
16.3. Route Planning. To the maximum extent possible, crews should follow guidance listed in AFTTP 3-3.35A, chapter 4.

16.4. Low Level Altitude Restrictions. Low level altitudes will depend upon conditions such as terrain, threat, the necessity to avoid detection, and equipment limitations. The following minimum altitudes are established for MAF airlift operations. FLIP/ICAO procedures, training considerations, terrain, or operational directives may dictate higher altitudes.

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 will ensure accurate terrain analysis by evaluating both spot elevations and the highest contour level. Refer to [Figure 16.1.](#), Inherent Chart Errors.

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).

Figure 16.1. Inherent Chart Errors.



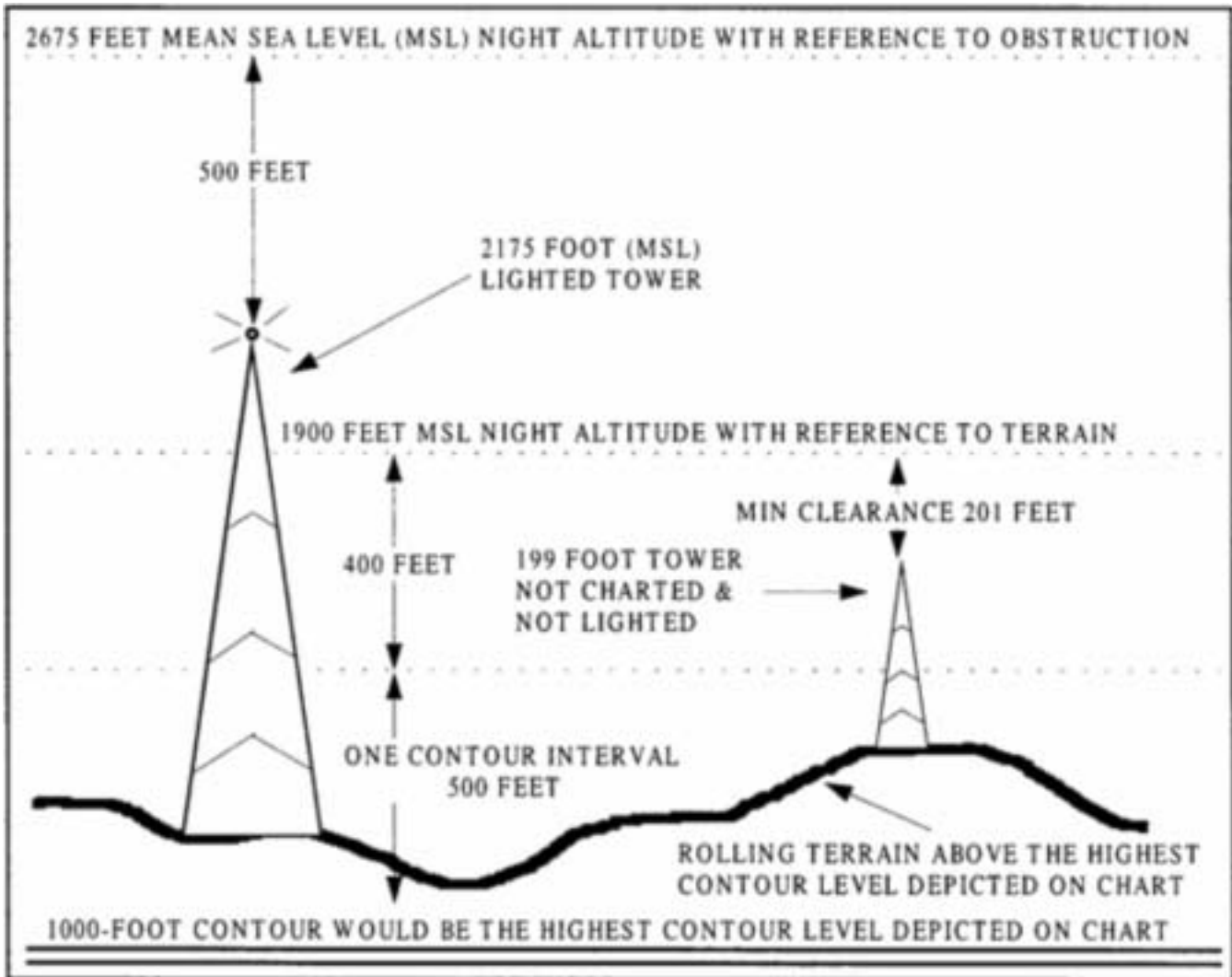
16.4.1. Day VMC En Route. Plan a minimum of 500 feet AGL (300 feet AGL on approved routes) modified contour altitude above the terrain using visual references, HUD, and radar altimeter.

16.4.2. Night VMC En Route. Plan en route legs at an indicated altitude of 500 feet above the highest obstruction to flight (man-made obstacle, terrain feature, or spot elevation), or 400 feet plus one chart contour interval above the highest depicted terrain contour, whichever is highest, within 5 NMs of route centerline to include the aircraft turn radius over each turn point (10 NMs outside of the U.S.). If the altitude for the next leg is higher than the current leg altitude, climbs will be completed before the turn point. If the altitude for the next leg is lower, do not initiate descent until after the turn point. Legs may be segmented to allow flight closer to the ground. Once the obstruction is visually identified and the aircraft is confirmed well clear, the crew may descend to the next segmented altitude, if lower. See [Figure 16.2](#).

NOTES:

1. A MC FOM of 5 or better is required in order to fly lower than MSA at night.
2. Planning a route on a JOG chart, if available, may reduce night en route altitudes. If the route has been planned on a JOG and night altitudes are verified, the route may be flown with the lower altitudes when flying with reference to a TPC.

Figure 16.2. Night VMC En Route Altitude.



16.4.3. NVG En route. Plan en route legs at an indicated altitude of 500 feet above the highest spot terrain elevation, or 400 feet plus one chart contour interval above the highest depicted terrain contour, whichever is higher, within 3 NM on centerline. Three miles prior to the charted man made obstacle, within 3 NM of centerline, the aircrew must visually identify the obstacle. If the obstacle is not identified by 3 NM, climb to attain an altitude 500' above the obstacle. If the altitude for the next leg is higher than the current leg altitude, complete the climb prior to the turn point. 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 terrain. Once the controlling obstacle or terrain feature is visually identified and the aircraft is confirmed well clear, the crew may descend to the next segmented altitude.

NOTES:

1. A MC FOM of 5 or better is required in order to fly lower than MSA at night.

2. Planning a route on a JOG chart, if available, may reduce night en route altitudes. If the route has been planned on a JOG and night altitudes are verified, the route may be flown with the lower altitudes when flying with reference to a TPC.

16.4.4. Minimum Safe Altitude (MSA). MSA is an initial VFR altitude that provides additional terrain clearance while the aircrew analyzes situations that require interruption of low-level operations (route orientation and aircraft malfunctions or when either pilot will leave the seat during low-level operations, etc). An MSA will be computed for each leg or route segment or entire low level route. The MSA is 1000 feet above the highest obstruction within 5 NMs of route centerline.

16.4.5. Minimum IFR En Route Altitude. Compute Minimum IFR En Route Altitude by adding 1000 feet (2,000 feet in mountainous terrain as defined in AIM, paragraph 5-6-5, *ADIZ Boundaries and Designated Mountainous Areas*) above the highest obstruction to flight (man-made obstacle, terrain feature, or spot elevation) within 5 NMs of route centerline (10 NMs outside the US). This altitude should be rounded off to the next higher 100-foot increment. If the altitude for the next leg is higher than the current leg altitude, climbs will be completed before the turn point. If the altitude for the next leg is lower, do not initiate descent until after the turn point.

16.4.5.1. Minimum altitudes for IFR operations within published Military Training Routes (MTRs) in US sovereign airspace will be computed leg minimum IFR En Route Altitude unless a higher altitude is required by FLIP AP/1B. The min IFR altitude may be above the top of the MTR leg altitude. In this case, the aircraft will slow to 250 KCAS or less, contact ATC and coordinate an alternate clearance.

EXCEPTION: After thorough route planning by the crew and approval from the wing tactics office and OG/CC, aircraft may fly the top of the block on an MTR when that altitude is less than min IFR en route altitude. For multiple use local MTRs, OGV will issue local approval and restrictions in their unit supplement to this instruction.

16.4.6. Emergency Safe Altitude (ESA). ESA is designed to provide positive IMC terrain clearance during emergency situations that require leaving the low level structure. Several ESAs may be computed for route segments transiting significant terrain differentials or a single ESA may be computed for the entire low level route. To compute ESA, 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.

NOTES:

1. Climbing to ESA may put the aircraft or formation in a controlled (i.e., IFR) altitude structure requiring coordination with Air Traffic Control agencies.
2. 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.

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

16.5.1. With less than 1 NM separation (3 NMs when in excess of 250 KCAS) when below 2000 feet AGL from known sensitive environmental (i.e., hospitals, fish hatcheries, large poultry complexes, recreation areas, institutions, etc).

16.5.2. With less than 3 NMs separation from prohibited airspace.

16.5.3. With less than 3 NMs separation from nuclear power plants.

16.5.4. 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.

16.5.5. In weather conditions less than those specified in this instruction and AFI 11-202V3.

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

16.5.7. Over or through active live fire or impact areas that may not be specifically designated as prohibited or restricted areas.

16.5.8. Below 500 feet AGL unless:

16.5.8.1. Host nation rules specifically allow such VFR operations.

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

16.6. Navigation Chart Preparation. Mission planners will construct a master chart for mission briefings and aircrew reference. Planners may construct the chart using computerized mission planning systems if available. Sectional charts depict controlled airspace. Low-level navigation charts will be annotated with any added, deleted, or changed information in the most recent CHUM or supplement. In no case will CHUM 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 after establishing the ESA. Color copies, if available, of a master chart reduce the probability of missing or misplotted data on aircrew charts.

CAUTION: 1:50,000 and smaller scale maps do not depict aeronautical information, may not show man-made obstacles, and are rarely updated through the CHUM.

16.6.1. Chart Annotation. Individual chart annotations should have, as a minimum, turnpoints, IP, DZ, course line, course data, CHUM data and date, ESA and chart series/date. Reference AFTTP 3-3.35A for common chart annotations.

16.7. Aircrew Flimsy. Aircrew flimsies are a standardized collection of essential operational information required by aircrews to complete mission planning, conduct route study, fly the mission, and comply with post-mission ground procedures and debriefing requirements.

16.8. Route Study. Crew route study is mandatory before accomplishing flight in the low level environment. An intensive review of the ingress, objective area, and egress routing by the entire crew leads to effective crew coordination and safe mission execution. Aircraft turns planned into higher terrain, critical obstacles that do not meet three-engine climb performance, terrain analysis, threat locations, terrain masking, and tactics will be discussed. Special emphasis should be placed on the run-in and objective area for

the locations of visual and radar features that will assist in proper identification. The importance of route study cannot be overemphasized.

16.9. Tactical Aircrew Coordination. Effective crew coordination is crucial to the success of any flight, especially during tactical operations, and will be discussed prior to executing the mission. During the route study and/or the mission briefing is a convenient time for the entire aircrew to discuss specific responsibilities during each phase of the mission. Assigning specific in-flight duties, such as who is going to fly the aircraft and who is going to operate airdrop switches, and who is going to scan for threats, will help to reduce confusion during execution. While there is no clear cut definition of crew coordination, the concept deals with the ability of the aircrew to handle a rapidly changing environment and successfully perform the task at hand. This requires maintaining a high level of situational awareness through the cross flow of information between various crew positions. Information should be relevant, accurate, complete, timely, and concise, particularly for the objective area and threat reaction maneuvers. Crew coordination discussions should also encompass individual technique, limitations, emergency procedures, and previous lessons learned.

16.10. Airlift Support Forces Coordination. Ensure coordination is complete with airlift and supporting forces. Reference AFTTP 3-3.35A for applicable briefing items.

16.11. Briefings.

16.11.1. Mission Planning Pre-Brief. The purpose of the mission planning pre-brief is to familiarize all crewmembers with the general aspects of the mission. The group or squadron commander, combat support group staff specialists, all crewmembers of each participating crew, and other personnel concerned with the mission should attend. The mission planning pre-briefing may include all information pertinent to the mission and eliminate the need for later specialized briefings. In cases where highly specialized information or techniques require additional explanation or review (such as formation procedures), schedule a specialized briefing. During the briefing, indicate what preparation has been accomplished and what is yet to be accomplished. Reference AFTTP 3-3.35A for guidance in conducting the briefing.

16.11.2. Pre-Deployment Briefing. Prior to deployments, the operations officer, mission commander, or designated representative should assemble the crew and brief the description and purpose of the mission, tentative itinerary, aircraft configuration, special equipment, fuel load, clothing required, anticipated housing and messing facilities, sufficient money to defray individual's anticipated expenses, personal equipment/field equipment requirements, special clearance requirements, and flying safety.

16.11.3. Tactical Mission Briefing. This briefing is required if applicable items are not briefed in the Joint Mission Briefing/Mission Briefing. A mission briefing for participating pilots, loadmasters, and other personnel as directed by the mission commander, is required prior to all low-level and formation missions. Brief applicable items in sufficient detail to ensure a clear understanding of mission objectives and procedures. The PIC is responsible for ensuring all crewmembers are briefed on applicable mission items (reference AFTTP 3-3.35A).

16.11.4. Specialist Briefing. Conduct specialist briefings to detail operating procedures or special interest items. The mission commander determines the requirement for this briefing. When appropri-

ate, hold specialist briefings at the completion of the Tactical Mission Briefing for pilots, loadmasters, aeromedical personnel, jumpmasters, landing zone control officers, STT, and DZST personnel.

16.11.5. **Serial Lead Briefing.** The serial leader will assemble the pilots participating in the serial to cover any changes or additions arising after the formal mission briefing. Only applicable items need to be briefed. Conduct this briefing as appropriate, to allow sufficient time to complete necessary aircraft inspections and jumpmaster, loadmaster, or parachutist briefings before station time.

16.11.6. **Other Briefings.** In addition to the briefings above, mission participants will also conduct briefings as required in Section 6.12. of this AFI. These include C2 Center Briefing, Aircraft Commander Briefing, Specialized Briefings (Airdrop, Air Refueling, Load Briefing, etc.), Weather Briefing, Intelligence Briefing and Hazardous Materials Briefing.

16.12. Mission Debriefings. Hold immediately after the mission if practical. Reference AFTTP 3-3.35A for suggested items to include in the debrief.

16.12.1. For formation flights, a post-mission debrief should be conducted by the mission commander or formation leader.

Chapter 17

MISSION EMPLOYMENT/TACTICAL PROCEDURES

17.1. General.

17.1.1. Each unit will have a tactics ground training program tailored to the unit's wartime taskings. Tactics and intelligence staff should join forces in this area to ensure success. Using a building block approach, the ground tactical training program forms the base of the unit's tactics program. Each unit's tactics ground training program may be different because of the differences between unit mission taskings, however, the overall objectives should be the same.

17.1.2. Crews will follow guidance in AFTTP 3-3.35A when performing tactical arrivals and departures, or when operating into locations with a hostile threat environment, except as noted in this chapter. Brief any deviations from guidance provided in AFTTP 3-3.35A.

17.1.3. Crews should be prepared to adjust their mission plan based on en route mission updates. In a potential threat situation, crewmembers will understand their limitations and those of their equipment. Since the procedures contained in this instruction and AFTTP 3-3.35A are not all encompassing, aircrews are expected to use good judgment, innovation, and sound airmanship to successfully accomplish the mission.

17.2. Tactical Checklists. Combat Entry and Combat Exit checklists will be executed at the appropriate times/locations for airdrop and tactical airland missions.

17.2.1. All primary crewmembers will be on interphone from the Combat Entry checklist until completion of the Combat Exit checklist, unless crew duties require otherwise. If a pilot needs to leave the seat or go off interphone, initiate a climb to an appropriate altitude.

17.2.2. Personnel performing duties required to be mobile in the cargo compartment during airdrop, low level operations, or threat environments will wear protective headgear. All other personnel in the cargo compartment will be seated with seat belts fastened.

