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C-17 OPERATIONS PROCEDURES

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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.C-17. 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 33-363, Management of Records, and disposed of in accordance with the Air Force Records Disposition Schedule (RDS) located at **https://www.my.af.mil/afrims/afrims/afrims/rims.cfm** 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 as amended by Executive Order 13478, Amendments to

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(452AMW) This supplement applies to all personnel assigned or attached to the 452d Air Mobility Wing (AMW). This publication applies to Air Force Reserve Command (AFRC) March ARB-assigned Units. The purpose of this supplement is to identify 452 OG C-17A operational procedures and implement unit responsibilities established in AFI 11-2C17V3, *C-17 Operations Procedures*. The 452d Operations Group Commander (OG/CC) is the waiver authority for this supplement. Refer recommended changes and questions about this publication to the Office of Primary Responsibility (OPR) using the AF Form 847, *Recommendation for Change of Publication;* route AF Form 847s from the field through Major Command (MAJCOM) publications/forms managers. Ensure all records created as a result of processes prescribed in this publication are maintained in accordance with Air Force Manual (AFMAN)33-363, *Management of Records*, and disposed of in accordance with Air Force Records Information Management System (AFRIMS) Records Disposition Schedule (RDS) located at **https://www.my.af.mil/gessaf61a/afrims/afrims**/. 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 CHANGES

This document is substantially revised and must be completely reviewed. Major changes include stabilized approach criteria; use of automation; Verbalized, Verify, and Monitor; critical action coordination; taxi obstruction criteria from tail/ramp; volcanic ash operations; APU usage; Arrival/Departure Briefings; elimination of touch and go certified ACs; fuel efficiency procedures; 18-hour Augmented Duty Day; MEL list; use of non-mission related material; VFR procedures; and high altitude airdrop. Major changes were a result of standardizing AFI 11-2MDSv3 across all Mobility Air Forces (MAF) platforms. This document is based on the AMC 11-2MDSv3 template. Some paragraphs were renumbered as a result.

(452AMW) This document is substantially revised and must be completely reviewed.

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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-17A 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. 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-17A 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-17A aircraft.

1.2.1. **(Added-452AMW)** If information contained in this supplement is found to be in conflict with other Air Force instructions, notify 452 OG/OGV as soon as possible with discrepancy information.

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 the contents of this instruction is the MAJCOM/A3/DO with mission execution authority. For TRANSCOM/AMC operational missions under Operational Control (OPCON) of 18 Air

Force, 18 AF/CC is the waiver authority. For aircrews that change Operational Control (CHOP) to a COCOM, the COMAFFOR is the waiver authority.

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 para. 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.

1.4.2.4. **(Added-452AMW)** Waiver authority for any local training mission will be obtained prior to home station departure from the 452d Operations Group Commander (OG/CC). Communication with the 452 OG/CC can be coordinated through the 452 AMW Command Post.

1.4.2.5. **(Added-452AMW)** The pilot in command (PIC) shall attempt to consult with 452 OGV prior to requesting any AMC waiver. Ensure any approved waiver and the assigned waiver identification number are documented in the AFTO 781A.

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

1.5.1. 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 Form 673, *Request To Issue Publication*) to HQ AMC/A3V, 402 Scott Dr., Unit 3A1, Scott AFB IL, 62225-5302.

1.6. Local Supplement Coordination Process. Operations Group commanders (OG/CCs) shall define local operating procedures to this instruction in a unit supplement. OG/CCs shall obtain approval from Numbered Air Force (NAF), if applicable, and MAJCOM prior to releasing their supplement. Send an electronic copy of the approved version to MAJCOM/A3V, or NAF/DO (if applicable). MAJCOM/A3V will send approved copies to AMC/A3V.

1.7. Improvement Recommendations. Send comments and suggested improvements to this instruction on an AF Form 847, *Recommendation for Change of Publication*, through channels to HQ AMC/A3V, 402 Scott Drive Unit 3A1, Scott AFB IL, 62225-5302 or post to the Air Mobility Command Change of Publication Community of Practice **https://wwwd.my.af.mil/afknprod/ASPs/CoP/EntryCoP.asp?Filter=OO-TO-AM-01** IAW procedures in AFI 11-215, *USAF Flight Manual Program (FMP)* and MAJCOM Supplement.

1.8. 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 102, *The DoD Dictionary of Military and Associated Terms*. See **Attachment 1** for common terms used herein.

1.9. 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: 618 Air and Space Operations Center (AOC) Tanker Airlift Control Center (TACC) (618 AOC (TACC)), Pacific Air Forces (PACAF) or United States Air Forces Europe (USAFE) Air and Space Operations Centers (AOCs), Air National Guard (ANG) Command Center, Air Force Reserve Command (AFRC) Command Center, theater Air and Space Operations Centers (AOC), Air Mobility Division (AMD), Joint Operational Support Airlift Center (JOSAC), Special Air Missions Division, Office of Assistant Vice Chief of Staff, USAF (CVAM), Unit Command Posts, Air Mobility Control Centers (AMCC), Contingency Response Groups (CRG), Contingency Response Elements (CRE), and Special Tactics Teams (STT). 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 pilot in command 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 MAJCOM instruction, for procedures and requirements.

2.2.1.1. AFRC Current Operations (AFRC/A3OO) is approval authority for AFRC 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. PICs are:

2.3.1. In command of all persons aboard the aircraft and are the final responsibility and authority for the safe operation and conduct of the flight, regardless of who is at the controls.