17.3. Energy Management. Performance data will be carefully considered and energy management is essential when planning low level operations. This is particularly necessary in mountainous terrain, at heavy gross weights, at high pressure altitudes, and/or with less than full engine power capability. Aggressive maneuvering, even at relatively high airspeeds, can place the aircraft into an approach-to-stall condition or require a go-around. Abrupt control inputs and/or uncoordinated flight should be avoided. These inputs are particularly hard on the airframe; and, in some instances, may increase airframe structural loading beyond design limits, possibly resulting in structural failure. Knowledge of factors that can lead to Pilot Induced Oscillations (PIO) during the landing phase is critical. It does no good to avoid the threat successfully only to exceed aircraft and/or pilot capabilities during the approach and landing phase.

WARNING: Uncoordinated flight reduces stall margins and can cause an abrupt departure from controlled flight. Uncoordinated flight increases airframe structural loading and should be avoided unless an actual threat exists.

17.4. Tactical Descents. If necessary, reverse engine idle thrust and speed brakes can be used to obtain rapid descents from high altitudes. Initial descent rates of over 12,000 fpm may be achieved. Use of the flight director for guidance is recommended.

17.4.1. Follow procedures in TO 1C-17A-1.

17.4.2. Initially, the PF smoothly lowers the nose to approximately 15 degrees nose low and then follows the pitch bar to maintain desired speed, and follows the roll bar for lateral navigation guidance.

17.4.3. Stow thrust reversers and speed brakes prior to leveling off. Select and establish desired en route airspeed.

17.4.4. Formation tactical descents are limited to 3-ship formations and a minimum of 6,000' spacing between aircraft.

17.5. NVG Visual Approaches. When flying NVG visual approaches, intercept final no later than 1.5 miles from the approach end of the runway, and intercept target approach path angle at no lower than 500 AGL. The first pilot to acquire the landing zone will state Pilot/Copilot has the LZ. The next pilot to acquire the zone will announce Pilot/Copilot has the LZ at (state clock position). The clock position will be verbally acknowledged/confirmed by the other pilot.

17.6. Ground Operations. This paragraph outlines procedures to follow when conducting specific ground operations at forward operating locations. Maneuvering in confined areas, reverse taxi operations, performing engine running onloads and offloads, and combat offloads all require a high degree of crew coordination. A thorough briefing and prior preparation are essential to quick and safe operations. Appropriate ground personnel and subsequent aircrews should be briefed on any hazards encountered during takeoff or landing (e.g., dust, winds, hostile activity).

17.6.1. NVG Lighting During Ground Operations. Operating landing lights with IR lens covers/filters for more than 5 minutes on the ground will cause damage to the lights/filters.

17.6.2. NVG Taxi/Backing. Pilots may taxi using NVGs on airfields without lights (blacked out) or equipped with overt or covert lights. If taxiing or accomplishing ground ops on blacked out taxiways/runways/ramps, the Aircraft Commander will ensure aircraft or environmental lighting provides for clear definition of taxiway/runway/ramp edge. Comply with all taxi restrictions in [Chapter 5](#) and the ASRR. The LM may provide the pilot with directions to taxi the aircraft while using NVGs.

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

WARNING: Do not onload or offload through the crew entrance door and cargo ramp/door at the same time unless both doors are directly supervised by a C-17A qualified crewmember. Paratroop doors will not be used.

WARNING: If a combat offload is to be accomplished before offloading vehicles, do not remove restraint until after the combat offload is completed.

17.6.3.1. Vehicle parking brakes will not be released until all restraint is removed and cleared by the loadmaster.

17.6.3.2. Personnel to be offloaded will be briefed to secure baggage aboard vehicles (if applicable).

17.6.3.3. Vehicles and all personnel exiting via the ramp will proceed directly aft of the aircraft at least 25 feet before turning and at least 200 feet before stopping.

17.6.3.4. After the aircraft has slowed to taxi speed, the loadmaster may remove all tiedowns except one forward and one aft. After ensuring the ramp toes are in the appropriate position, open the cargo door, and lower the ramp to an approximate horizontal position.

17.6.3.5. The loadmaster will direct all onload and offload operations using briefed signals. Other qualified loadmasters (CRG, aerial port) may perform these duties; however, the crew's primary loadmaster retains overall responsibility for the operation. Passengers will be escorted by a crew-member, CRG, Aerial Port, or airfield control (i.e., STT, DACG) personnel when enplaning or deplaning. Deplane passengers before removing cargo and enplane after loading cargo unless cargo size and location dictates otherwise.

17.6.3.6. Load Data. If cargo/passenger onload information can be obtained prior to landing/onload, complete the DD Form 365-4 for the subsequent sortie. The loadmaster may use the load plan total weight and load center of balance (CB) for entry on the DD Form 365-4 provided these procedures are followed:

17.6.3.7. The load plan data will be checked by a qualified load plan validator (i.e. aircraft loadmaster, CRG loadmaster, aerial port specialist, or any individual who has completed the AMC Affiliation Program Airlift Planners Course).

NOTE: If downloading to an empty aircraft, a DD Form 365-4 is not required for the subsequent sortie.

CAUTION: The stabilizer struts will be stowed and the ramp raised to at least the horizontal position prior to taxi.

17.6.3.8. Crew Entrance Door ERO Procedures. The PIC may approve the offload or onload of personnel and small cargo through the crew entrance door. In this instance, the throttles may be positioned to idle or reverse idle. Deplane the loadmaster to assure safety of deplaning/enplaning of personnel.

17.6.3.9. Reduced Lighting EROs. Reduced light EROs must be accomplished with red/NVIS (overt) lighting in the cargo compartment sufficient to permit MHE drivers to see marshaller's signals and safely position MHE. NVGs will not be used for positioning MHE for on/off-loading operations. Dimming rheostat will be set to minimum amount of lighting to accomplish LMs duties. LMs may use NVGs to maintain situational awareness of the load team behind the aircraft before and after actual loading.

17.6.4. Combat Offload Procedures. On operational missions, the controlling MAJCOM/A3/DO (or DIRMOBFOR for chopped assets) may authorize combat offloads when conditions warrant. OG/CC may approve combat offloads on training missions following a thorough risk assessment.

WARNING: Many explosive items have specific "drop" criteria that, if exceeded, render the item useless or dangerous to the user. With the exception of small arms ammunition (Hazard Class/Division 1.4), explosives and munitions shall not be combat offloaded without approval of MAJCOM/A3/DO.

EXCEPTION: Explosives and munitions rigged for airdrop may be combat offloaded without MAJCOM/A3/DO approval.

CAUTION: Excessively rough, sharply undulating or battle damaged surfaces may cause damage to the aircraft during combat offload operations. Reducing forward taxi speed on these surfaces will reduce air-

craft oscillation. The PIC will ensure the offload area will permit the offload operation to be conducted without damage to the aircraft.

CAUTION: The PIC is ultimately responsible for ensuring the area in front and behind the aircraft is clear during the operation. The loadmaster will ensure the area behind the aircraft is well clear of anything which may be damaged due to engine exhaust blast.

CAUTION: To combat offload, a surface of at least 1,000 feet is required; however, 1,500 feet is desired to provide a margin of safety.

17.6.4.1. Ensure the crew rest window to the cargo compartment is clear of obstructions for combat offload operations.

17.6.4.2. If ground personnel are present, the loadmaster will make contact with the individuals to ensure no one disrupts the operation. After the area is clear and secure, the loadmaster positions for the offload.

17.6.4.3. All combat offloads will be accomplished from the forward loadmaster station.

NOTE: If combat offloading to an empty aircraft, a DD Form 365-4 is not required for the subsequent sortie.

17.6.4.4. NVG Combat Offloads. Pilots and loadmasters may accomplish Combat Offloads on NVGs at airfield light levels down to and including blacked out, provided aircraft or airfield lighting permit clear definition of taxiway/runway/ramp edges. Cargo compartment lighting will be set at minimum level to perform loadmaster duties safely.

17.7. Emergency Airlift of Personnel. Use these procedures for emergency airlift of personnel from areas faced with enemy siege or hostile fire; or use these when directed by the controlling component commander, MAJCOM/A3/DO or DIRMOBFOR. Airlift of this nature will normally be accomplished without the use of individual seats, seat belts, or litter stanchions. Passengers will be seated on the cargo floor/ramp. The number of personnel will vary depending on size and the number of tiedown straps on board the aircraft. An estimate of 200 personnel on the main floor and 25 on the ramp can be used for planning purposes. Personnel may be loaded in groups of 12 to 16 (depending on size).

The following procedures will apply:

17.7.1. All Rails and roller conveyors will be stowed. Four ramp toes install in the high position.

17.7.2. When available, mattresses or other cushioning material may be used for seating.

17.7.3. Troops, passengers, and ambulatory patients will be seated facing forward on the cargo floor, sidewall seats, or ramp.

17.7.3.1. Attach the hook end of tiedown straps to tiedown rings in A and G rows. Position personnel laterally between attached straps. After personnel are seated, route straps laterally across their legs and secure ratchet end of straps to the tiedown ring in D row. Be cautious of making strap to tight to restrict blood circulation in the legs of passengers.

17.7.4. Secure baggage on the ramp when excess baggage and cargo secured on the cargo floor (or a pallet) may decrease the number of troops, passengers, and patients proportionately.

17.7.5. The maximum altitude for emergency airlift will not exceed FL250.

17.7.6. For airlift of patients, see [Chapter 20](#) of this instruction.

Chapter 18

AIRCRAFT FORMATION

18.1. General. Aircrews will follow formation procedures in AFTTP 3-3.35A, Chapter 5, except as outlined below.

18.2. Weather Minimums.

18.2.1. Takeoff. Takeoff minimums are no lower than 200 foot ceiling and one-half mile visibility (RVR 24). If the departure ceiling or visibility is below published approach minimums, the formation may takeoff if the requirements for a departure alternate (in accordance with **Chapter 6** of these instructions) are met.

18.2.1.1. NVG Formation Departures. Weather minimums for NVG formation departures for crewmembers who are non-current and/or unqualified is 1500/3. Current and qualified NVG aircrews may fly NVG departures with weather down to 600/2 (OG/CC or equivalent may approve down to 300/1). Crews must give careful consideration to potential hazards during the critical phase of flight. Other weather limitations are IAW this instruction and AFI 11-202V3. NVGs 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 NVG operations.

18.2.2. Landing. Formation landing minimums are the published minimums for the airport.

18.3. Taxi Interval. Minimum taxi interval is one aircraft length. Lead may increase taxi interval if circumstances dictate.

18.4. Inadvertent Weather Penetration. If a formation inadvertently enters clouds and/or areas of poor visibility while operating VFR, flight lead's primary concern is to extricate the formation from the weather while providing safe aircraft separation and terrain clearance. Wingmen should immediately notify lead of deteriorating visual conditions. The following procedures apply to formations operating VFR.

18.4.1. Inadvertent Weather Penetration With SKE. Immediately upon penetrating the weather, formation lead will announce, "XXXX Flight, execute inadvertent weather penetration procedures with SKE now, base altitude XXX, base heading XXX, base airspeed XXX. Acknowledge." The formation climbs to a base altitude at or above the route/segment ESA. Element wingmen initiate climb, select SKE, set cross-track to 1,000 feet left or right, as appropriate, and continue climb to the base altitude on the base heading at base airspeed at 1,000 FPM while maintaining SKE separation. When level at the base altitude, the leader commands the section to assume IFR interval. At this command, number 2 and 3 aircraft of each element reduce airspeed 20-knots and drift back until they establish intervals of 4,000 and 8,000-feet, respectively, then reset the appropriate cross-track distance. If visual conditions can not be reestablished, lead will contact the appropriate ATC, declare an emergency, and request the necessary airspace clearance or individual clearances.

18.4.2. Inadvertent Weather Penetration Without SKE. Immediately upon penetrating the weather, formation lead will announce, "XXXX Flight, execute inadvertent weather penetration procedures without SKE now, base altitude XXX, base heading XXX, base airspeed XXX. Acknowledge." The

formation climbs to a base altitude at or above the ESA for the route or segment. Climb at base speed and 1,000 feet per minute. After the element wingmen establish a 1,000 feet per minute climb, they will use 30 degrees of bank to turn to a heading 30 degrees right or left, respectively, from the base heading. Maintain this divergent heading for one minute (2 minutes from slowdown to escape for air-drop missions) before resuming base heading. The use of TCAS, Air-to-Air TACAN or weather skin paint will aid in maintaining separation from other formation members. The last element of the formation will occupy the base altitude; preceding elements will stack at 1,000-foot intervals, with the first element occupying the highest altitude. Do not change the base heading while in IMC. If visual conditions can not be reestablished, lead will contact the appropriate ATC, declare an emergency if needed, and request the necessary airspace clearance or individual clearances.

EXCEPTION: If executing inadvertent weather penetration without SKE in a personnel echelon geometry, #2 will turn 20 degrees off base heading away from the lead airplane using 20 degrees of bank. #3 will turn 30 degrees off base heading in the same direction away from lead as #2 using 30 degrees of bank. Each wingman will maintain a divergent heading for 2 minutes then turn back to base heading.

WARNING: For formation geometries other than visual in-trail, terrain clearance requirements and airspace restrictions may require modified procedures. Inadvertent weather penetration in mountainous terrain using the above procedures may be hazardous. Mission planners and flight leads should thoroughly brief the procedures that best suit the situation.

NOTE: The above procedures are for emergency use and do not constitute authority to violate AFI 11-202V3, or Federal Aviation Regulations (FAR). Exercising these procedures under actual weather conditions may constitute a violation subject to appropriate action by USAF and FAA. Individual aircraft should remain VFR if there is sufficient warning to take evasive action. Flight leads will take all practical measures to avoid entering controlled airspace without clearance. Level off initially at VFR cruise altitude to minimize conflict with IFR traffic until an IFR clearance is obtained.

NOTE: Lead may level the formation below the ESA for the route provided sustained VMC is encountered and terrain clearance is assured.

18.4.3. Lead is responsible for calling the inadvertent weather penetration and maintaining formation clearance/integrity at all times. Inadvertent weather penetration cannot be written for each individual situation. It is therefore critical for lead to keep track of his wingman at all times, and be directive if a standard inadvertent weather penetration doesn't fit the exact condition of the formation.

18.5. Departure Airborne Aborts.

18.5.1. Aircraft aborting during assembly will execute the briefed emergency procedures, hold clear of departing traffic, maintain VMC if possible, notify lead, and contact the appropriate controlling agency. If possible, the aborting aircraft will remain clear until a landing can be made without interfering with the remainder of the departing formation.

18.6. Formation Recoveries.

18.6.1. Formation Landings. All aircraft land on the runway centerline with the same flap detent setting, and use reverse thrust and brakes as briefed. Continue to the end of the runway (or briefed turn-off) without stopping in any position that would prevent succeeding aircraft from clearing the runway.

WARNING: Aircraft will not perform touch-and-go landings or planned go around after touchdown maneuvers out of formation recoveries.

18.6.2. Visual Recoveries. The desired landing interval is 60 seconds (45 seconds minimum). Consider extending the interval for icy runway conditions, short/narrow runways, or other adverse conditions.

18.6.3. SKE Recoveries. Desired aircraft interval upon landing is 12,000 feet, 10,000 feet minimum.

18.6.3.1. Do not fly 45/180 ground tracks or course reversal maneuvers.

18.7. Rendezvous. See AFTTP 3-1.35 Attachment 7 (UNCLASSIFIED) paragraph 7.4. Serial leads may brief alternate rejoin procedures as dictated by the individual situation. The following procedures can be used in the event that special procedures are not pre-briefed. These procedures are intended to join multiple sections into one formation. Each section will converge on a briefed geographic point or radio fix that is referred to as the Start Rendezvous Point (SRP). Each section will use a different SKE frequency, arriving at the SRP two minutes apart with a minimum altitude separation of 1,000 feet. (The rendezvous track should be at least 50 NM long for two sections, and adjusted by planners for more than two sections.)

18.7.1. Aircrew Procedures. The first section decreases airspeed to 250 KCAS two minutes past the SRP. The last aircraft in the first section will be Master for the rendezvous. The rejoining section(s) flies the same track as the first section and executes a chase-type rendezvous. When the rejoining section is approaching position based on TCAS, A/A TACAN, WX radar, or other means, section lead will direct a change to the first section's SKE frequency and master slot IAW flight manual procedures. If the rejoining section is unable to maintain formation position visually, they must obtain altitude separation within the section prior to changing SKE frequency and master slot. Follower aircraft will stack up 500' above section lead. For example, the first section is at 13,000 and the second section arrives at the SRP at 14,000 but is unable to establish visual formation procedures. Rejoining section lead will maintain 14,000 and coordinate with ATC for a block altitude. Follower aircraft will climb to 14,500, 15,000, 15,500... before they switch SKE frequency and master slot. When all SKE systems are synchronized, section lead will positively identify the last aircraft of the preceding section and continue to close to en route spacing. The joining section slows to 250 KCAS as necessary to stabilize in position. Serial lead will be positively identified with SKE and an FCI check will be accomplished prior to flying co-altitude in IMC. After established in the proper position, the second section descends to the formation altitude on section lead's FCI signal.

18.7.2. Ensure aircraft do not have duplicate slot numbers. Join only one section to the formation at a time.

18.8. Formation Air Refueling Procedures.

18.8.1. Briefing. The lead pilot briefs all PICs within the receiver cell. This briefing will be in sufficient detail to cover all phases of cell operations. Reference AFTTP 3-3.35A, chapter 5 for additional information.

18.8.2. Aircraft will have operable SKE and radar systems for formation air refueling flights. It is the intent of this chapter that these systems be fully operational during FAR operations. However, when operational mission requirements dictate, this decision will be left to the mission commander.

18.8.3. SKE will be left on throughout refueling.

18.8.4. A 180 degree turn on track with multiple receivers will be accomplished with all receivers established in a single in-line formation with 1000 feet vertical separation between the receivers and the lowest tanker and at least two nautical miles in-trail of the lead tanker.

NOTE: Transitioning to an in-line formation behind T1 will be initiated with all receivers in their respective post A/R positions.

EXCEPTION: For 3-on-1 or 2-on-1 only, with prior permission from the tanker, a receiver in contact may remain in the contact position during the turn. The other receivers will maintain the current altitude and move from either awaiting A/R or post A/R to the in-trail position for the duration of the 180 degree turn. The in trail aircraft will return to either awaiting A/R or post A/R, whichever is appropriate, once the course reversal is complete (tanker is wings level, less than 30 degree intercept heading to track). Before maneuvering, the receiver in the contact/pre-contact position will remain in the contact/pre-contact position until the other receiver is reestablished in the awaiting A/R or post A/R position.

18.8.5. Emergency Actions:

18.8.5.1. Breakaway. Follow procedures in IAW TO 1-1C-1-35. When separation between receiver and tanker has been effected, the receiver pilot advises the tanker "WELL CLEAR" and states altitude passing. When the situation has stabilized, coordinate clearance back to precontact. Restrict all breakaways to 500' below individual tanker's altitude.

Chapter 19

AIRDROP

19.1. General. Aircrews will follow guidance in TO 1C-17A-1-4 and AFTTP 3-3.35A for airdrop procedures, except as noted in this chapter, and **Chapter 18**.

NOTE: Unless used in conjunction with drop execution, avoid use of the word GREEN after the Slow-down Checklist and until completion of the Post Drop checklist. "GREEN LIGHT" will be seen or heard by the loadmaster for all drops.

19.1.1. NVG Airdrop Procedures. Qualified NVG airdrop pilots are authorized to perform normal night operations IAW this chapter and **Chapter 16** and **Chapter 18** of this regulation. Airdrops may be accomplished on drop zones lit IAW AFI 13-217 lighting patterns (covert and overt) while wearing NVGs, to include unmarked drop zones.

19.1.1.1. Loadmasters will use NVGs during airdrops if the mission dictates. Loadmasters are authorized to perform equipment airdrops with minimum lighting. Use NVGs as necessary to assist with operations and keep cargo area lighting to a minimum. During static line personnel operations, use of NVGs in the cargo compartment is not authorized; however, use of NVGs on the flight deck is authorized.

19.1.1.2. Cargo Compartment Lighting. After the Combat Entry Checklist, all cargo compartment lighting will be switched to red/NVIS lights. Blacked out (no-light) operations in the cargo compartment are not authorized. Loadmasters will carefully consider cargo compartment lighting intensity prior to opening ramp and door to minimize interference with formation wingmen's NVG vision.

19.2. Airdrop Equipment.

19.2.1. Airdrop Kits. The loadmaster will maintain an airdrop kit and will ensure enough equipment is included to satisfy load or mission requirements. Minimum contents of the airdrop kit will include cloth-backed pressure sensitive tape, 1/2-inch tubular nylon cord, type III nylon cord, # 5 cord, and inch cotton webbing.

19.2.2. Safety Equipment.

19.2.2.1. Personnel performing duties required to be mobile in the cargo compartment during airdrop, low level operations, or threat environments will wear protective headgear (except personnel performing water jumps). All other personnel in the cargo compartment will be seated with seat belts fastened. During paratroop missions, loadmasters will lower their helmet visor before opening the troop doors and keep them lowered until the troop doors are closed.

19.2.2.2. All occupants of the cargo compartment will either wear a parachute or an attached restraint harness, or be seated with a seat belt fastened before a troop door and/or the cargo door and ramp is opened. When a troop door(s) or the door/ramp is open and the aircraft is below 800 feet AGL or above 14,000 feet MSL, loadmaster(s) will wear a restraint harness when performing airdrop duties. For operations over water, when parachute(s) are required, LPU(s) will be worn.

EXCEPTION For static line jumps, static lines are attached to anchor cables before troop door(s) are opened. Jumpers exiting on subsequent passes may stand and hook up with door(s) opened if they are forward of FS 1027.

19.2.2.2.1. The restraint harness will be fitted and adjusted prior to flight. The lifeline will be 18 feet 6 inches long. After the lifeline has been adjusted, disconnect the hook, roll and secure the lifeline, and stow on the restraint harness.

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.

19.2.2.2.2. Prior to opening troop door(s) and/or the ramp/door in-flight (or for airdrops that require the loadmaster to be positioned at the aft loadmaster station), attach the restraint harness at FS 1188 and adjust the life line as follows:

19.2.2.2.2.1. Troop door airdrop operations: Adjust to allow mobility only to the troop door(s) and air deflector controls.

19.2.2.2.2.2. Cargo Door and airdrop operation: Adjust to allow mobility to FS 1403.

19.2.2.3. Three additional parachutes, not including those required for aircrew, will be aboard the aircraft for training missions performing personnel airdrops. Two will be available for Army safety personnel use. User safety personnel will provide their own parachutes for contingency missions.

19.3. Airdrop Load Information.

19.3.1. The loadmaster will complete the Joint Airdrop Inspection Records (applicable DD Form 1748) before takeoff and verify the accuracy of cargo and troop documentation (see AFI 11-231, *Computed Air Release Point Procedures*, and AFJI 13-210, for specifics). The loadmaster will reject loads with inaccurate or unavailable weights, or loads hazardous to flight. If inflight rigging is required, the loadmaster will use the applicable DD Form 1748 as a checklist to ensure all items are completed.

NOTE: Equipment not rigged IAW 13C-series TOs or Joint Special Operations Command (JSOC) 350 series manuals, requires a waiver from MAJCOM tactics.

19.3.1.1. If airdrop loads and airland cargo are carried at the same time, refer to the restrictions listed in **Table 19.1**. These restrictions are designed to prevent airland loads from interfering with airdrop rigging equipment.

Table 19.1. Airdrop Configuration Restrictions.

RESTRICTIONS	MINIMUM DISTANCE IN INCHES
ANCHOR CABLE HEIGHT FROM AIRCRAFT FLOOR	81 AT MIDSPAN FOR ADP
DISTANCE BETWEEN ANCHOR CABLES (a) CDS OR EQUIPMENT (3) (b) PERSONNEL (1) FORWARD BULKHEAD INTERMEDIATE SUPPORTS (c) DUAL ROW	182 122 INBOARD, 182 OUTBOARD 155 INBOARD, 182 OUTBOARD 182
AIRLAND CARGO WIDTH/HEIGHT	CANNOT INTERFERE WITH INSTALLED ANCHOR CABLES, OR AIRDROP RIGGING EQUIPMENT
AIRLAND CARGO WIDTH ON PERSONNEL AIRDROPS	144 OR LESS WITH ADP 1 CONFIGURATION. MAY BE INCREASED TO 178 OR LESS IF ONLY USING ONE TROOP DOOR
CDS AIRDROPS (WHEN DROPPING ONE SIDE ONLY) (a) MAXIMUM WIDTH OF AIRLAND CARGO (b) POSITION OF AIRLAND CARGO	110 OR LESS AFT END OF AIRLAND CARGO FORWARD OF FS 1280
PERSONNEL DISTANCE FROM AIRDROP RIGGING EQUIPMENT (2)	30 MINIMUM

NOTES:

1. Personnel airdrops may be performed with only one troop door configured for airdrop.
2. Personnel seated adjacent to heavy equipment platforms/CDS containers will have an operational seat belt. Ensure all floor loaded rucksacks are secured.
3. Combination airdrop of heavy equipment and CDS will not be accomplished on the same aircraft.

WARNING: Static line personnel airdrops over the ramp are prohibited.

19.3.2. Identification of Airdrop Items. It may be necessary to identify items that are not dropped or land off the DZ in unsecured areas. Identify supplies or equipment by the following class numbering system:

- 19.3.2.1. Class I - Subsistence.
- 19.3.2.2. Class II - Individual equipment.
- 19.3.2.3. Class III - POL.
- 19.3.2.4. Class IV - Construction materials.
- 19.3.2.5. Class V - Ammunition (include the type).
- 19.3.2.6. Class VI - Personal demand items.
- 19.3.2.7. Class VII - Major end items. (Vehicles, Howitzers, etc.)
- 19.3.2.8. Class VIII - Medical supplies.
- 19.3.2.9. Class IX - Repair parts.
- 19.3.2.10. Class X - Non-military programs. (i.e. agricultural supplies).
- 19.3.2.11. Red - ammunition and weapons.
- 19.3.2.12. Blue - fuel and lubricants.
- 19.3.2.13. Green - rations and water.
- 19.3.2.14. Yellow - communications equipment.
- 19.3.2.15. White (or red cross on white background)- medical supplies.
- 19.3.2.16. Black and white stripes - mail.

19.4. Required Figures of Merit (FOMs).

19.4.1. In IMC, lead requires a MC FOM of 3 or better to descend from minimum IFR en route altitude to IMC drop altitude. IMC airdrop requires a MC FOM of 3 or better to drop using MC guidance. For SKE airdrops, the wingmen may descend to IMC drop altitude and drop off the SKE timer regardless of MC FOM. Aircrews are authorized to complete airdrops with a FOM greater than 3 provided they can visually ensure the load will land on the DZ.

19.5. Notice To Airmen Requirements.

19.5.1. Airdrop Notice to Airmen (NOTAM). For the airdrop portion of all SKE missions in uncontrolled airspace, the mission command unit will comply with the current Federal Aviation Administration (FAA) Exemption 4371. A Letter of Agreement between local ATC and the military is required when operating under this exemption. Also, provide a NOTAM to the FAA Flight Service Station nearest the objective area at least 48 hours in advance of the intended activity, regardless of actual or forecast weather. NOTAM information will include:

- 19.5.1.1. Name of the nearest city or town and state.
- 19.5.1.2. Date and time period of intended activity.
- 19.5.1.3. Number and type of aircraft.
- 19.5.1.4. Altitudes.
- 19.5.1.5. IFR Drop Corridor Ingress and Egress points of the route segment expressed in radial and DME from a VORTAC.

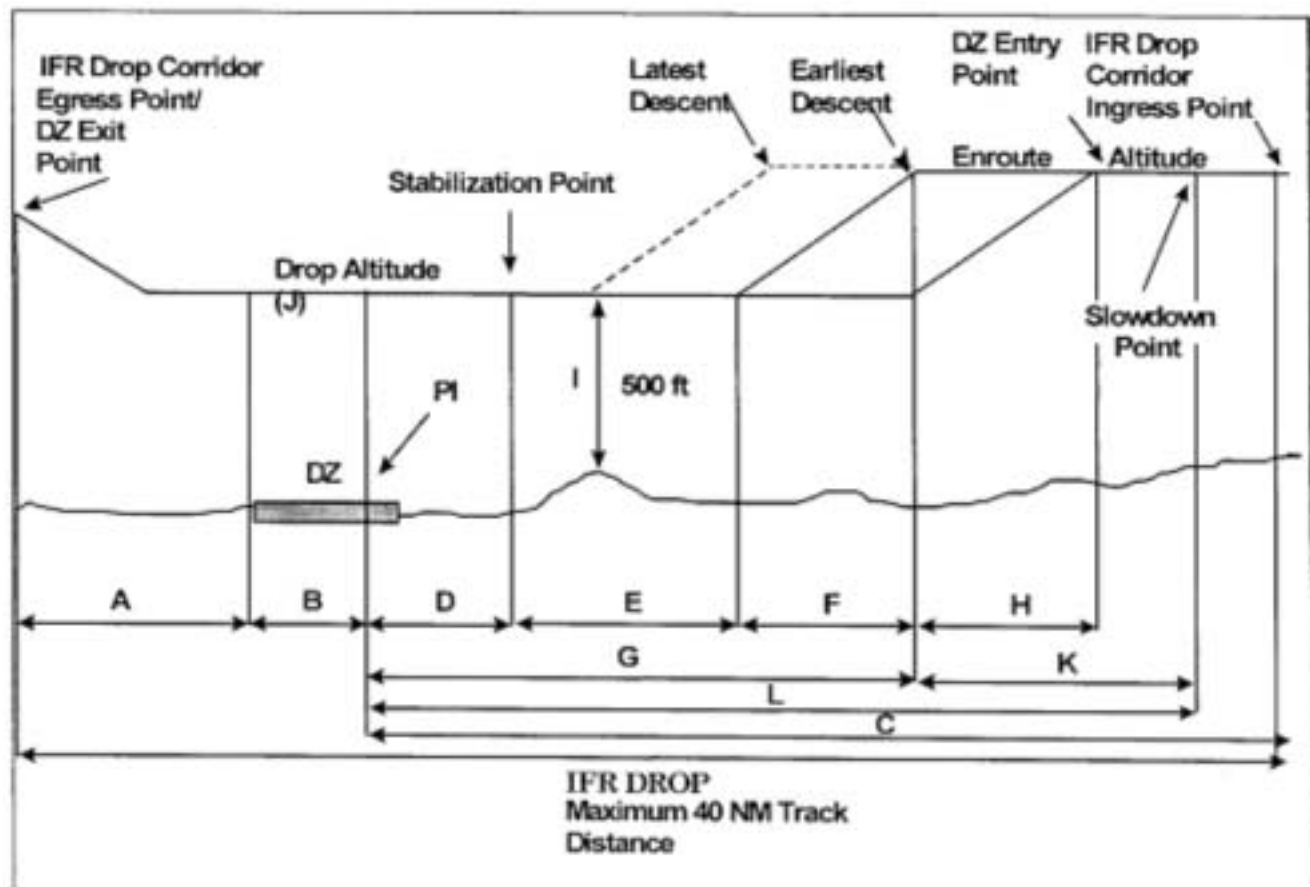
19.6. IMC Drop Altitude. Plan minimum IMC drop altitude at 500 feet above the highest obstruction to flight (man-made obstacle, terrain feature, or spot elevation), or 400 feet plus one contour interval above the highest depicted terrain contour, whichever is higher, within 3 nautical miles either side of the run-in centerline from DZ entry point to DZ exit point or as specified in AFI 11-231, whichever is higher.

WARNING: Drop zone surveys do not assure terrain and obstruction clearance. The responsibility is incumbent upon planners and aircrew through thorough mission planning and chart updating.

NOTE: Altitudes on DZ run-in may be segmented to allow for lowest possible run-in/drop altitude. Once the limiting obstruction (man-made obstacle, terrain feature, or spot elevation) is visually identified and the aircraft is confirmed well clear, the crew may descend to the next segment altitude, if lower.

19.7. IMC Drop Profile. See [Figure 19.1](#).

Figure 19.1. IMC Drop Profile.



19.7.1. IFR Drop Corridor. Defined in FAR Exemption 4371, the IFR Drop Corridor is the corridor where aircraft may operate below IFR en route altitude. The beginning of the corridor, the IFR Drop Corridor Ingress Point, is a maximum of 40 miles 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, or spot elevation), or 400 feet plus one contour interval above the highest depicted terrain contour, whichever is higher, within 3 nautical miles of centerline.