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. Fly unscheduled training events (for example, air refueling (AAR) 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 passing mission progress reports (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 Personnel (MEP), 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 due to insufficient fuel or 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, 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 Agency. Transmit mission data (arrival, departure, and advisory messages) to the controlling C2 agency by any means available (preference in the following order: DSN/commercial line, Airline Operational Control (AOC), HF/ALE, Iridium Phone, AERO-I). For critical C2 communications, i.e. aircraft waiver request, maintenance delay, etc., voice communications are the primary method.

2.5.3. C2 Communications.

2.5.3.1. Airline Operational Control (AOC). Do not send messages solely for crew training unless a transmission time has been pre-coordinated with TACC/XONI.

2.5.3.1.1. IFM Missions. Airline Operational Control (AOC) will be the primary means of routine communications between FM/C2 and aircrew. AOC is not a secure means of communication. Do not pass classified information via AOC. For critical C2 communications, voice communications are the primary method.

2.5.3.1.2. NON-IFM MISSIONS. Initialize Airline Operational Control, but do not send messages unless other channels of communication are not available. Initializing allows TACC to take advantage of automated position reporting, free text capability and automated OOOI (OUT OF BLOCKS, OFF GROUND, ON GROUND, and IN

BLOCKS) reporting. Non-IFM missions must realize that messages will be handled on a first come, first serve basis as resources permit.

2.5.3.2. ALE. The ALE system is provided as an alternate means of communication between the aircraft and a number of C2 agencies. When an HF radio, in SELCAL mode, is required for primary ATC, use AERO-I and/or AOC to monitor C2, in lieu of ALE. Ensure the other HF radio is not in ALE to preclude overriding ATC messages. (N/A when using CPDLC).

2.5.3.3. Combat Track II (CT II). CT II provides a secure means of communication between the aircraft and a number of C2 agencies.

2.5.3.4. 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.

2.5.3.4.1. 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.

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

2.5.3.6. Iridium Phone. Iridium phones may be used for communications between aircrews and command and control agencies when beyond-line of sight C2 is required and other line of sight communications, HF or SAT-2000 do not provide proper security or timeliness. For more information, refer to AMC Iridium Satellite Phone CONOPS for Aircrews under the CONOPS section of the A3O website: **https://private.amc.af.mil/a3/a33/A33O**/.

2.5.3.6.1. Turn off Iridium phones within 25 feet of ground refueling operations.

2.5.3.6.2. Turn off Iridium phones during takeoff, air refueling, approach, and landing.

2.5.3.7. **(Added-452AMW)** All March ARB assigned aircrews will make a 30-minute out call to 452 AMW Command Post on 349.4 or DSN/commercial (see **para 2.8.1**) with ETB, maintenance status, cargo, passengers on board and any other pertinent or requested information. Identify to 452 AMW Command Post any maintenance requirements which may require an engine run (e.g., SOV/Bleed Air problems).

2.5.3.8. **(Added-452AMW)** Coordinate with 452 AMW Command Post for itinerary changes, early departure/landing and landing time or block-in time extensions for any

training flight or mission. Before an aircraft commander cancels a local training flight and/or releases a crew, he/she will obtain approval through 452 AMW Command Post from 452 OG/CC or 729 AS/DO, as applicable.

2.5.4. Enroute Reporting.

2.5.4.1. Make the following enroute reports to the appropriate MAF C2 agency:

2.5.4.1.1. Airborne report when departing from a location without an AMC presence.

2.5.4.1.2. Maintenance report whenever aircraft alpha status changes to code 3.

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

2.5.4.1.4. Uncoordinated aircraft intercepts via the most expeditious means available, after complying with guidance in the flight information handbook. Consideration will be given to the phase of flight and aircraft emergencies. When an airborne report is not accomplished, PICs must directly notify 618 AOC (TACC) or appropriate C2 agency upon landing. In all cases ensure local C2 and Intel agencies are informed.

2.5.4.1.5. Air to Air Refueling (AAR) Cancellation Policy. For 618 AOC (TACC)-controlled missions that were initially planned to include an AAR, if it is determined that a scheduled AAR is not required for mission accomplishment, as verified by current parameters and computer flight planning software, the flight manager (FM) will coordinate the cancellation of the AAR as early as possible in the schedule of events. The FM will immediately advise the tanker and airlift duty officers (DO), and the tanker DO will advise the tanker unit of the cancellation to allow the aircraft and crew to be released or reassigned to a different mission. The DO does not need to wait until crew show for crew input. On flight managed sorties this process will normally occur four to six hours prior to scheduled departure. If the AAR is not required for mission accomplishment but the PIC needs to perform the air to air refueling event prior to expiration of an evaluation or for required AAR currency, the PIC will contact the nearest C2 agency or stage manager to ensure that a departure leg info remark is entered into the form 59/GDSS 2 mission detail prior to entering crew rest. The remark will include the surname of the crew member(s) requiring the event.

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

2.5.4.3. 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. AOC, AERO-I, HF-Automatic Link Establishment (HF-ALE), L-Band SATCOM).

2.5.5. 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.

2.5.6. “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. For critical C2 communications, voice communications are the primary method. ***EXCEPTION:*** For AFRC/ANG missions using IFM, AFRC/ANG will provide C2.

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 (N/A for AOC / CDPLC sorties). 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.

2.5.7.2. The Flight Manager and PIC have specific duties that must be accomplished separately, but they share the responsibility for safe, risk-mitigated, effective and efficient sortie execution. Reference AFI 11-255v3 chapter 5 *IFM Responsibilities.*

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.