19.7.2. DZ Entry Point. A fixed point in the IFR Drop Corridor where an aircraft or formation may safely begin descent from IFR en route altitude or a segmented altitude to IMC drop altitude. Formation descent will not begin until the last aircraft is at or past the DZ entry point.

19.7.3. Earliest Descent Point (EDP). Earliest point in the IFR Drop Corridor where the formation lead may descend the entire formation to IMC drop altitude and be assured of terrain clearance for the entire formation. Computed by subtracting formation length (e.g., a 4-ship is 2 NMs long) from the computed DZ entry point. A minimum of 6 NM stabilization point is recommended in IMC.

19.7.4. IMC Stabilization Point. The point after the DZ entry point where the lead aircraft will plan to be stabilized at IMC drop altitude and airspeed (normally 6NM from the PI).

19.7.5. Latest Descent Point (LDP). Latest possible point in the IFR corridor where formation lead may begin descent to IMC drop altitude and be assured of terrain clearance for the entire formation. This is the latest point that ensures all aircraft in the formation are stabilized on altitude and airspeed.

19.7.6. DZ Exit Point. A fixed point on the DZ escape flight path centerline where each aircraft will be at minimum IFR en route altitude. Calculate the exit point based upon three-engine performance at airdrop gross weight. This point will be a minimum of 4 NMs track distance from the trailing edge of the DZ. Also referred to as the IFR Drop Corridor Egress Point.

Table 19.2. IMC Drop Profile Calculation.

<p>A DZ Exit Point. Compute this distance as 1 minute at 160 KCAS + climb at 1000 FPM or as briefed (no greater than 3 engine climb performance). Climb at least 500 FPM or as required by terrain/obstructions. Cannot be less than 4 NM.</p> <p>Example: $(160 \text{ KCAS}/60 \text{ min/hr}) + (160 \text{ KCAS}/60 \text{ min/hr} \times 500\text{ft}/1000 \text{ VVI}) = 2.7 + (2.7 \times .5) = 4.1 \text{ NM}$</p>	Write Here
<p>B DZ Length (Total DZ Length-Leading edge to PI Distance/2025 yd/NM)</p> <p>Example: $(1688-550)/2025 = .6 \text{ NM}$</p>	
<p>C IFR Drop Corridor Entry Point. Computed by subtracting distances A and B above from 40 NM.</p> <p>Example: $(40 \text{ NM} - A - B) 40 - 4.1 - .6 = 35.3 \text{ NM}$</p>	
<p>D IMC Stabilization Point. Recommended at least 6 NM from the PI, the mission commander may extend this distance.</p> <p>Example: 6 NM</p>	
<p>E Slowdown from 160 KCAS to Drop Speed.</p> <p>Example 160 to 145 KCAS = .7 NM (See attached slowdown distance table)</p>	
<p>F Descent from IFR en route to IFR drop altitude.</p> <p>Example Descent from 2000' to 1000' MSL = 2.7 NM (@ 160 GS and 1000 FPM see attached distance table)</p>	
<p>G Formation Length (3-ship elements, no ghosts)</p> <p>2-ship .7 NM 3-ship 1.3 NM 4-ship 2.0 NM</p> <p>5-ship 2.6 NM 6-ship 3.3 NM</p> <p>Example: 3-ship 1.3 NM</p>	
<p>H DZ Entry Point. To extract this distance compute the slowdown point for the last aircraft and subtract the initial deceleration distance, or add D + E + F+G above.</p> <p>Example $(D+E+F+G) 6 + .7 + 2.7 + 1.3 = 10.7 \text{ NM}$</p> <p>Verify the result is not greater than the IFR Drop Corridor Entry Point.</p>	
<p>I Minimum IFR Drop Altitude.</p> <p>Example: $716 + 500 = 1216'$</p>	
<p>J Planned Drop Altitude. Highest point on DZ plus AGL drop altitude. Will not be less than IFR Drop Altitude.</p> <p>Example: $289 + 800 = 1089'$ (use higher of min IFR and planned drop alt) = 1216' (Min IFR) (Not Shown)</p>	

<p>K Initial Slowdown Distance. Distance needed to slow from en route airspeed to 160 KCAS* (see attached table)</p> <p>Example 240 KCAS to 160 KCAS = 4.7</p>	
<p>L Slowdown Distance. Total distance from initial slowdown to PI. Item K + Item F + Item E + Item D</p> <p>Example (from 240 KCAS to drop airspeed, 2000' to 1216') 4.7 + 2.7 + .7 + 6 = 14.1 NM</p>	

NOTES:

A: 1 Min @ 160 + Climb to IFR Alt @ 1000 fpm (**Table 19.2. A**).

B: DZ Length = (Total DZ Length - Leading Edge to PI).

C: 40 - (A+B).

D: IMC Stabilization Point.

E: Slow from 160 to Drop Speed (**Table 19.2. C**).

F: Descent to Drop Altitude (**Table 19.2. B**).

G: Formation Length.

H: DZ Entry Point (D+E+F+G).

I: IFR Drop Altitude.

J: Planned Drop Altitude (No Lower than IFR Drop Altitude).

K: Initial Slowdown Distance (**Table 19.2. A**).

L: Slowdown Distance (Items K + F + E + D).

The C-17 mission computer calculates slowdown based on a deceleration of .05 G. To calculate this distance use the following formula:

$$\frac{(GS1 - GS2) * (GS1 + GS2)}{6825}$$

6825

Where GS1 = Starting Ground Speed and GS2 = Ending Ground Speed e.g., 240 kts starting speed with 160 kts ending speed. See **Table 19.2.**, **Table 16.5.**, **Table 16.6.** for the values already computed.

For time computations, as a rule of thumb, the C-17 slows at approximately 1 knot per second. 6,825 feet is an example shown for 3-ship SKE 800' AGL LVAD at North Field.

Table 19.3. Slowdown Distance (part 1 of 3).

ENDING GROUND SPEED										
		130	140	150	160	170	180	190	200	210
S	G 370	17.5	17.1	16.7	16.2	15.7	15.2	14.7	14.1	13.5
T	R 360	16.4	16.0	15.6	15.2	14.7	14.2	13.6	13.1	12.5
A	O 350	15.4	15.0	14.6	14.1	13.6	13.1	12.6	12.0	11.4
R	U 340	14.4	14.0	13.6	13.1	12.6	12.1	11.6	11.0	10.4
T	N 330	13.4	13.0	12.6	12.1	11.7	11.2	10.6	10.0	9.4
I	D 320	12.5	12.1	11.6	11.2	10.7	10.2	9.7	9.1	8.5
N	S 310	11.5	11.2	10.7	10.3	9.8	9.3	8.7	8.2	7.6
G	P 300	10.7	10.3	9.8	9.4	8.9	8.4	7.9	7.3	6.7
	E 290	9.8	9.4	9.0	8.5	8.0	7.5	7.0	6.4	5.8
	E 280	9.0	8.6	8.1	7.7	7.2	6.7	6.2	5.6	5.0
	D 270	8.2	7.8	7.3	6.9	6.4	5.9	5.4	4.8	4.2
	260	7.4	7.0	6.6	6.1	5.6	5.1	4.6	4.0	3.4
	250	6.6	6.3	5.8	5.4	4.9	4.4	3.8	3.3	2.7
	240	5.9	5.5	5.1	4.7	4.2	3.7	3.1	2.6	2.0
	230	5.2	4.9	4.4	4.0	3.5	3.0	2.4	1.9	1.3
	220	4.6	4.2	3.8	3.3	2.8	2.3	1.8	1.2	0.6
	210	4.0	3.6	3.1	2.7	2.2	1.7	1.2	0.6	0.0
	200	3.4	3.0	2.6	2.1	1.6	1.1	0.6	0.0	

TABLE A (SLOWDOWN DISTANCES)

Table 19.4. Slowdown Distance (part 2of 3).

GROUNDSPEED										
D	<u>1000</u>	200	190	180	170	160	150	140	130	120
	<u>FPM</u>									
E	1000	3.3	3.2	3.0	2.8	2.7	2.5	2.3	2.2	2.0
S	2000	6.7	6.3	6.0	5.7	5.3	5.0	4.7	4.3	4.0
C	3000	10.0	9.5	9.0	8.5	8.0	7.5	7.0	6.5	6.0
E	4000	13.3	12.7	12.0	11.3	10.7	10.0	9.3	8.7	8.0
N	5000	16.7	15.8	15.0	14.2	13.3	12.5	11.7	10.8	10.0
T	6000	20.0	19.0	18.0	17.0	16.0	15.0	14.0	13.0	12.0
D	<u>1500</u>	200	190	180	170	160	150	140	130	120
	<u>FPM</u>									
I	1000	2.2	2.1	2.0	1.9	1.8	1.7	1.6	1.4	1.3
S	2000	4.4	4.2	4.0	3.8	3.6	3.3	3.1	2.9	2.7
T	3000	6.7	6.3	6.0	5.7	5.3	5.0	4.7	4.3	4.0
A	4000	8.9	8.4	8.0	7.6	7.1	6.7	6.2	5.8	5.3
N	5000	11.1	10.6	10.0	9.4	8.9	8.3	7.8	7.2	6.7
C	6000	13.3	12.7	12.0	11.3	10.7	10.0	9.3	8.7	8.0
E										
S	<u>2000</u>	200	190	180	170	160	150	140	130	120
	<u>FPM</u>									
	1000	1.7	1.6	1.5	1.4	1.3	1.3	1.2	1.1	1.0
	2000	3.3	3.2	3.0	2.8	2.7	2.5	2.3	2.2	2.0
	3000	5.0	4.8	4.5	4.3	4.0	3.8	3.5	3.3	3.0
	4000	6.7	6.3	6.0	5.7	5.3	5.0	4.7	4.3	4.0
	5000	8.3	7.9	7.5	7.1	6.7	6.3	5.8	5.4	5.0
	6000	10.0	9.5	9.0	8.5	8.0	7.5	7.0	6.5	6.0

TABLE B (SLOWDOWN DISTANCES)

Table 19.5. Slowdown Distance (part 3 of 3).

		ENDING GROUND SPEED									
		100	110	120	130	140	145	150	160	170	180
S T A R T I N G D	G 190	3.8	3.5	3.2	2.8	2.4	2.2	2.0	1.5	1.0	0.5
	R 180	3.3	3.0	2.6	2.3	1.9	1.7	1.4	1.0	0.5	0.0
	O 170	2.8	2.4	2.1	1.7	1.4	1.1	0.9	0.5	0.0	
	U 160	2.3	2.0	1.6	1.3	0.9	0.7	0.5	0.0		
	N 150	1.8	1.5	1.2	0.8	0.4	0.2	0.0			
	D 140	1.4	1.1	0.8	0.4	0.0					
	S 130	1.0	0.7	0.4	0.0						
	P 120	0.6	0.3	0.0							
	E 110	0.3	0.0								
	E 100	0.0									
	D	TABLE C (SLOWDOWN DISTANCES)									

19.8. Dual Row. Rigging for the 463L training pallets will be IAW the approved AMC interim rigging guide. Only AF aerial delivery units are authorized to rig using this guide. This will be an interim guide until appropriate rigging FM/TOs are released.

19.8.1. Minimum drop zone requirements for unilateral dual row training loads. The minimum sized drop zone for unilateral training loads is 1600 yds x 400 yds. Increase the minimum sized DZ for night, IMC and formation IAW AFI 13-217 for heavy equipment factors. PI placement will be 300 yards (day or night) from the leading edge of the drop zone for AF unilateral training drops of 463L pallets using either the 2 or 3 pallet configuration.

19.9. High Altitude Airdrop Operations.

19.9.1. Reference TO 1C-17A-1-4 for pre-breathing requirements and restrictions. Reference AFTTP 3-3.35A chapter 8 for additional information.

19.9.1.1. Maintain cabin pressure at or below 10,000 feet until the Pre-Slowdown Checklist (time for check may have to be adjusted) and until pre-breathing is complete. De-pressurization will not exceed 3,000 feet per minute. Slower rates are recommended if time allows. Ensure zero pressure differential before clearing doors to be opened.

19.9.1.2. Physiological Technician (PT) Requirements. PTs will support high altitude airdrop missions whenever requested by the mission frag order, the aircrew, or the user. A minimum of 2 PTs will be on all airdrops conducted at 18,000 feet MSL or above, or if a waiver is granted to exceed exposure limitations of AFTTP 3-3.35A Table 8.3

19.9.2. The mission computer determines the HARP for all high altitude drops. A two-stage model is used to calculate wind drift for HARP airdrops. The total wind drift is obtained by adding the drift encountered in the free fall/high velocity stage to that from the high drag/deployed stage. Drift due to wind is calculated as the product of the average wind and the total time of fall divided by a constant for each stage. The HARP uses ballistic wind and deployed wind. Both values must be calculated and entered by the pilot. For high altitude drops above FL200, where wind direction can vary greatly from the surface to drop altitude, a vectorial average should be used in lieu of a simple arithmetic average. Small errors in wind calculations can produce very large errors in drop accuracy. A vectorial average will correctly cancel opposing wind velocities (i.e., 90 vs. 270 deg), and give greater weight to directions with stronger winds. A vectorial average can be performed using a scientific calculator (or laptop computer) via the following method:

$S1 * \cos D1$	$S1 * \sin D1$	$S1 =$ wind speed at altitude #1
$S2 * \cos D2$	$S2 * \sin D2$	$D1 =$ wind direction at altitude #1
↓	↓	$X =$ average of all cosine values
$S8 * \cos D8$	$S8 * \sin D8$	$Y =$ average of all sine values
↓	↓	
$X =$ Avg of above	$Y =$ Avg of above	

$$\alpha = \arctangent \left(\frac{Y}{X} \right)$$

$$\text{Average Speed} = \sqrt{X^2 + Y^2}$$

Average wind direction = $90 - \alpha$ (for negative X); $270 - \alpha$ (for positive X)

NOTE: If using Microsoft Excel for trigonometry functions, convert all angles from degrees to radians. Tab data is adequate for Sine/Cosine functions, but inadequate for Arctangent functions.

NOTE: The symbol for arctangent on most calculators is Tan^{-1} .

19.10. En Route. Pilots are ultimately responsible for en route navigation and time control. Time control to the objective area should be accomplished primarily by varying airspeed with secondary methods of flying alternate legs, cutting corners, or extending legs.

19.10.1. Loadmasters will make a visual inspection of the cargo compartment prior to the initiation of the Pre-Slowdown Checklist to ensure that nothing has fallen between or aft of the airdrop load(s) as a result of takeoff or evasive maneuvering. A visual inspection of each extraction system, to include the security of recovery parachutes, will also be accomplished.

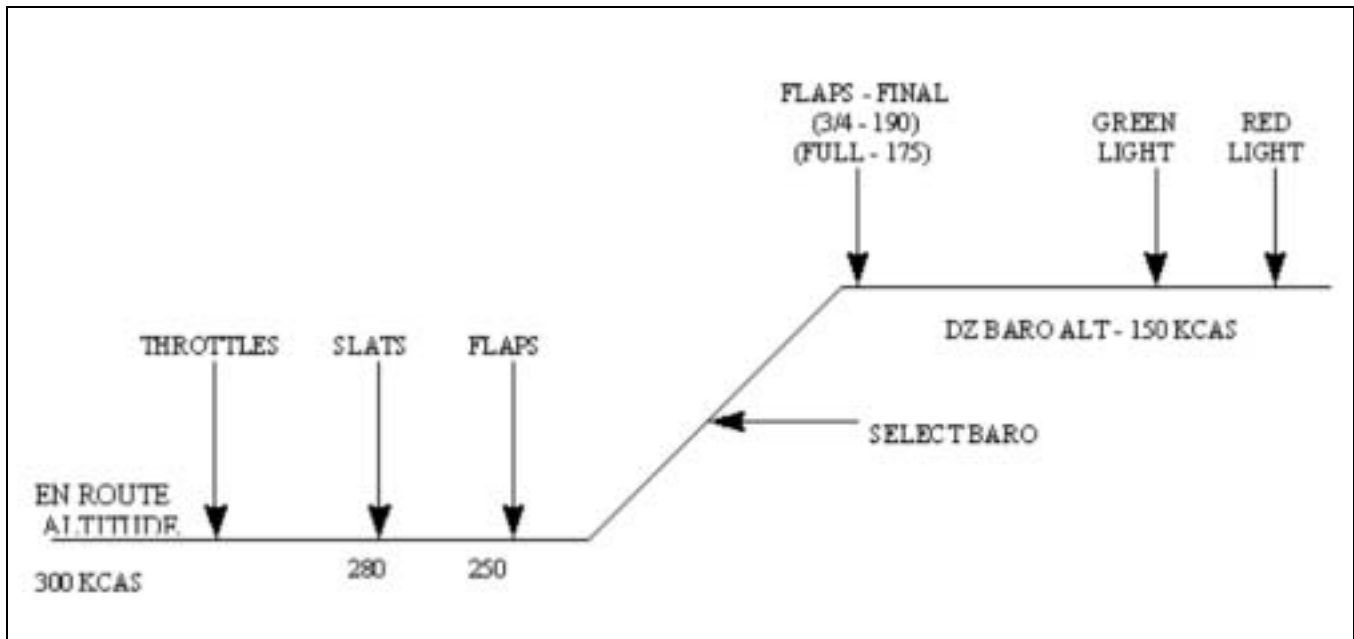
19.10.2. All primary crewmembers will be in their respective crew positions and on interphone from the combat entry point until completion of the combat exit checklist unless crew duties require otherwise. Warnings and advisories are normally provided to the aircrew by the mission computer.

19.10.3. Normally, depart the IP on course, using a drift-corrected heading to the CARP. If the threat situation dictates, terrain masking procedures may be required until stabilized on drop altitude.

19.10.3.1. In IMC, do not initiate descent from the minimum IFR en route altitude to IMC drop altitude until all aircraft in the element are inside the DZ entry point, on course, with element lead's position positively known.

19.10.4. The slowdown through escape sequence is depicted in [Figure 19.2](#). A slowdown maneuver executed late in the run-in sequence can reduce the time an aircraft is vulnerable at a slow airspeed and high altitude in a hostile environment. However, accomplish slowdowns early enough to ensure safe drop execution.

Figure 19.2. Slowdown Maneuver Example.



<u>EVENT</u>	<u>ACTION</u>
1. Start Slowdown (from 250-350 KCAS)	1. Throttles-Fwd Idle; May Extend SBKs
2. Pop-Up/Descent (as necessary)	2. Initiate Climb
3. Slat Placard (280 KCAS)	3. Extend Slats
4. Cargo Door/Ramp Placard (250 KCAS)	4. Open Cargo Door/Ramp
5. Half Flap Placard (250 KCAS)	5. Lower Half Flaps
6. Final Drop Flap Setting	6. Set Final Flaps
7. Prior to Green Light	7. Depress Ready/Drogue
8. Green Light (CARP)	8. Deliver Load
9. Load Clear & Red Light (Start of Escape)	9. Set Half Flaps, Start Ramp and Door Closure Accelerate to Below Door Placard
10. Ramp and Door Closed	10. Retract Flaps & Slats; Accelerate to Egress Airspeed (250-350 KCAS)

NOTE: For a descending slowdown, descend at 160 KCAS with half flaps. When reaching drop altitude, select final flaps and slow to drop airspeed.

19.11. Navigation to the CARP. Accurately positioning the aircraft to the release point is the most critical phase of the airdrop mission. The primary method for navigating to the CARP is using a MC-calcu-

lated release solution updated with GPS. Alternate methods (using radar beacons, SKE, GRADS, VIRS, pilot-directed visual releases) are available, provided ground forces are willing to accept less airdrop accuracy.

19.11.1. The mission computer determines the release point based on desired point of impact, desired airspeed/altitude, payload and parachute information, and atmospheric data entered for the airdrop. The computed location is then provided to the flight plan. For active flight plan airdrops, warning cues are normally controlled according to the Time To Go (TTG) indicated on the Airdrop Progress Page. Inside of one minute, the warning cues are controlled according to the TTG indicated by the selected airdrop timer. The PF is responsible for ensuring the aircraft is positioned at the release point at green light and for maintaining drift-corrected track through red light. The PNF is responsible for ensuring a count down to green light, the green light call, and the red light call are given.

19.11.2. Crew coordination is of the utmost importance to ensure all advisories and checklists are completed, proper DZ line-up is maintained, the point-of-impact (PI) is identified (if VMC), and time over target (TOT) is within established tolerances.

19.12. GPS Airdrop. GPS airdrops rely on high precision coordinates to accurately position the aircraft at the CARP and is the preferred method for C-17 airdrop. GPS airdrop accuracy is not affected by night or IMC conditions. When visual references are available, crews will ensure the airdrop load will impact the DZ or call a no drop. A preflight drop box will be computed and updated on the route as needed. During the "slowdown checklist", the following items must be confirmed if planning to drop in IMC:

19.12.1. At least one GPS receiver will be updating with no "RAIM alert" messages present.

19.12.2. No "degraded NAV ACC" messages will be present.

19.13. Pilot-Initiated Airdrops. Non SOLL-II crews require MAJCOM/A3/DO approval before accomplishing actual pilot directed airdrops or GRADS.

EXCEPTION: Pilot directed airdrops may be accomplished for training on dry passes only.

Chapter 20

AEROMEDICAL EVACUATION

Section 20A—General Information

20.1. Mission.

20.1.1. This chapter applies to C-17 aircrews, Aeromedical Evacuation Aircrews and all management levels concerned with operations of the C-17 aircraft. All operators involved in Aeromedical Evacuation missions on C-17 aircraft will use this AFI.

20.1.2. C-17 aircraft may be used for AE transport of ill or injured DoD members and their dependents. These AE missions may be directed at any time by C2 agencies. AE personnel will utilize the procedures in applicable AFI/H 11-XXX and 41-XXX series, in conjunction with this publication, to accomplish the AE mission.

Section 20B—AE Command and Control

20.2. Operational Control and Reporting of Aeromedical Evacuation Forces.

20.2.1. HQ AMC is lead command for Aeromedical Evacuation. HQ AMC Directorate of Operations (AMC/A3) is the executive agent for operational AE missions.

20.2.2. Command and control of Aeromedical Evacuation missions is the same as other airlift missions.

20.2.3. The PIC is responsible for ensuring the safety of the flight crew, and all patients and passengers. The Medical Crew Director (MCD) is responsible for providing medical care to the patients. In matters concerning flight safety, decisions of the PIC are final; in matters of patient care, decisions of the MCD are final.

20.2.4. The MCD will advise the PIC on patient's condition or use of medical equipment which may affect aircraft operations.

20.2.5. HQ AMC Command Surgeon (AMC/SG) is responsible for providing clinical standards and procedures concerning the treatment of patients in-flight.

20.2.6. The Aeromedical Evacuation Operations Officer (AEEO), if available, is responsible for supervising flight line execution of AE missions. The MCD is directly responsible for the safety and medical well being of patients on the aircraft and coordinates enplaning and deplaning procedures with the AEEO and supporting agencies.

20.3. Alerting Procedures.

20.3.1. At all locations AMC C2 agency will alert the PIC who will alert the MCD. The MCD will alert the medical crew. The goal is to link the primary aircraft commander, local AMC C2 agency and MCD before mission execution.

20.3.2. When the AE crew is staged separate from the front-end crew, the MCD will contact AMC local C2 agency and establish alert, show time, etc. with the C2 agency. The MCD will make every effort to communicate with the front-end crew any mission irregularities prior to crew rest. Utilize

local AMC C2 agency to leave messages for non-emergency. Crew rest will be based on scheduled launch time. Do not violate crew rest.

20.3.3. The local AMC C2 agency will provide PIC/MCD AE mission information when he/she checks on mission status. Local C2 agency will be the link between the AE crews and the PIC, thus permitting mission status updates to both parties without interruption of crew rest.

20.3.4. AE mission requirements can change depending on clinical status of patient(s) and aircraft availability. There will be occasions when aircraft cannot depart (i.e. MX problems) or emergency patient movement that may separate an AE crew from the front-end crew. The MCD is responsible for communicating these changes with the PIC and local AMC C2 agency to de-conflict problems.

20.4. Pilot In Command Responsibilities.

20.4.1. Establish communication link with the MCD during pre-mission planning and throughout the mission.

20.4.2. Brief AE crew on the mission, flight plan, flight profile, and current threat (as applicable).

20.4.3. The PIC will fully integrate front-end and Aeromedical Evacuation Crew Members (AECM) into single crew through the entire mission to include en route transportation, dining, billeting, etc.

20.4.4. Coordinate with MCD and C2 agencies/FM for cabin altitude/flight restrictions based on patient requirements.

20.4.5. For missions with combined cargo and patients, coordinate with the MCD for loading, positioning, egress considerations.

20.4.6. Comply with hazardous cargo/passenger restrictions in AFI 24-101, *Passenger Movement*.

20.4.7. Advise AECMs of intentions to start engines, taxi, itinerary changes, in-flight difficulties, and additional responsibilities of the flight crew.

20.4.8. Transmit load messages and radio transmissions to tasking AE C2 agency as requested by the MCD.

20.4.9. Brief the MCD on additional responsibilities of the flight crew.

20.5. Loadmaster Responsibilities.

20.5.1. Assist the AE crew with aircraft systems.

20.5.2. Coordinate emergency evacuation plan with the MCD.

20.5.3. Operate aircraft systems, i.e., doors, ramps, emergency exits, etc.

20.5.4. Assist the AE crew as necessary, providing such assistance does not interfere with primary duties.

20.5.5. Operate galley and prepare food and beverages for food service provided to patients by AECMs.

20.5.6. Assist with aircraft configuration for AE operations.

20.6. Aeromedical Evacuation Crew Responsibilities.

- 20.6.1. Responsible for patient clinical care activities including loading, positioning, and off-loading.
- 20.6.2. Assist Loadmaster/maintenance crew with aircraft configuration for AE operations.
- 20.6.3. Install and remove medical equipment/supplies.
- 20.6.4. Assist the Loadmaster with observation and care of passengers when it does not interfere with primary duties.
- 20.6.5. The MCD or designated AECM should be on aircraft inter-phone (headset) for all phases of flight, and will be on aircraft inter-phone during critical phases of flight to include take-off and landing.

Section 20C—Aeromedical Evacuation Airlift Operations

20.7. Ground Operations.

- 20.7.1. Engines should be shut down during enplaning and deplaning of patients. **EXCEPTION:** ERO procedures as outlined in paragraph [20.14](#).

20.8. Refueling Operations.

- 20.8.1. Refueling normally begins after deplaning patients are off the aircraft and prior to enplaning that station's patients. The PIC and Concurrent Servicing Supervisor (CSS) shall ensure aircrew members and servicing personnel accomplish Concurrent Servicing (CS) per AFI 32-2001, *The Fire Protection Operations and Fire Prevention Program*, and TO 00-25-172.
- 20.8.2. CS may be accomplished with patients onboard provided:
- 20.8.3. The CSS coordinates with all personnel involved prior to beginning concurrent operations.
- 20.8.4. Prior to starting concurrent servicing, the total number of patients, passengers, and crew on board the aircraft will be given to the fire department.
- 20.8.5. Loading ramps/stairs are in place for immediate use and exits (excluding the overhead escape hatches) are opened for egress.
- 20.8.6. At least two AECMs (one must be a Flight Nurse [FN]) remain onboard to observe patients and assist patients in the event of an egress.
- 20.8.7. If cabin lights, electrical power to operate medical equipment and aircraft interphone are operating prior to refueling, use may be continued during servicing operations. Only those systems, switches or electrical circuits needed to operate equipment to sustain life, may be turned on and used during refueling.
- 20.8.8. Patients and passengers will not enter or exit the aircraft during servicing. Crewmembers may enter or exit the aircraft only when performing essential duties associated with the concurrent servicing operation.
- 20.8.9. Activities around the aircraft will be kept to a minimum during the refueling process. Onload/offload patient and passenger baggage prior to or after refueling.
- 20.8.10. Do not use the on board toilet facilities during servicing.

20.8.11. When the aircrew is at the aircraft, the PIC is responsible for all aspects of aircraft operations and shall inform the CSS how aircrew members will participate in passenger evacuation/safety.

20.9. Aircraft Configuration.

20.9.1. On designated ARM and operational AE missions, configure the aircraft during pre-flight, per TO 1C-17A-9 and AFI 11-2C-17V3, Addenda A.

20.9.2. Roller conveyers will be stowed, unless required for comfort/baggage pallets. Rollers on the ramp will be stowed during patient onloading and offloading operations.

20.9.3. Enplaning litter patients through the crew entrance door is authorized.

20.9.4. The Patient Support Pallet (PSP) is a pallet-based system of seat and litter accommodation. The PSP is authorized for use on the C-17.

20.9.5. The PSP will be transported to the aircraft by aerial port personnel, positioned and secured on the aircraft by the Loadmaster and configured by the AE crew.

20.9.6. Loading the patient support pallet, medical equipment, and airline seats should be accomplished before the flight crew leaves the aircraft or prior to the crew entering Crew Rest.

20.9.7. PSP configuration will be determined by patient requirements. Each seat has storage capacity for required prepositioned life support (EPOS and life vest).

20.9.8. Extenders and spacers will be used with the PSP(s) to mitigate trip hazards created by uneven surfaces between the PSP(s) and/or the C-17 integral stanchions.

20.9.9. Slight forward-aft pallet movement may occur as the pallet shifts against the pallet lock. To prevent this occurrence, secure the PSP with a cargo tie-down strap.

20.9.10. Therapeutic oxygen is an integral system on the C-17 aircraft.

20.9.11. In the event of an emergency, patients and passengers will use the Passenger Oxygen Kit (POK) or Emergency Passenger Oxygen System (EPOS).

20.9.12. AECMs will have an oxygen source available. AECMs normally use an MA-1 portable oxygen bottle, or equivalent. EPOS or EEEDs can be used as an alternate oxygen source if the preplanned flight level is below FL 350. **NOTE:** If a pressure demand regulator is used, the oxygen supply will be turned off when the personal oxygen equipment is removed.

20.9.13. Do not secure aircraft or medical equipment adjacent to an emergency exit in a manner that will prevent or impede egress.

20.9.14. Life Preservers. Use the Adult/Child life preserver for patients.

20.10. Passengers and Cargo.

20.10.1. The PIC, with the concurrence of the MCD, will ensure maximum aircraft utilization for passengers and cargo. Passenger restrictions based upon patient considerations will be identified when seats are released. The PIC will advise the appropriate C2 agency of the number seats available for passengers.

20.10.2. Cargo and passengers may be carried with patients unless a clear detriment to the health and well being of the patient or passengers can be demonstrated. The decision will be made by the MCD,

considering the need for maximum utilization of the aircraft. Conflicts will be referred to the respective tasking AE command element for a decision. Litters will be positioned forward of cargo pallets. **EXCEPTION:** If cargo is in place, and the PIC and MCD agree, patients may be transported aft of the cargo. The MCD and Loadmaster will ensure patient egress is not affected by mixed cargo/patient loads.

20.10.3. Cargo will not be bumped except in unusual/abnormal cases, and only after the MCD has coordinated with the PIC and notified the tasking AE command element.

20.10.4. Do not move ambulatory patients to litters in order to provide seating for additional patients or passengers.

20.10.5. For patient comfort and to permit inflight rest for patients use the following for missions over 4 hours in duration:

20.10.5.1. Minimum of 2 litters must be available for ambulatory patients.

20.10.5.2. One seat must be reserved for every 3 litter patients.

20.10.6. An emergency litter will be set up on all AE missions.

20.10.7. Patient Therapeutic Liquid Oxygen (PT LOX) may be transported for positioning and deposition of Operational/contingency support AE Missions.

20.10.8. A maximum of 25 PT LOX serviced units may be transported simultaneously without Hazmat certification. Processing through aerial port is not required. If shipping more than six PT LOX containers as cargo, do not cover the containers with plastic. This will prevent potential accumulation of high oxygen concentration levels. **WARNING:** Ensure the cargo floor is free from any oil or petroleum products.