2.6. Mission Commander (MC).

2.6.1. Unit commanders shall designate a 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 AR, airdrop, or tactical airland operation. For AMC-tasked missions the planning agency is 618 AOC (TACC). For theater airlift missions with more than one airlift unit involved, the theater Air Operations Center (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. Crewmembers may use the 618 AOC (TACC) toll-free number, 1-800-AIR-MOBL, or DSN 312-779-0320 to contact other offices within the 618 AOC (TACC), including flight managers.

2.8.1. **(Added-452AMW)** March ARB C2 telephone numbers:

Table 2.1. (Added-452AMW) March ARB C2 Telephone Numbers.

Command Post	DSN 447-4665/1-888-452-1121/1-951-655-4665
Crew Control	DSN 447-6672/1-951-961-3347
729 AS Scheduler	DSN 447-5629/1-951-655-5629
Base Operations	DSN 447-4404/1-951-655-4404
Crew Comm	DSN 447-2534/ after hours cell 951-329-7080
Aircrew Flight Equipment	DSN 447-2013
452 OG Stan/Eval	DSN 447-3510,3573,3920

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. Enroute Maintenance Support. 618 AOC (TACC/XOCL) will support all mobility aircraft requests for parts and/or maintenance assistance on TRANSCOM/AMC missions. Refer to paragraph **2.8** for 618 AOC (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 these policies 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. Table 3.1. below summarizes crew position requirements for different crew types.

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

3.2.2. SQ/CCs shall form augmented aircrews for missions planned to take longer than a basic CDT. 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 MAJCOM/A3/DO may augment aircrews while the flight is underway. (see paragraph **3.7**, Aircrew Management, for more on CDT/FDP.)

Table 3.1. Aircrew Complement.

Crew Position	Crew Complement		
	Basic	**Augmented**	**Basic + 1 (7)**
Aircraft Commander	1 (6)	1 (6)	1 (6)
Pilot/Copilot	1	2 (1)	1(7)
Loadmaster	1 (2,3,5)	2 (4,5)	1(7)

NOTES:

(1) Pilots who have graduated from the ACIQ course may augment the crew. Pilots who have graduated from the PIQ course, (when approved by the Sq/CC) may act as the augmenting crewmember.

(2) Two loadmasters or one loadmaster and one pilot 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.

EXCEPTION: On personnel airdrop sorties, only one loadmaster is required with more than 40 jumpers planning to jump. This exception does not apply to airland segments of an airdrop mission.

(3) 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.

(4) For augmented airdrop missions, one loadmaster must be airdrop qualified; the other loadmaster may be airland qualified.

(5) Two loadmasters are required for dual-row airdrop and JPADS missions. Both loadmasters shall be qualified in the specific mission.

(6) For formation flight/airdrop, the following lead pilot requirements apply:

(a) Single-element formations. When the element consists of three aircraft, a lead pilot is required in the formation (any position). Two ship elements do not require a lead certified pilot.

(b) Multiple-element formations. A lead certified pilot 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.

(7) Basic + 1 (previously referred to as Combat Basic) is 2 pilots, 1 loadmaster, and 1 additional mission qualified C-17 pilot or loadmaster (additional crewmember will be dictated by mission requirements).

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 Form 8 *Certificate of Aircrew Qualification*) or orientation for a Senior Staff Familiarization flight may occupy a primary crew position when under direct instructor supervision. Refer to AFI 11-401, *Aviation Management*, for procedures and requirements governing senior leader flying.

3.3.2. Crewmembers who complete the Senior Staff Course will log "FP" for Flight Authorization Duty Code on the AFTO *Form 781, ARMS Aircrew/Mission Flight Data Document*.

3.3.3. Crewmembers who complete a Senior Staff Familiarization flight will log "OP" for Flight Authorization Duty Code on the AFTO Form 781, ARMS Aircrew/Mission Flight Data Document.

3.4. Pilots.

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

3.4.2. Although an alternate aircraft commander may be in the seat, overall command of the mission, crew, and aircraft remains with the PIC. At no time should the crew have any doubt who is in command of the aircraft. To prevent confusion among the crew, a change of PIC will not occur during a flight duty period unless the off-going PIC is leaving the crew.

3.4.3. SQ/CCs shall augment the PIC for missions over 16 hours Flight Duty Period (FDP) and designate those additional pilots authorized to perform PIC duties. The PIC shall brief the aircrew on the plan to transfer PIC duties.

3.4.4. Graduates of Initial Qualification Course may accomplish receiver AR under IP supervision.

3.4.5. Missions With Passengers. Only current and qualified pilots (possessing an AF Form 8, Certificate of Aircrew Qualification) will occupy pilot seats with passengers on board (N/A MEP).

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

3.4.5.2. Pilots shall not fly touch-and-go landings with passengers. Touch-and-go and stop-and-go landings are authorized with Mission Essential Personnel (MEP) on board.

3.5. Not Used.

3.6. Loadmasters.

3.6.1. 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).

3.6.2. Multiple Loadmaster CRM. To ensure good CRM when there is a multiple loadmaster requirement, the primary loadmaster will assume overall responsibility for completion of all checklists. He or she will coordinate all responsibilities and ensure no confusion exists about what duties have been accomplished.

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. If the autopilot fails after departure, consider mission requirements and determine the best course of action to preclude further mission delays due to reduced FDP. The best course of action may include diverting to an airfield with maintenance capability. Contact C2, coordinate intentions, and comply with limitations.