20.10.9. Hazardous cargo will not normally be transported aboard AE missions.

20.10.10. AE Movement of Contaminated/Contagious Personnel. Potentially contaminated patients must be decontaminated before entering the AE system. However, in extreme circumstances, the AMC/CC is the policy waiver authority for movement of contaminated/contagious casualties/personnel. If a waiver is approved, AMC will provide the capability to move a small number of contaminated/contagious casualties (a combination of approximately 50, with a maximum of 20 contagious personnel). AMC will equip AE crew operating in designated high-threat areas with the required equipment/supplies to carry out this mission.

20.11. Crash/Fire/Rescue.

20.11.1. Aircraft carrying patient(s) will be provided CFR protection per TO 00-25-172. Stand-by CFR vehicle is not necessary during normal operations however, a CFR vehicle will be available upon request. The flight crew will coordinate CFR requirements.

20.11.2. At non-AMC bases, non-U.S. military bases, and civilian airfields, the controlling agency will coordinate the CFR coverage, as necessary. The request for CFR vehicle coverage may be denied. This will not prevent refueling operations from occurring.

20.12. AE Call Sign/Use of Priority Clearance.

20.12.1. AIREVAC Priority. The PIC may request AIREVAC priority for preferential ATC handling if a delay will affect a patient's well being. Aircraft commanders will request priority handling if AE missions are experiencing long delays during takeoff or landing phases, which will affect a patient's condition.

20.13. Not Used.***Section 20D—Contingency Operations*****20.14. ERO Procedures.**

20.14.1. ERO procedures are outlined in AFI11-2AE Volume 3. ERO procedures for loading patients are authorized for contingency operations or when AE mission requirements dictate minimum ground time. ERO procedures can be practiced/trained during ARMs, joint training operations, exercises, etc. EROs will not be used in a noncontingency environment unless mission essential.

20.14.2. The loadmaster will be positioned on the left side, at the foot of the ramp and on headset during actual onload procedures.

20.14.3. When litter patients are wearing personal gear (i.e. web belts, canteen, helmets, flak vests, etc.) and situation requires/permits, remove personal gear from patients and secure on ramp or in a designated area.

20.15. Floor Loading Procedures.

20.15.1. Floor loading of patients is authorized for all contingency operations when a time critical environment exists (i.e. non-secure landing zones, areas faced with enemy siege/hostile fire, humanitarian reasons, etc.), and minimum ground time is essential. Floor loading procedures can be practiced/trained during aeromedical readiness missions, joint training operations, exercises, etc. The cargo/ramp floor will be configured with all rollers stowed (cargo permitting). Reference AFI 11-2AE Volume 3 for specific floor loading procedures.

20.15.2. Maximum altitude for floor loaded patients is flight level 350.

Chapter 21

EMERGENCY NUCLEAR AIRLIFT (ENAF)

Section 21A—Mission Preparation

21.1. Emergency Nuclear Airlift. Airlift of nuclear weapons may be tasked at any time. The amount of preparation and assistance required depends entirely on the length of time AMC has to move the weapons.

NOTE: Use of these procedures requires SECDEF approval.

21.2. Conduct of Operations. Crews will be briefed on and receive detailed instructions from a specific OPLAN or mission directive. If there is a conflict between this regulation and the instructions in an OPLAN or mission directive, use the OPLAN or mission directive.

21.3. Emergency Nuclear Airlift Standards. In an emergency, the objective is to move the weapons safely in a short time. Crews are expected to use sound judgment and common sense in what may be a turbulent or tense environment. Comply with as many of the nuclear weapons system safety rules in AFI 11-299, *Nuclear Airlift Operations*, as possible. Pay particular attention to the following areas:

21.3.1. Nuclear weapons will be handled safely. The most immediate hazard is the high explosive that can be set off by shock or heat in most nuclear weapons. Use standard aircraft TO 1C-17A-1-9 loading procedures. Keep the loading controlled and orderly at all times. Load or handle only one item or pallet at a time. Crews may ask shipper or receiver personnel to help, but the overall aircraft loading responsibility still belongs to the aircrew. Time permitting, crews should refer to TO 1C-17A-16-1 or TO 1C-17A-16-2, section I, II, III, or IV for specific instructions that could help crews during onload or offload. Step-by-step use of the TO 1C-17A-16-1 is not necessary.

21.3.2. Load plan: See AF Form 4114, **C-17A Nuclear Floor Plan Worksheet**.

21.3.2.1. If crews are required to move the maximum number of one type of weapon, section VI of the TO 1C-17A-16-1 is the best guide to determine where to position the weapons. Use the maximum tested figure.

21.3.2.2. For mixed loads (more than one type of weapon), base the load plan on how many weapons can be properly restrained using TO 1C-17A-1-9 criteria. Do not allow weapons to touch each other when tied down.

21.3.2.3. Crews may use the TO 1C-17A-1-9 to compute shoring requirements or section VI of the TO 1C-17A-16-1, which shows parking and rolling shoring requirements for each weapon. For winching operations, the TO 1C-17A-16-1 is a good guide for positioning approach shoring.

21.3.3. Use standard TO 1C-17A-1-9 restraint criteria. Crews may use the tiedown patterns in the TO 1C-17A 16-1, which may exceed TO 1C-17A-1-9 criteria. The tiedown patterns will aid crews in floor planning a maximum tested load.

21.3.4. The route of flight will not violate restrictions in the classified United States Air Force Special Weapons Overflight Guide (SWOG). Overflying a foreign country with nuclear weapons is an extremely sensitive issue, even in an emergency airlift. Comply with the SWOG at all times. If crews don't have access to the SWOG, request a route of flight that complies with the SWOG through command and control center (C2 agency) channels. The C2 agency will ensure the route of flight is pro-

vided to the aircrew by the most expeditious means available. If no route of flight is provided, fly normal air traffic control (ATC) routings to the destination. Do not divulge the nature of cargo to any enroute ATC facility or country to obtain a specific clearance.

21.3.5. United States military custody of nuclear weapons is required. Normally, the copilot is the courier and maintains custody of the nuclear cargo for the flight. Under certain conditions, the shipper may furnish United States military couriers who will retain custody of the weapons in flight.

21.4. Aircrew Selection. All C-17 active duty aircrews may be used for ENAF. Time permitting, AMC will use a sliding scale of options, which may be one or more of the following:

21.4.1. Assign Prime Nuclear Airlift Force (PNAF) loadmasters and/or pilots so as to have one or the other on each aircraft.

21.4.2. Place PNAF pilot and loadmaster teams at the onload bases to assist with the loading and flight planning.

21.4.3. Use non-PNAF crews in a prepared OPLAN scenario with planned, organized loads.

21.4.4. Use non-PNAF crews in a short notice, bare-base environment with little or no advance preparation or assistance.

21.4.5. Use ARC crews with Secretary of Defense (SECDEF) approval.

21.5. Aircrew Requirements.

21.5.1. Crew complement will be according to the OPLAN or specific mission directive. If not specified, use a normal crew complement (basic crew, only one LM required).

21.5.2. The crew will be armed IAW AFI 11-299.

21.5.3. If crews are tasked for a mission that has a higher security classification than personnel security clearance, crews will be authorized emergency access to enough information to complete the mission. Approval authority rests with a general officer, wing commander, or wing commander equivalent and cannot be delegated.

21.6. Aircrew Briefings.

21.6.1. Crews should be briefed on the following:

21.6.1.1. Purpose of the mission.

21.6.1.2. Classification of the mission, cargo, and locations.

21.6.1.3. Itinerary, including confirmation of prior coordination for hazardous material as required by instrument flight rule (IFR) supplement and alternate airfields.

21.6.1.4. Cargo. TO 11N-20-11 line numbers should be included. Obtain line numbers from the fire department prior to loading. TO 11N-20-11 is a classified technical order that assigns an unclassified line number to each nuclear weapon.

21.6.1.5. "No lone zone," two-person concept, and security requirements.

21.6.1.6. Personnel authorized to sign for nuclear weapons at the destination.

21.6.1.7. Current intelligence, including threat analysis.

- 21.6.1.8. SWOG route of flight restrictions.
- 21.6.1.9. Airborne intercept (SWOG).
- 21.6.1.10. Jettisoning (SWOG).
- 21.6.1.11. Command Disable System (CDS) procedures.
- 21.6.1.12. Emergency procedures outlined in paragraph [21.10](#).

Section 21B—Mission Execution

21.7. General. Use these procedures in addition to the normal operating procedures in the rest of this regulation.

21.7.1. Flight Plans. Enter "hazardous cargo" and the mission number in the "other information" section of the flight plan. If crews are carrying inert weapons, trainers, or other items that could be mistaken for actual weapons by crash or rescue personnel in an emergency, enter "inert devices and the mission number."

21.7.2. Radio Calls:

21.7.2.1. Departure (onload) base. Before commencing the onload, tell the tower to notify the fire department the onload is commencing. Prior to engine start, give the controlling agency (ground or tower) the parking location and approximate engine start time and announce there is hazardous cargo aboard the aircraft. Ensure a fire truck is standing by the aircraft for engine start.

21.7.2.2. Enroute to offload base. At least 30 minutes prior to landing, contact one of the following (in this order): command post, base operations, or control tower. Pass mission number and verify that the hazardous cargo information has been received. If the arrival base does not have hazardous cargo information, request the following be relayed immediately to the crash or fire protection agency and other support agencies as appropriate:

21.7.2.2.1. Aircraft call sign, type, and mission number.

21.7.2.2.2. Estimated time of arrival (ETA).

21.7.2.2.3. Department of Transportation (DOT) explosives hazard class or division (normally 1.1).

21.7.2.2.4. Net explosive weight (NEW).

21.7.2.2.5. Line numbers from TO 11N-20-11 if requested. Obtain line numbers from the base fire department or shipper personnel prior to commencing upload at the onload location.

21.7.2.2.6. A request for isolated parking and security forces to meet the aircraft.

21.8. Custody of Nuclear Cargo. Appoint a commissioned officer to be the courier officer (a copilot or third pilot is the preferred option). The courier officer is responsible for receipt, custody, security, safety, and delivery of nuclear weapons to authorized receivers.

21.8.1. Before accepting and loading nuclear weapons, the shipper briefs the crew (at least the PIC, courier officer, and primary LM) on the nature and hazards of the cargo. If anyone on the crew does not receive the briefing, the PIC will ensure they are briefed the appropriate information before the flight. Ask the shipper to point out any specific issues the crews may need to know when handling the

weapons (i.e. tiedown points, forklift stirrups, command disable system (CDS) procedures, etc). The specific procedures in sections II, III, and IV to the TO 1C-17A-16 can also provide helpful information on how to load specific weapons.

21.8.2. Time permitting, the courier and LM will inspect the cargo before accepting custody. The courier should have the shipper verify the integrity of a weapon case and replace any broken seals. Crews may be held responsible for damage at the receiving end if crews accept a damaged weapon without documentation. Document damage or broken seals on the DD Form 1911, **Materiel Courier Receipt**, prior to signing for the weapon.

21.8.3. The courier accepts custody of the weapon by signing the DD Form 1911 provided by the shipper. Use this form to transfer cargo custody to replacement couriers.

21.8.4. Release custody of the cargo only to a replacement courier or someone authorized to sign for nuclear material. Authorized receivers are identified by the shipper, by message, or through the AMC command and control system.

21.8.5. Time permitting, refer any questions through the 18 AF TACC Command Center to TACC/XOON for resolution.

21.9. Security Procedures. The host base is responsible for providing security for the aircraft and the nuclear cargo. The courier officer (who has custody of the weapons) is the final authority on security matters; however, crews should follow the advice and procedures of the host security force as much as possible. If the situation is serious and crews will load and depart quickly, use judgment and dispense with the formalities. Prior to takeoff, the PIC will ensure through the 18 AF TACC Command Center that security support is acknowledged for all stations being transited that day.

21.9.1. Home Station. Time permitting, conduct a thorough visual search of the aircraft for unauthorized explosives or stowaways. Use a bomb detection dog if available. If time is critical, do not delay the mission to "sanitize" the aircraft.

21.9.2. Onload Base. The host base should set up a restricted area, normally with ropes and stanchions, around the aircraft.

21.9.2.1. Entry Control. Use one entry point to maintain strict control of entry into the area. The entry controller will have a roster of all personnel allowed to enter. Use a copy of the flight orders for the aircrew. Instruct the entry controller to coordinate with the aircrew courier before allowing anyone into the area. **EXCEPTION:** Allow the weapons convoy to enter the restricted area without delay.

21.9.2.2. "No lone zone." Do not allow anyone to be alone in the restricted area or aircraft when nuclear weapons are present (either inside the area or aircraft). The purpose of a "no lone zone" is to prevent any one person from tampering with a nuclear weapon. The easiest way to enforce a "no lone zone" is to always be in pairs inside the restricted area (for example, two aircrew members, two shippers, or one aircrew member and one shipper).

21.9.3. In-flight. Maintain the two-person concept throughout the flight. Do not allow anyone to be alone in the cargo compartment, crew rest area, or flight deck.

21.9.4. Arrival at En Route Base. As soon as the engines are shut down, deploy sufficient armed crewmembers around the aircraft to control access to the aircraft. Until the host base security force is established, the only personnel authorized near the aircraft are aircrew members and those support

personnel necessary to install landing gear pins, ground power, and wheel chocks. Monitor these people at all times. Keep doors closed and be prepared for an immediate departure until the host base establishes security.

21.10. Emergency Procedures.

21.10.1. Security Emergencies. If confronted with a hostile force, crews may use deadly force to protect nuclear cargo. To the maximum extent possible crews will resist any attempt by a hostile force to capture a nuclear weapon. Consider any attack on an aircraft loaded with nuclear cargo, including a hijacking attempt, as an attack against the nuclear weapons. The presence of hostages shall not deter the taking of immediate, decisive, and effective action, including the use of deadly force, to prevent unauthorized access to, removal of, or to recover a nuclear weapon. If a crew comes under attack, take the following actions:

21.10.1.1. Make an immediate takeoff, with the cargo if possible.

21.10.1.2. If the attack occurs during unloading or offloading, load the weapons as fast as possible, even if improper procedures will be used. Ensure effective cargo restraint and take off immediately.

21.10.1.3. Some weapons have a CDS that internally destroys the capability of a weapon to achieve a significant nuclear yield. The CDS will be used when capture of a weapon is imminent.

21.10.1.4. Aircrews will not use emergency destruct procedures on nuclear weapons. Emergency destruction of weapons by shaped charges requires SECDEF approval and will be accomplished by qualified personnel who have the capability to receive, authenticate, and carry out emergency destruct orders. When two properly identified shipper or receiver personnel concurrently request custody of the cargo for emergency destruct purposes, release the cargo using appropriate custody transfer procedures.

21.10.2. Jettisoning Nuclear Cargo. The LM will identify which cargo is and is not jettisonable according to the TO 1C-17A-1. In an emergency, the PIC bears a moral obligation to jettison cargo or crash-land where the least amount of damage will result. Use the CDS, if applicable, prior to jettisoning or crash-landing. Record the coordinates of each jettisoned item. Observe the jettison restrictions in the SWOG.

21.10.3. Landing in Foreign Countries. Be prudent and keep things very low key. If confronted with demands to board or inspect the aircraft, refer to the status of United States military aircraft in the DoD Foreign Clearance Guide (FCG), which states: United States military aircraft are sovereign instrumentalities. When cleared to overfly or land in a foreign territory, it is United States policy to assert that military aircraft are entitled to the privileges and immunities which customarily are accorded warships. These privileges and immunities include, in the absence of stipulations to the contrary, exemption from duties and taxation; immunity from search, seizure, and inspections (including customs and safety inspection); or other exercise or jurisdiction by the host nation over the aircraft, personnel, equipment, or cargo on board. Air Force aircraft commanders will not authorize search, seizure, inspection, or similar exercises of jurisdiction enumerated above by foreign authorities except by direction of HQ USAF or the American Embassy in the country concerned. Diplomatically, but firmly, refuse any requests to board or inspect, and get help through any available United States channel. Flash priority is authorized.

21.11. Maintenance on Aircraft Loaded with Nuclear Cargo.

21.11.1. Maintenance on an aircraft loaded with nuclear weapons will not violate safety rules normally used with aircraft loaded with conventional explosives. Ensure all maintenance and servicing is completed prior to loading nuclear weapons on the aircraft. Do not allow the following maintenance to be performed on an aircraft loaded with nuclear weapons:

21.11.1.1. Use of flame producing or uncontrolled heat-producing items that could increase the possibility of a fire .

21.11.1.2. Repairs on the fuel system, cell, and tank or other maintenance where significant fuel spills are likely to result from disconnected lines, ruptured components, etc.

21.11.1.3. Aircraft will not be jacked. The temporary lifting of one set of landing gear for minor maintenance (integral jacking) is not considered jacking.

21.11.1.4. Do not concurrently refuel, defuel, or service oxygen while loading or offloading nuclear weapons. Ensure a fire truck standing by at the aircraft during refueling, defueling, or oxygen servicing of a nuclear laden aircraft.

21.11.2. Any maintenance performed on an aircraft loaded with nuclear cargo will be monitored by the loadmaster, copilot or crew chief.

21.12. Forms Adopted. DD 1351-2, **Travel Voucher or Sub-voucher**, DD 1351-2c, **Travel Voucher or Sub-voucher (Continuation Sheet)**, DD 1610, **Request and Authorization for TDY Travel of DoD Personnel**, DD Form 1748-2, **Airdrop Malfunction Report (Personnel-Cargo)**, DD 1801, **DOD International Flight Plan**, DD 1854, **US Customs Accompanied Baggage Declaration**, DD Form 2131, **Cargo/Passenger Manifest**, CF 6059B, **US Customs Accompanied Baggage Declaration**, CF 7507, **General Declaration Outward/Inward**, AF IMT 8, **Certificate of Aircrew Qualification**, AF IMT 15, **United States Air Force Invoice**, AF IMT 315, **USAF AV Fuel Invoice**, AF IMT 457, **USAF Hazard Report**, AF IMT 651, **Hazardous Air Traffic Report (HATR)**, AF IMT 664, **Aircraft Fuels Documenting Log**, AF IMT 673, **Request to Issue Publication**, AF IMT 711B, **USAF Mishap Report**, AFTO 781, **ARMS Aircrew/Mission Data Document**, AFTO 781A, **Maintenance Discrepancy and Work Document**, AF IMT 847, **Recommendation for Change of Publication**, AF IMT 1297, **Temporary Issue Receipt**, AF IMT 1631, **NATO Travel Orders**, AF IMT 3211, **Customer Comments**, AF IMT 4075, **Aircraft Load Data Worksheet**, AMC 41, **Flight Authorization**, AMC IMT 43, **AMC Transient Aircrew Comments**, AMC IMT 54, **Aircraft Commander's Report on Services/Facilities**, AMC IMT 97, **AMC In-Flight Emergency and Unusual Occurrence Worksheet**, AF IMT 4327a, **Crew Flight Authorization**, SF 44, **Purchase Order-Invoice-Voucher**.

21.13. Forms Prescribed. AF Form 4114, **C-17A Nuclear Floor Plan Worksheet**, AFVA 11-300, **Passenger Safety Card**.

CARROLL H. CHANDLER, Lt General, USAF
DCS/Air and Space Operation

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

DoD 4500.9-R, *Defense Transportation Regulation Part V*

DoDD 4515.13-R, *Air Transportation Eligibility*

AFI 10-245, *Air Force Antiterrorism Standards*

AFI 10-403, *Deployment Planning and Execution*

AFI 10-801, *Assistance To Civilian Law Enforcement Agencies*

AFI 10-1101, *Operations Security*

AFI 11-2C-17V1, *C-17 Aircrew Training*

AFI 11-2C-17V2, *C-17 Aircrew Evaluation Criteria*

AFI 11-2C-17V3, ADDENDA A, *C-17 Configuration and Mission Planning*

AFI 11-2C-17V3, ADDENDA B, *C-17 Special Operations (FOUO)*

AFI 11-2C-17V3, ADDENDA B CL-1, *C-17 Pilot SOLL II Briefing Guides and Checklists*

AFI 11-2C-17V3, ADDENDA B CL-2, *C-17 Loadmaster SOLL II Checklist*

AFI 11-2C-17V3, ADDENDA B CL-3, *C-17 Pilot's SOLL II Fanfold Checklist*

AFI 11-202V1, *Aircrew Training*

AFI 11-202V2, *Aircrew Standardization/Evaluation Program*

AFI 11-202V3, *General Flight Rules*

AFI 11-209, *Air Force Aerial Events*

AFI 11-214, *Air Operations Rules and Procedures*

AFI 11-215, *USAF Flight Manuals Program (FMP)*

AFI 11-218, *Aircraft Operation and Movement on The Ground*

AFI 11-231, *Computed Air Release Point Procedures*

AFI 11-246V6, *Air Force Aircraft Demonstrations (C-17, C-130, C-141, C/KC/NKC-135, UH-1)*

AFI 11-299, *Nuclear Airlift Operations (FOUO)*

AFI 11-301V1, *Aircrew Life Support (ALS) Program*

AFI 11-401, *Aviation Management*

AFI 11-403, *Aerospace Physiological Training Program*

AFI 13-207, *Preventing and Resisting Aircraft Piracy (Hijacking) (FOUO)*

AFI 13-212V1, *Range Planning and Operations*

AFI 13-217, *Drop Zone and Landing Zone Operations*

AFI 21-101, *Aerospace Equipment Maintenance Management*

AFI 23-202, *Buying Petroleum Products and Other Supplies and Services Off-Station*

AFI 31-101, *The Air Force Installation Security Program (FOUO)*

AFI 31-207, *Arming and Use of Force by Air Force Personnel*

AFI 31-401, *Information Security Program Management*

AFI 32-2001, *The Fire Protection Operations and Fire Prevention Program*

AFI 33-324, *The Information Collections and Reports Management Program: Controlling Internal, Public, and Interagency Air Force Information Collections*

AFI 36-161, *Distribution Management*

AFI 36-2903, *Dress and Personal Appearance of Air Force Personnel*

AFI 48-123, *Medical Examinations and Standards*

AFI 91-202, *The US Air Force Mishap Prevention Program*

AFI 91-204, *Safety Investigations and Reports*

AFJI 11-204, *Operating Procedures for Aircraft Carrying Hazardous Materials*

AFJI 48-104, *Quarantine Regulations of the Armed Forces*

AFMAN 10-206, *Operational Reporting*

AFMAN 11-217V1, V2, *Instrument Flight Procedures*

AFMAN 15-129, *Air and Space Weather Operations -Processes and Procedures*

AFMAN 37-123, *(will convert to 33-363) Management of Records*

AFMAN 91-223, *Aviation Safety Investigations and Reports*

AFOOSH Standard 91-100, *Aircraft Flight Line - Ground Operations and Activities*

AFPD 10-9, *Lead Operating Command Weapon Systems Management*

AFPD 10-21, *Air Mobility Lead Command Roles and Responsibilities*

AFPD 11-2, *Aircraft Rules and Procedures*

AFTTP 3-1V1 (S), *General Planning and Employment Considerations*

AFTTP 3-1V2 (S), *Threat Reference Guide and Countertactics*

AFTTP 3-3.35A (U), *C-17 Combat Aircraft Fundamentals*

AMCI 11-208, *Tanker/Airlift Operations*

AMCI 11-301, *Aircrew Life Support (ALS) Program*

ATP-56A, *NATO Air to Air Refueling* (May be downloaded from the Aircrew Portal, Pubs Tab)

Joint Publication 1-02, *DOD Dictionary of Military and Associated Terms*

Abbreviations and Acronyms

ACDE—Aircrew Chemical Operations and Procedures

ACF—Acceptance Check Flight ACM-Additional Crew Member

AD—Airdrop

ADS—Aerial Delivery System

ADTD—Aircrew Data Transfer Device

AE—Aeromedical Evacuation

AECM—Aeromedical Evacuation Crew Member

AFCS—Automatic Flight Control System

AFI—Air Force Instruction

AFPD—Air Force Policy Directive

AFRC—Air Force Reserve Command

AFVA—Air Force Visual Aid

AGL—Above Ground Level

AMC—Air Mobility Command

AMCC—Air Mobility Control Center

ANG—Air National Guard

AOA—Angle of Attack

AOC—Airline Operational Control

AOR—Area of Responsibility

AP—Auto Pilot

APU—Auxiliary Power Unit

A/R—Air Refueling

ARC—Air Reserve Component

ARCP—Air Refueling Control Point

ARCT—Air Refueling Control Time

ARIP—Air Refueling Initial Point

ASRR—Airfield Suitability and Restrictions Report

AT—Auto Throttle

ATA—Actual Time of Arrival

ATC—Air Traffic Control

ATS—Auto Throttle System

AUX—Auxiliary
BARO—Barometric
BASH—Bird Aircraft Strike Hazard
BCN—Beacon
BDHI—Bearing Distance Heading Indicator
BIT—Built in Test
BTMS—Brake Temperature Monitor System
BRNAV—Basic Area Navigation Airspace
C2—Command and Control
CAT I—Category I Approach
CAT II—Category II Approach
CARP—Computed Air Release Point
CAWS—Central Aural Warning System
CB—Circuit Breaker
CCU—Communications Control Unit
CDS—Container Delivery System
CDT—Crew Duty Time
CFL—Critical Field Length
CFP—Computer Flight Plan
CIP—Core Integrated Processor
CNC—Comm/Nav Control
COMSEC—Communications Security
CPDLC—Controller Pilot Data Link Communications
CRG—Contingency Response Group
CVR—Cockpit Voice Recorder
C2IPS—Command and Control Information Processing System
DCS—Defense Courier Service
DH—Decision Height
DLC—Direct Lift Control
DME—Distance Measuring Equipment
DNAV—Degraded Navigation Mode
DZ—Drop Zone

EAR—End Air Refueling
ED—Engineering Disposition
EDP—Earliest Descent Point
EEC—Electronic Engine Control
EFCS—Electronic Flight Control System
EMCON—Emitter Control
EPR—Engine Pressure Ratio
ERO—Engine Running On/Offload
ESC—Environmental System Controller
ETA—Estimated Time of Arrival
ETE—Estimated Time En route
ETIC—Estimated Time in Commission
ETP—Equal Time Point
FAF—Final Approach Fix
FCC—Flight Control Computer
FCF—Functional Check Flight
FD—Flight Director
FDP—Flight Duty Period
FEDS—Flotation Equipment Deployment System
FIR—Flight Information Region
FM—Flight Manager
FMC—Full Mission Capable
FOD—Foreign Object Damage
FOM—Figure of Merit
FPA—Flight Path Angle
FPV—Flight Path Vector
GDSS—Global Decision Support System
G/S—Glide Slope
GMT—Greenwich Mean Time
GPS—Global Positioning System
GPWS—Ground Proximity Warning System
GRM—Gate Release Mechanism

GS—Ground Speed

HAHO—High Altitude High Opening

HALO—High Altitude Low Opening

HARP—High Altitude Release Point

HATR—Hazardous Air Traffic Report

HDG—Heading

HE—Heavy Equipment

HF—High Frequency

HQ—Have Quick

HUD—Head Up Display

IAW—In Accordance With

IAS—Indicated Airspeed

ICAO—International Civil Aviation Organization

ICS—Infant Car Seat

ICS—Intercom System

IFF—Identification Friend or Foe

IFR—Instrument Flight Rules

IFM—Integrated Flight Management

ILS—Instrument Landing System

IMT—Integrated Management Tool

INOP—Inoperative

INT—Intermediate Thrust

IP—Initial Point

IRU—Inertial Reference Unit

JOSAC—Joint Operational Support Airlift Center

KCAS—Knots Calibrated Airspeed

KIAS—Knots Indicated Airspeed

KTS—Knots

LNAV—Lateral Navigation

LOC—Localizer

LRU—Line Replaceable Unit

LSK—Line Select Key

LVAD—Low Velocity Airdrop
MACH—Mach Number
MAF—Mobility Air Forces
MARSA—Military Assumes Responsibility for Safe Altitude
MAX—Maximum Thrust
MC—Mission Capable
MC—Mission Computer
MCD—Medical Crew Director
MCD—Mission Computer Display
MCK—Mission Computer Keyboard
MCT—Maximum Continuous Thrust
MDA—Minimum Descent Altitude
ME—Mission Essential
MEL—Minimum Equipment List
MFC—Multifunction Control
MFD—Multifunction Display
MNPS—Minimum Navigation Performance Specification
MDS—Mission Design Series (e.g., C-17)
MWS—Missile Warning System
NDB—Non Directional Beacon
NEW—Net Explosives Weight NM-Nautical Mile
OAT—Outside Air Temperature
OBIGGS—On Board Inert Gas Generating System
OIS—Obstacle Identification Surface
PBIT—Preflight Bit
PDM—Parachute Deployment Mechanism
PF—Pilot Flying
PFD—Primary Flight Display
PIC—Pilot In Command
PNF—Pilot Not Flying
PPI—Plan Position Indicator
RA/BA—Radar Altitude/Barometric Altitude

RAT—Ram Air Turbine
RCR—Runway Condition Reading
RDS—Records Disposition Schedule
RNAV—Area Navigation
RNP—Required Navigation Performance
RSC—Runway Surface Condition
RVSM—Reduced Vertical Separation Minimum
RZ—Rendezvous
SAAM—Special Assignment Airlift Mission
SATCOM—Satellite Communications
SC—Secure Communications
SC/EFC—Spoiler Control/Electronic Flap Computer
SED—Standby Engine Display
SID—Standard Instrument Departure
SKE—Station Keeping Equipment
SPR—Single Point Refueling
SPRO—Semi-Prepared Runway Operations
STT—Special Tactics Team
TAWS—Terrain Awareness Warning System
TCAS—Traffic Collision Avoidance System
TO—Technical Order
TOGA—Takeoff/Go-Around
TOLD—Take off and Landing Data
TOT—Time Over Target
UARRSI—Universal Aerial Refueling Receptacle Slipway Installation
V PROF—Vertical Profile
VNAV—Vertical Navigation
WACS—Warning and Caution System
WAP—Warning and Caution Annunciation Panel
WCCS—Wireless Comm Control System
X-FEED—Crossfeed
XFER—Transfer

XMIT—Transmit

ZFW—Zero Fuel Weight

ZM—Zone Marker

Terms

Aeromedical Evacuation (AE)—Movement of patients under medical supervision between medical treatment facilities (MTFs) by air transportation.

Aeromedical Evacuation Crew member (AECM)—Qualified Flight Nurse (FN) and Aeromedical Evacuation Technician performing AE crew duties.

Aeromedical Evacuation Operations Officer (AEOO)—Medical Service Corps (MSC) officer or medical administrative specialist or technician (AFSC 4A0X1) assigned to the AE system to perform duties outlined in applicable Air Force policy directives, instructions, 41-series handbooks, and this AFI.

Air Force Component Commander (AFCC)—In a unified, sub-unified, or joint task force command, the Air Force commander charged with the overall conduct of Air Force air operations.

Air Force Mission Support System (AFMSS)—A computer system capable of mission planning and generating flight plans used by C-17 mission computers.

Air Force Satellite Communication—Satellite communications system capable of 75 bits per second (BPS) record message traffic.

Air Mobility Control Center (AMCC)—Provides global coordination of tanker and airlift for AMC and operationally reports to the 18 AF 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 Division (AMD)—As one of five divisions of the AOC the AMD integrates and supports air mobility missions. They coordinate with the JFC, theater AMOCC (if established) and 18 AF TACC in planning, tasking and executing theater air mobility missions.

Air Refueling Control Point (ARCP)—The planned geographic point over which the receiver(s) arrive in the observation/pre-contact position with respect to the assigned tanker.

Air Refueling Exit Point (A/R EXIT PT)—The designated geographic point at which the refueling track terminates. In a refueling anchor it is a designated point where tanker and receiver may depart the anchor area after refueling is complete.

Air Refueling Initial Point (ARIP)—A point located upstream from the ARCP at which the receiver aircraft initiates a rendezvous with the tanker.

Air Reserve Component (AFRC)—Refers to Air National Guard and Air Force Reserve Command forces, both Associate and Unit Equipped.

Air Route Traffic Control Center (ARTCC)—The principal facility exercising en route 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.

Aircraft/Weapon System/Equipment (AWE)—Software that makes AFMSS flight plans/products specific to the C-17 or other aircraft.

Aircrew Chemical Defense Ensemble (ACDE)—Individually fitted aircrew unique chemical protective equipment for the sole purpose of protecting aircrew while flying into and out of a chemically contaminated environment.