3.7.1.1. Basic Crew FDP. The maximum FDP for a basic aircrew (including Basic + 1) is 16 hours (12 hours when the autopilot is inoperative). All AAR and tactical events will be accomplished within the first 14 hours of the FDP. 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 PICs to exercise this option.

3.7.1.2. Augmented Crew FDP. Maximum FDP for an augmented aircrew is 24 hours (16 hours when the autopilot is inoperative). All AAR and tactical events will be accomplished within the first 18 hours of the FDP. SQ/CC need only augment the pilot portion of the aircrew when the autopilot is inoperative.

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

3.7.1.2.2. SQ/CC will augment an aircrew when FDP exceeds 16 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:

3.7.1.2.2.1. Mission profile shall include at least one 6 hour leg or two 4 hour legs. ***EXCEPTION:*** If the mission profile does not meet the leg length criteria above but includes at least one 5 hour leg or two 3 hour legs, the maximum FDP will be 18 hours. All A/R and tactical events will be accomplished within the first 14 hours of the FDP. Once an aircrew begins an 18 hour augmented day, only MAJCOM/A3/DO may extend to a 24 hour augmented day. (All other restrictions still apply).

3.7.1.2.2.2. Any AAR or airdrop shall count as an intermediate stop. ***EXCEPTION:*** Multiple drops conducted within 1 hour of each other are considered to be 1 airdrop for the purpose of “intermediate stop”.

3.7.1.2.2.3. No more than 3 intermediate stops after 14 hours of FDP.

3.7.1.2.2.4. The PIC shall validate planned leg times based on actual conditions. PICs may swap an extended ground time (4 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.*

3.7.1.4. Flight examiners administering evaluations will not exceed an augmented FDP.

3.7.1.5. Training FDP. Maximum FDP for training, Off-Station Trainers (OST), Joint Airborne/Air Transportability Training (JA/ATT), and Functional Check

Flights/Acceptance Check Flights (FCFs/ACFs) is 16 hours (12 hours when the autopilot is inoperative). Conduct the mission as follows:

3.7.1.5.1. Not used.

3.7.1.5.2. Complete all training events (i.e., FCF/ACF checks, transition events, AAR, or tactical events) during the first 12 hours of the FDP.

3.7.1.5.2.1. ANG and AFRC crews may perform all mission-related events on local training missions provided their time from start of CDT/FDP does not exceed 16 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).

3.7.2. 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 is 18+00 hours for a basic aircrew and 24+45 hours for an augmented aircrew.

3.7.3. Except as outlined below, CDT/FDP begins 1 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. Crews may self-alert with C2 (618 AOC (TACC) for AMC and AMC gained missions) concurrence prior to entering crew rest. The PIC must coordinate 618 AOC (TACC) approval required for AMC and AMC-gained missions) the self-alert time before entering crew rest. Begin CDT/FDP when the first aircrew member reports for duty.

3.7.3.2. CDT/FDP Extensions. See AFI 11-202V3. The 89 AW/CC and 6 AMW/CC are waiver authority for CVAM-directed special assignment airlift missions (SAAM) their aircrews support.

3.7.4. Mission Essential Personnel (MEP) Time. IAW AFI 11-401, *Aviation Management*, MAF aircrew members may travel as additional crewmembers (not required for the mission being flown but required for follow-on missions) as MEP. MEP will not be listed on the AFTO Form 781, will not log time, and will not accrue OFDA credit. Crewmembers may travel as MEP for a maximum of 24 hours. OG/CC or equivalent may approve crewmembers to travel as MEP in excess of 24 hours.

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

3.7.4.2. Aircrew members may travel in MEP status 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, or taxi aircraft). Crew rest is required IAW AFI 11-202V3. The CDT/FDP begins when the aircrew member reports for official duties.

3.8. Scheduling Restrictions. IAW AFI 11-202V3. In addition, SQ/CCs shall not schedule an aircrew member to fly nor will an aircrew member perform aircrew duties:

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 impaired by its after effects.

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. Following use, crewmember will be considered DNIF until cleared by a flight surgeon.

3.9. Fatigue Countermeasures Management Program.

3.9.1. AMC/A3 will establish policy for implementation of the Fatigue Countermeasures (CM) Management Program and ensure compliance with its provisions, and AMC/SG will provide clinical oversight, guidance and materials for fatigue CM education and mitigation.

3.9.2. OG/CCs will ensure Unit Operational Risk Management (ORM) programs include use of the basic fatigue countermeasures found in the AvORM worksheet. Both the manual and automated "MAF Mission Aviation ORM Worksheet" incorporate a fatigue CM risk assessment model. They are available on the AMC/A3V website under the "Pubs" tab, "Operational Risk Management (ORM)" section, and will be used by all three tiers of mission planners, as well as aircrew during the mission execution phase.

3.9.3. Flight surgeons will use the AMC-approved (lead command) fatigue CM training CDs and pamphlets provided by AMC/SGP to educate their operational fliers in venues such as clinic visits, flight physicals, Safety Down Days, pre-deployment briefings, readiness training, Commanders' Calls, First-Term Airmen Courses, base orientations and safety meetings.

3.9.4. The primary fatigue CM available to aircrew members is appropriate management of their sleep/rest cycles. Secondary CM include smart scheduling procedures aimed at managing those cycles, strategic inflight and/or ground napping techniques, and proper diet and exercise.

3.9.5. An additional fatigue CM tool available to aircrew is the No-Go Pill. The occasional use of a No-Go Pill by MAF aircrew to improve sleep quality and/or adjust circadian rhythm sleep/wake cycles is voluntary. Each individual aircrew member will, with the aid of their home station flight surgeon, determine how/if to implement the use of No-Go Pills as a fatigue CM.

3.9.6. The following directives concerning the use of No-Go Pills are as important and unbreakable as the "12 hour bottle to throttle" restriction for alcohol consumption:

3.9.6.1. Aircrew members on flight orders will not use No-Go Pills in flight.

3.9.6.2. Aircrew members will complete ground testing for any No-Go Pill they are authorized to use for operational purposes and document using MAF No-Go Pill Form 1, *Ground Testing of No-Go Pills*. In order to avoid possible drug interactions, aircrew members will inform the flight surgeon of any over-the-counter medications and/or nutritional supplements they are taking. During ground testing, aircrew members will be DNIF on an AF Form 1042 for the minimum 'DNIF' periods prescribed in paragraph 3.9.6.4. below. After ground testing of a particular No-Go Pill, the flight surgeon will complete the bottom half of the Form 1 and a "return to fly" AF Form 1042. Successful ground testing of a particular No-Go Pill establishes clearance to use it operationally IAW the Official Air Force Approved Medication guidlines.

3.9.6.3. Aircrew members may obtain NoGo Pills from any USAF or other authorized flight surgeon while at home station or off-station while TDY/deployed. Off-station/deployed flight surgeons will verify individual aircrew ground testing results via the "MAF Aircrew Medication Ground Test Card" all MAF aircrew members are required to carry.

3.9.6.4. In no case will an individual perform aircrew duties while under the effects of No-Go Pills. Individuals will use the mission report or legal for alert time to determine the latest time to take a No-Go Pill. The following are the minimum 'DNIF' periods (no AF Form 1042 required) after consuming a No-Go Pill:

3.9.6.4.1. Sonata (Zaleplon) – 4 hours minimum 'DNIF'

3.9.6.4.2. Ambien (Zolpidem) – 6 hours minimum 'DNIF'

3.9.6.4.3. Restoril (Temazepam, Class IV Controlled Substance) – 12 hours minimum 'DNIF'. NOTE: No-Go medications can affect individuals very differently. To comply with the "no aircrew duties while under the effects" restriction, it is the responsibility of each individual aircrew member to be aware of their own minimum 'DNIF' period for any No-Go Pill they use, based on their ground trial results and/or previous experiences.

3.9.6.5. Aircrew members will consider the following examples of missions prone to causing fatigue and/or sleep disruptions in their decision to use a No-Go Pill after non-medicinal counter measures have been unsuccessful:

3.9.6.5.1. Home station night launch missions with 2000-0530L show times and greater than four hours' duration.

3.9.6.5.2. Crew rest facilities lacking an optimal (i.e., quiet, air-conditioned, darkened) sleeping environment.

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

3.9.6.5.4. Rotating or stair-stepped flying schedules with greater than 6-hour flight time duration.

3.9.6.5.5. Missions that run consistently near a 12 to 14 hour duty day.

3.9.6.6. The MAF's worldwide mobility mission makes accountability for this program challenging; therefore, the following are aircrew member responsibilities:

3.9.6.6.1. Aircrew members will not operate heavy equipment during the minimum 'DNIF' period for each No-Go Pill outlined in paragraph 3.9.6.4. above.

3.9.6.6.2. Aircrew members will not take No-Go Pills within 12 hours of consuming alcohol, as their combined use unpredictably increases the effects of both.

3.9.6.6.3. Aircrew members will limit use of Ambien (Zolpidem) and Restoril (Temazepam) to a maximum of seven consecutive days and no more than 20 days in a 60-day period. Flight surgeons may prescribe up to 60 days' worth of medication (20 pills) at a time if requested by the aircrew member, unless clinically inadvisable.

3.9.6.6.4. Aircrew members will limit use of Sonata (Zaleplon) to a maximum of 10 consecutive days and no more than 28 days in a 60-day period. Flight surgeons should prescribe 60 days' worth of medication (28 pills) if requested by the aircrew member, unless clinically inadvisable.

3.9.6.6.5. If an aircrew member uses Sonata in combination with either of the other types of No-Go Pills, the seven consecutive days and 20-days in a 60 day period restrictions apply (overrides the 10 consecutive days and 28 days in a 60-day period for Sonata).

3.9.6.6.6. Aircrew members may consume more than one No-Go Pill in a 24-hour period, if operationally necessary. A second No-Go Pill of the same or different type will not be consumed while in the minimum 'DNIF' period for the previous pill.

3.9.6.6.7. The "MAF No-Go Pill Usage/Refill Form" will be used to document No-Go Pill use and refill authorization, and placed in the aircrew member's medical record. Non-duty station flight surgeons will forward the form to the aircrew member's home station aerospace medicine clinic to be placed in their medical record. Flight surgeons will immediately discuss any concerns about an aircrew member's use of No-Go Pills with the individual's commander if any question of misuse arises.

3.9.6.6.8. Aircrew members on Personnel Reliability Program (PRP) status will follow PRP notification procedures if prescribed No-Go Pills.

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 hours or more, unit commanders will enter primary and MEP 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. Do not manifest aircrew members traveling in MEP status as passengers to deny pre-departure crew rest. ***EXCEPTION:*** ACC, AFRC, ANG, and AETC in accordance with AFI 11-202V3 *General Flight Rules* 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.