Aircrew Eye/Respiratory Protective System (AERPS)—New generation individually sized aircrew chemical defense protective equipment system designed to protect aircrew from toxic chemical exposure to the head, neck, face, eyes, and respiratory tract.

Airfield Suitability and Restrictions Report (ASRR)—A quarterly publication, published by HQ AMC/A36AS, to establish airfield suitability and restrictions for AMC and AMC-gained C-5, C-9, KC-10, C-17, C-21, C-130, KC-135, and C-141 aircraft operations. GDSS/GDSS2 (when available) provides the most up to date information available. Others use as information only, or as directed by the assigned MAJCOM.

Airlift—Aircraft is considered to be performing airlift when manifested passengers or cargo are carried.

Allowable Cabin Load (ACL)—The maximum payload which can be carried on an individual sortie. Also called ACL.

AMC History System (AHS)—Database that compiles and stores tanker activity input by line units.

Augmented Crew—Basic aircrew supplemented by additional qualified aircrew members to permit in-flight rest periods.

Automated G File (AGILES)—Computer system designed to store/access aircraft technical order information and maintenance fault data;

Base Station—A functional AFMSS station with one or more work stations normally located in a tactics office or base operations facility. The base station is air transportable to forward operating environments. The most common configuration is a dual station unit.

Bird Aircraft Strike Hazard (BASH)—An Air Force program designed to reduce the risk of bird strikes.

Bird Watch Condition Low—Normal bird activity [as a guide, fewer than 5 large birds (waterfowl, raptors, gulls, etc.) or fewer than 15 small birds (terns, swallows, etc)] on and above the airfield with a low probability of hazard. Keep in mind a single bird in a critical location may elevate the Bird Watch Condition (BWC) to moderate or severe.

Bird Watch Condition Moderate—Increased bird population (approximately 5 to 15 large birds or 15 to 30 small birds) in locations that represent an increased potential for strike. Keep in mind a single bird in a critical location may elevate the BWC to moderate or severe.

Bird Watch Condition Severe—High bird population (as a guide, more than 15 large birds or 30 small birds) in locations that represent an increased potential for strike. Keep in mind a single bird in a critical location may cause a severe BWC.

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.

Category I Route—Any route that does not meet the requirements of a category II route, including tactical navigation and over water routes.

Category II Route—Any route on which the position of the aircraft can be accurately determined by the overhead crossing of a radio aid (NDB, VOR, TACAN) at least once each hour with positive course guidance between such radio aids.

Chalk Number—Number given to a complete load and to the transporting carrier.

Charge Medical Technician (CMT)—AET responsible for ensuring completion of enlisted aeromedical crew duties.

Chart Update Manual—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. 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.

Circular Error Average—Indicator of the accuracy of an airdrop operation. It is the radius of a circle within which half of the air-dropped personnel and items or materiel have fallen.

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.

Combat Control Team (CCT)—A small task organized team of Air Force parachute and combat diver qualified personnel trained and equipped to rapidly establish and control drop, landing, and extraction zone air traffic in austere or hostile conditions. They survey and establish terminal airheads as well as provide guidance to aircraft for airlift operations. They provide command and control, and conduct reconnaissance, surveillance, and survey assessments of potential objective airfields or assault zones. They also can perform limited weather observations and removal of obstacles or unexploded ordinance with demolitions.

Combat Mission Folder—Folder containing information pertinent to a combat mission. It is used for mission preparation and execution and includes logs, strip charts, predictions, photos, images, etc. See Mission Planning Folder (MPF).

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. Also called C2.

Command and Control (C2) Center—Each C2 Agency provides supervision, guidance, and control within its assigned area of responsibility. For the purpose of this AFI, C2 Agencies include operations centers, command posts, Air Mobility Division, Contingency Response Groups, air mobility control centers, and tanker task forces.

Command and Control Information Processing System (C2IPS)—Computer-based information transmission and information handling for command and control functions associated with the Director of Mobility Forces (DIRMOBFOR), Air Mobility Division (AMD), Wing Operations Center (WOC), and CRG. Interfaces to and automatically updates the Global Decision Support System (GDSS).

CONFERENCE HOTEL—Communication conference available to help aircrews solve in-flight problems that require additional expertise.

Contingency Mission—Mission operated in direct support of an OPORD, OPLAN, disaster, or emergency.

Contingency Response Group (CRG)—Team of qualified Air Force personnel established to control, coordinate, and function as an Air Force tanker and airlift C2 facility at a base where normal AMC C2 facilities are not established or require augmentation. CRGs support and control contingency operations on both a planned and no-notice basis.

Critical Phase Of Flight—Takeoff, air refueling (Precontact and closer), visual or non-SKE formation, low level (below MSA), airdrop (from Pre-slowdown Checklist through DZ escape), approach, and landing.

DCS Courier—Members of the U.S. Armed Forces or civilian employees assigned to the DCS, who have completed the DCS Training School and are qualified as couriers by the Commander, DCS. DCS couriers are identified by DCS Form 9 credential sets issued by the DCS.

Deadhead Time—Duty time for crew members positioning or de-positioning for a mission or mission support function.

Designated Courier—Officer or enlisted member in the grade of E-5 or above of the US Armed Forces, or a Department of State diplomatic courier, selected by the Defense Courier Service (DCS) to accept, safeguard, and deliver DCS material as directed. A primary aircrew member should be used as a courier only as a last resort and can be designated only with the PIC's concurrence.

Desolate Terrain Missions—Any mission in excess of one hour over desert, tropical, or jungle terrain (not to include flights conducted over the CONUS).

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 an ARCT. 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 Aeronautical Flight Information File (DAFIF)—Digitized FLIP data containing airport, runway, navigation aid, and en route data. Contains both low and high altitude structures.

Digital Features Analysis Data (DFAD)—Selected natural and man-made features collected from photographic and cartographic sources.

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)—The DIRMOBFOR is the COMAFFOR's and/or JFACC's designated coordinating authority for air mobility with all commands and agencies internal and external to the joint force. The DIRMOBFOR is normally a senior officer with an extensive background in air mobility operations and is familiar with the area of responsibility (AOR). The DIRMOBFOR provides mobility direction and guidance to the Air Mobility Division in the theater air and space operations center (AOC).

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'/NM is maintained be assured of obstacle clearance. This is normally indicated on DoD/NOAA publications by the absence of any published departure procedures.

Double Blocking—When an aircraft is required to block-in at one parking spot, then move to normal parking for final block-in. The extra time required for double blocking will be taken into account during mission planning/scheduling. To compensate for double blocking on departure, the aircrew "legal for alert time" may be adjusted to provide additional time from aircrew "show time" to departure. When double blocking is required on arrival, the aircrews entry into crew rest will be delayed until postflight duties are complete.

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 PIC 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—DZ Entry Point. A fixed point in the IFR Drop Corridor where an aircraft or formation may safely begin descent from IFR en route 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 en route altitude. Calculate the exit point based upon three-engine performance at airdrop gross weight. This point will be planned no less than four NMs track distance beyond the DZ trailing edge.

Earliest Descent Point—Earliest point in the DZ run-in course where the lead aircraft may begin IFR descent to IFR drop altitude and be assured of terrain clearance for the entire formation. Compute EDP by subtracting formation length (i.e. a 4-ship is 2 NMs long) from the computed DZ entry point.

Egress—The route portion from the last objective to the planned recovery base.

Equal Time Point—Point along a route at which an aircraft may either proceed to destination or first suitable airport or return to departure base or last suitable airport in the same amount of time based on all engines operating.

Estimated Time In Commission (ETIC)—Estimated time required to complete required maintenance.

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.

Firm Scheduled Return Time (FSRT)—Scheduling tool used by air mobility units to predict when crews will return to home station. FSRT for active duty and AFRC is defined as SRT plus 48 hours.

First Pilots—First pilots are highly experienced copilots who are qualified IAW volumes 1 and 2 of this instruction to taxi, take-off, and land the aircraft from the left seat under the supervision of a qualified aircraft commander.

Force Rendezvous Point (FRP)—Navigational checkpoint over which formations of aircraft join and become part of the main force.

Geographic and Geodetic Coordinates—These numbers indicate locations on the surface of the earth. Technically, these two types of coordinates are the same. However, for mission planners, Geographic has come to mean map-derived coordinates while Geodetic refers to mensurated or photo/survey-derived coordinates. Geodetic and geographic data must not be mixed during calculations.

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. GDSS2 will assume AMC's primary C2 platform when fielded.

Global Decision Support System 2 (GDSS2)—AMC's primary execution command and control system to replace C2IPS and GDSS. GDSS2 is used to manage the execution of AMC airlift and tanker missions.

Global Patient Movement Requirements Center (GPMRC)—A joint activity reporting directly to the Commander in Chief, US Transportation Command, the Department of Defense single manager for the regulation of movement of uniformed services patients. The Global Patient Movement Requirements Center authorizes transfers to medical treatment facilities of the Military Departments or the Department of Veterans Affairs and coordinates intertheater and inside continental United States patient movement requirements with the appropriate transportation component commands of US Transportation Command. See also medical treatment facility.

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 (HAZMAT)—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, i.e., 1.1, 2.3, 6.1, etc.

Home Station Departure—For the purposes of **Chapter 4** of this instruction, home station departure refers to a flight duty period which begins at the unit's home base and is planned to terminate at another location.

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.

Interfly—The exchange and/or substitution of aircrews and aircraft between Mobility Air Forces (MAF) including crew members and/or C-17 aircraft from AETC, PACAF, and AMC-gained AFRC forces.

In-Place Time (IPT)—Time when an aircraft and crew are at an operating base and prepared to load for the mission.

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. HQ AMC publishes JA/ATT taskings in AMC OPOD 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).

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.

L-Band SATCOM—600 BPS satellite communications (SATCOM) system contracted through the International Maritime Satellite Organization (INMARSAT), used primarily for command and control. The system consists of a satellite transceiver, a laptop computer, and a printer.

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 (or an off-station training mission), generated for training or evaluation, and executed at the local level.

Maintenance Status:

A-1—No maintenance required.

A-2 (Plus Noun)—Minor maintenance required, but not serious enough to cause delay. Add nouns that identify the affected units or systems, i.e. hydraulic, ultra high frequency (UHF) radio, radar, engine, fuel control, generator, boom or drogue, etc. Attempt to describe the nature of the system malfunction to the extent that appropriate maintenance personnel will be available to meet the aircraft. When possible, identify system as mission essential (ME) or mission contributing (MC).

A-3 (Plus Noun)—Major maintenance. Delay is anticipated. Affected units or systems are to be identified as in A-2 status above.

A-4—Aircraft or system has suspected or known biological, chemical, or radiological contamination.

Medical Crew Director (MCD)—FN responsible for supervising patient care and AEMCs assigned to AE missions. On missions where an FN 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—1. The task, together with the purpose, that clearly indicates the action to be taken and the reason therefore. 2. In common usage, especially when applied to lower military units, a duty assigned to an individual or unit; a task. 3. The dispatching of one or more aircraft to accomplish one particular task.

Mission Advisory—Message dispatched by command and control agencies, liaison officers, or PICs advising all interested agencies of any changes in status affecting the mission.

Mission Contributing—Any discrepancies that is not currently designated Mission Essential (ME).

Mission Essential—An item, system, or subsystem component 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. Also called OPCON.

Operational Missions—Missions executed at or above 18 AF TACC level. Operational missions termed "CLOSE WATCH" include CORONET missions and AFI 11-221, *Air Refueling Management (KC-10 and KC-135)*, priority 1, 2, and 3 missions tasked by the 18 AF TACC. Other operational missions such as deployment, re-deployment, reconnaissance operations, operational readiness inspections (ORI), AMC channel or SAAM, and JA/ATT missions may be designated "CLOSE WATCH" as necessary.

Operational Risk Management (ORM)—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.

Opportune Airlift—Transportation of personnel, cargo, or both aboard aircraft with no expenditure of additional flying hours to support the airlift.

Originating Station—Base from which an aircraft starts on an assigned mission. May or may not be the home station of the aircraft.

Over water Flight—Any flight that exceeds power off gliding distance from land.

Pathfinder Aircraft—Aircraft that precedes the main force to the objective area. Its primary functions are to airdrop the CCT and provide current weather information to the main force.

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, i.e. 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 PIC for not complying with permit to proceed procedures.)

Point Of No Return—A point along an aircraft track beyond which its endurance will not permit return to its own or some other associated base on its own fuel supply.

Point of Safe Return—Most distant point along the planned route from which an aircraft may safely return to its point of departure or alternate airport with required fuel reserve.

Portable Mission Planning System (PMPS)—Man-portable AFMSS computer system capable of loading flight plan information into the C-17 mission computer.

Positioning and De-positioning 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.

Provisional Courier—A person assigned outside the DCS, nominated by his/her parent command, and trained by the DCS to act as the DCS representative in a specific area.

Quick Stop—Set of procedures designed to expedite the movement of selected missions by reducing ground times at en route or turnaround stations.

Ramp Coordinator—Designated representative of the C2 agency whose primary duty is the coordination of ground handling activities on the ramp during large scale operations.

Scheduled Return Time (SRT)—Scheduling tool used by air mobility units to predict when crews will return to home station. It allows force managers to plan aircrew availability and provide crews visibility over monthly flying activities. AMC and AMC-gained aircrews (except those on standby at home station) will have an SRT established on their flight orders.

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.

Section—1. As applied to ships or naval aircraft, a tactical subdivision of a division. It is normally one-half of a division in the case of ships, and normally six aircraft in the case of aircraft.

Serial—Normally consists of 12 aircraft (2 sections or 4 elements).

Significant Meteorological Information (SIGMET)—Area weather advisory issued by an ICAO meteorological office relayed to and broadcast by the applicable ATC agency. SIGMET advisories are issued for tornadoes, lines of thunderstorms, embedded thunderstorms, large hail, severe and extreme turbulence, severe icing, and widespread dust or sand storms. SIGMETs frequently cover a large geographical area and vertical thickness. They are prepared for general aviation and may not consider aircraft type or capability.

Special 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.

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 (Airborne)—Specified time when paratroopers will be seated in the aircraft with seat belts fastened. Normally, this time is 5 minutes before Air Force Stations time.

Stations Time (Air Force)—Normally, 45 minutes before takeoff time for the C-17. 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—Non-SKE formations, SKE formations larger than two-ships, ALZ landings, airdrop operations, low level routes, and threat avoidance/tactical approaches/departures.

Tanker Airlift Control Center (18 AF TACC)—The 18th Air Force 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 18 AF TACC contains the following functions: Command and Control, Current Operations, Mission Support, Logistics Operations Center, Aerial Port Control Center, Flight Planning, Diplomatic Clearance, Weather, and Mission Support Planning Office. Also called 18 AF TACC.

Tanker Task Force (TTF)—Force of tanker aircraft assembled and tasked to perform a specific function.

Theater Patient Movement Requirements Center (TPMRC)—Organization within a specific theater of operations responsible for coordination of intra- and inter-theater patient movement.

Time Out—Common assertive statement used to voice crew member concern when safety may be jeopardized.

Topographical Line Map (TLM)—A map scaled at 1 inch = 50,000 feet.

Top Secret Control Officer—The person who receives, controls, safeguards, and keeps access records on all TOP SECRET information obtained or originated by activities under his or her control.

Training Mission—Mission executed at the unit level for the sole purpose of aircrew training for upgrade or proficiency. Does not include operational missions as defined in this AFI.

Transportation Working Capital Fund (TWCF)—Formerly known as Defense Business Operations Fund-Transportation (DBOF-T). Part of the Air Force Working Capital Fund (AFWCF). Normally used to cover costs that can be recovered from an air mobility customer. Examples include TDY costs, site surveys of CRG or airlift unit deployment bed down locations, airlift unit level mission planning expenses, and support or contract costs for deployed TWCF units/personnel.

Unilateral—Operations confined to a single service.

Unit Move—Unit relocation in support of a contingency or exercise deployment/redeployment. These moves are made to desired areas of operation or to designated locations, and are made IAW a troop movement schedule.

World Vector Shoreline (WVS)—A chart that displays shorelines, political boundaries, and country names only.

Zero Fuel Weight—Weight, expressed in pounds, of a loaded aircraft not including wing and body tank fuel. All weight in excess of the maximum zero fuel weight will consist of usable fuel.