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 shall provide aircrews at least 16+30 hours (nuclear airlift missions will be IAW AFI 11-299) ground time between engine shutdown and subsequent takeoff.

3.10.3.1. Mission 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 hours ground time.

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 ACC, AFRC, ANG, and AETC.).

3.10.5.1. For missions that keep an aircrew off station 16 or more hours, the SQ/CC shall provide 1 hour (up to 96 hours) PMCR for each 3 hours off-station. Do not enter 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. Crew Chief Work/Rest Plan. While on Temporary Duty (TDY), the deployed crew chief or MEP 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 crew chief has sufficient time in each 24-hour period to get 8 hours of uninterrupted rest. See AFI 21-101, *Aircraft and 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 takeoff time (allows 1 hour for reporting and 2+45 hours (3+15 for airdrop missions) for mission preparation). Individual locations may increase or decrease this time depending on specific capabilities. OG/CCs may establish self-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 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 shall 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 shall not alert outbound crews when inbound aircraft is on A-2 or A-3 status until maintenance technicians determine required parts are available, the aircraft will be repaired within the target ground time, and will be mission capable for the follow on mission.

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.

3.11.1.6. **(Added-452AMW)** March ARB local alerting procedures are as follows:

3.11.1.6.1. **(Added-452AMW)** March Locals: Aircrew members will self alert (no call in requirement) commensurate with a 2+45 show-time for all local training missions. For Engine Running Crew Changes, crews will show 1+30 hours before scheduled takeoff.

3.11.1.6.2. **(Added-452AMW)** Missions (including OST): All missions will be alerted by Crew Control 3+45 prior to launch. There will be no self alerts for missions or OSTs. The Crew Control will advise the AC on the current status and any changes to the mission and aircraft.

3.11.1.6.3. **(Added-452AMW)** For each aircraft departure, crews will follow the home station sequence of events published in GDSS2. Report deviations (with explanation) in the launch sequence to 452 AMW Command Post.

3.11.1.6.3.1. **(Added-452AMW)** Aircraft commanders may vary aircrew stations time, engine start, block out and takeoff to meet unique mission requirements (e.g., ARCT, etc.).

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 traveling as MEP. 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 travel as MEP 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 hours from the time of notification.

3.11.2.4. If the mission cannot depart within 4+00 hours of any scheduled takeoff, the PIC may continue the mission after a thorough re-evaluation of all ORM factors. The

controlling C2 agent will not ask the PIC to accept a takeoff outside of the 4 hour window. The PIC will coordinate with C2 to continue the mission or enter crew rest and establish a legal for alert time.

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 or MAJCOM C2 agency may keep an aircrew in ALFA/BRAVO status up to 48 hours. MAJCOM/A3/DO may extend this period for contingencies. After completion of an alert period, 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 or MAJCOM C2 agency 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 T.O 1C-17A-6and aircrew T.O 1C-17A-1preflight 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 or MAJCOM C2 agency 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.

3.13.3. CHARLIE Standby Force. When tasked, SQ/CC or MAJCOM C2 agency 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 or MAJCOM C2 agency may keep aircrews in CHARLIE status up to 72 hours. After 72 hours, release aircrews or enter them into 12 hours crew rest for directed mission, training mission, or subsequent standby force duty.

3.13.4. 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 hours, launch, release, or re-enter aircrews in 12 hour crew rest period before subsequent 12 hours Wing Standby duty.

3.13.5. 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.

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

3.13.6.1. 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.

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

3.13.7. 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.

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

3.13.7.2. 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.

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

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

3.13.7.3.2. Crew members may fly for individual currency or Special Operations/Boat Drop training. These crewmembers are not to be used as an instructor/examiner pool.

3.13.7.3.3. 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.

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

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

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

3.14.1. **(Added-452AMW)** All Orientation and Incentive Flights will be IAW AFI 11-401/AFRCSUP_1. Specific approval for these flights will be coordinated through 452 OSS/OSO, Current Operations.

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. Interfly will 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). AFRC/A3 has delegated interfly approval authority to unit OG/CCs for active duty/ANG interfly with AFRC and AFRC to AFRC interfly. Units utilizing this authority will inform AFRC/A3V. NGB/A3 has delegated approval authority to Wing Commanders for active duty/AFRC interfly with ANG, and OG/CC approval authority for ANG to ANG interfly. ANG units will ensure appropriate active duty General Officer support staff has notified the Air Force Directorate of Personnel General Officer Management Office (AF/DPG) prior to any active duty General Officer flying with their unit. Participating aircrews will use guidelines established by the host command or as specified in the OPLAN or CONOPS. ***EXCEPTION:*** AE crewmembers are exempt from interfly requirements.

3.15.1. Aircrew members shall be current and qualified in the MDS, as well as unique systems or configuration required to fly the aircraft/mission.

3.15.2. Each affected group commander who commits resources (personnel or aircraft) must concur with interfly proposal.

3.15.3. MDS conversion training.

3.15.3.1. 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 affected units, duration of the agreement, and purpose.

3.15.4. **(Added-452AMW)** Interfly agreements will be IAW this regulation and AFI11-401/AFRCSUP_1. All interfly agreements will be forwarded to 452 OG/OGV for coordination.

3.16. Mission Essential Personnel (MEP). Procedures and policies regarding MEP are contained in AFI 11-401 and AMCI 11-208. PICs will ensure personnel traveling in this status are properly authorized. Crewmembers qualified in mobility aircraft are authorized MEP 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 MEP status.

3.16.1. Crewmembers in MEP 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.

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 MEPs require valid travel/flight orders or supporting message authorizing MEP status. OG/CCs may authorize MEP status for their mobility aircrews.

3.16.2.1. **(Added-452AMW)** 452 OG MEP processes are defined in the 452 OG/OGV MEP Process Guide available through the OGV shared drive and/or sharepoint.

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

3.16.4. MEPs normally travel in the crew compartment. If the number of MEPs 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 MEPs.

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

3.16.6. MEPs 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 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, *Tanker/Airlift Operations*.

3.18. Flight Attendants on Distinguished Visitor Missions. Flight attendants may fly as primary crewmembers on designated C-17 missions. They fall under the authority of the PIC, or MC (if assigned), throughout the mission. An egress briefing will be given to the flight attendants prior to the first mission leg.

3.19. (Added-452AMW) Home Station Go/No Go. Home Station Pre-departure (Go/No Go Program) processes are available in the 452 AMW Supplement to AFI 11-202v2.

3.19.1. **(Added-452AMW)** 729 AS FCIF sign-off procedures are located at the front of the FCIF book in the briefing room and the 452 OG/OGV shared drive process guides.

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 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 accepts an aircraft with degraded equipment/systems is not committed to subsequent operations with the same degraded equipment. PICs are not committed to operations with degraded equipment accepted by another PIC.

4.2.1. 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, 4) weather or other adverse condition, and 5) 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. If time allows, the PIC will coordinate with the lowest practical level (assigned/deployed OGV in most cases) to determine the need for a waiver. If the determination is to request an MEL waiver, the PIC will initiate the MEL waiver request through the appropriate C2 agency, detailed below. The PIC is the final authority to determine whether a waiver will or will not be requested. 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. Initiate the request with MAJCOM C2 agency.

4.3.2.1. The 18 AF/CC is the waiver authority for active duty, AFRC, or ANG units flying 618 AOC (TACC)-directed missions (includes Operational Readiness Inspections). The MEL waiver authority has been delegated to AMC/A3V. Contact HQ AMC/A3V through 618 AOC (TACC).

4.3.2.2. 613 AOC-directed missions (includes Operational Readiness Inspections). The PACAF/A3 is the waiver authority. The MEL waiver authority has been delegated to PACAF/A3T. Contact HQ PACAF/A3TV through the 613 AOC.

4.3.3. Contingency Missions. COMAFFOR (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. NGB/A3 delegates waiver authority to the unit OG/CC.

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. PIC's 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. PIC's 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, Dover AFB, Elmendorf AFB, Hickam AFB, Jackson ANGB, March ARB, McChord AFB, McGuire AFB, and Travis AFB as MOBs. 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.

4.5.1.1. One-time Flight Clarification: Although a one-time flight may be authorized IAW the MEL, maintenance release (clearing the Red X) will still be required. A Red X discrepancy must be downgraded through maintenance channels prior to flight. Contact 618 AOC (TACC) to coordinate the Red X discrepancy downgrade from the MXG/CC that owns the aircraft. This condition does not preclude carrying cargo and passengers unless stipulated otherwise by the waiver. The priority is to move the airplane to a repair capable facility. PICs must coordinate with appropriate agencies to ensure repair capability exists at the destination. 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.

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

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

4.5.1.2. Other Mission and Repair Clarifications:

4.5.1.2.1. 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.

4.5.1.2.2. 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 is not applicable for troubleshooting component failure(s) in flight. However, it may be used inflight to determine aircraft status after recovery. 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. 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. Limit gear down flight operations to sorties required to move the aircraft to a suitable repair facility. Consider gear down flight only after the PIC exhausts all avenues to repair the aircraft in place.

4.9.1. 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 MAJCOM STAN/EVAL.

Table 4.1. C-17 Minimum Equipment List (MEL),

Item/System	Message/Cue /Alert	Installed	Required		Remarks/Limitations/Exceptions
			A	B	
AIR CONDITIONING / PRESSURIZATION					
Air Conditioning Pack	L or R Pack "Disagree"	2	2	1*	One complete Air Conditioning Pack system must be fully operational for flight. Both packs required for takeoff into known icing conditions, or any AE mission.
Ram Air Ventilation Valve		1	0*	0*	Both packs will be operational if inop
Ram Air Inlet/Exhaust Doors		2	1*	1*	Inop Ram Air Inlet Door will be wired open. Cargo Cmpt Heat may be Degraded.
L/R Pack		2	1*	1*	Operable switch will correspond to

DISAG Switch					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, Pack Discharge Temp/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	1*	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		13	0	0	

Conditioning Outlet Air Valve					
Avionics Cooling Fan		3	2*	2*	These requirements cover the Avionics Cooling Check Valve. 3 required for airdrop above 25K feet.
Avionics Ground Cooling Inlet Filter Assembly		1	1	0*	Will have filter installed for ground operation of avionics equipment
Avionics Cooling Differential Pressure Sensor		2	1	1	
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 Doors		3	2	2	Door can be stuck closed but must be installed
Cabin Pressurization Panel Indicator		1	1*	1*	Two of three indicators in panel will be operational
Cabin Differential Pressure Sensor		1	1	1*	See Cabin Pressurization Panel Indicator note
10000 Ft Pressure Warning Aneroid Switch		1	1	1*	One-time flight below 10K ft to the nearest repair capable facility is authorized IAW 4.5.1.1.
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*	See Cabin Pressurization Panel Indicator note
Cabin Altitude Rate of Climb		1	0	0*	See Cabin Pressurization Panel Indicator note
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
Cargo Compartment Redistribution Fan		1	0*	0*	Required for Aerial Bulk Fuel Delivery System and Dispensing System Operations
ICE AND RAIN PROTECTION					
Air Data Sensor Heating		26	26	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 L/R	2	2	2*	Will be operational for flights into known or forecast icing.
Window Defog Control Box		1	1*	1*	Windshield (Front) and Sliding window defog must be operational.
Windshield Ice Protection		2	2	0*	Will be operational for flights into known or forecast icing.
Windshield Wipers		2	2	0*	Required for operations in precipitation.
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.
BLEED AIR					
Cowl Ice Prot Burst Duct Differential Press Switch		8	8	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.
(OBIGGS) 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.
Manifold Failure Detector Controller (MFDC)		1	1	1	
CARGO MISSION SYSTEMS (AIRLAND)					
Aircrew Data Transfer Device		1	1	0*	Shall be operational if upload of Worldwide Navigation Database (WWNDB) and Terrain Avoidance Warning System (TAWS) is required.
ADTD Printer		1	0	0	
Cargo Loading Stabilizer Struts		2	2	0*	Required to integrally jack the aircraft. Mission may continue to a station with repair capability if struts are not needed for mission accomplishment.
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.
CARGO MISSION SYSTEMS					
Aerial Delivery System Controller (ADSC)		1	1	0*	All associated components for airdrop are required

Troop Door Air Deflector/Troop Door Fairings		2	2	0*	As required for personnel airdrop
Buffer Stop Assembly (BSA)		1	1	0*	Required when dropping CDS > 9400 lbs.
Gate Release Mechanism (GRM)		6	6	0*	As required for CDS airdrop
Troop Doors		2	2	0*	As required for personnel airdrop
Paratrooper Retrieval Systems		2	2	0*	As required for personnel airdrop
Left Rail Bridge Assembly		1	1	0*	Left rail bridge assembly required for equipment drop
Ramp Edge Covers		1	1	0*	Required for equipment airdrop
Retrieval Winches		2	2	0*	As required for CDS or personnel airdrop
Tow Release Mechanism		1	1	0*	Required for equipment airdrop
Roller Conveyor Release Latches			*	*	Airdrop prohibited if release latch in load path is missing, damaged, safety wired, and/or taped to the cargo floor
COMMUNICATIONS					
Communication Control Unit (CCU)	CCU FAULT X	2	2	2*	With one inop, a one-time flight to a repair capability facility is authorized IAW 4.5.1.1.
AERO-I, Airline Operational Control (AOC), CPDLC	AERO-I INOP CMU 1,2	1	0*	0*	CPDLC may be required for ATC airspace restrictions
Comm/Nav Control Panel (CNC)		2	2	1*	#1 CNC required.
Control, Intercom Set (ICS)		7	4*	4*	Pilot's, copilot's, forward and aft loadmaster's intercom control sets will be operational.
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*	1 required for flights over water or as mission dictates.
DOORS					
Crew Entrance Door	"ENTRY DOOR"	1	1	1	Indicating systems will be operational.
Emergency Exit Door	"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.
Paratroop Doors Indicating System			*	*	Indicating system shall be operational
Air Deflector Doors Indicating System			*	*	Indicating system shall be operational
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 and ramp 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*	Manual operation permissible to continue the mission to a repair facility, unless aeromed or airdrop.

Cargo Door Uplocks		2	2	2	
Cargo Ramp Latches		22	22	22*	All cargo ramp latches will be operational. Manual operation permissible, unless aeromed or airdrop.
Cargo Ramp Locks		2	2	2*	All cargo ramp electrical safety locks will be operational. Manual operation permissible, unless aeromed or airdrop.
ELECTRICAL					
Integrated Drive Generators (IDG)	"GEN/OFF" Switchlight Illuminated	4	3	3*	With two inop, a one-time flight to a repair capable facility is authorized IAW 4.5.1.1.
AC X-TIE		1	1	1*	If inop, one-time flight to a repair capable facility is authorized IAW 4.5.1.1 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 nearest repair capable facility is authorized IAW 4.5.1.1.
AC BUS TIE Relays		4	4	4*	With one inop and all IDGs operational, a one-time flight to a repair capable facility is authorized IAW 4.5.1.1.
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 repair capable facility is authorized IAW 4.5.1.1.
Transformer Rectifiers		4	3*	3*	DC X-TIE and both DC Bus Ties will be operational.
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	X BATT NOT CHARGING	2	2	2	
Loadmaster Bus 1	LM 1 BUSES	1	1	1	
Loadmaster Bus 4	LM 4 BUSES	1	1	1	

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
ENGINES/APU					
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. Continue mission to a station with repair capability IAW 4.5.1.2.1.
Ignition System		8	8	4*	CH B may be inop. If only 1 engine has CH A inop, a one-time flight to a repair capable facility is authorized IAW 4.5.1.1
Turbine Cooling Air Valve (TCA)	ENG STABILITY X	4	0*	0*	Inop Valve must be safed open for flight.
EGT Thermocouple Probes		24	20*	20*	6 probes per engine, 5 required; 2 channels per engine, 1 required.
Standby Engine Display (SED)		1	1	1	
Thrust Reversers		4	2*	0*	Inop TRs will be locked out in symmetrical pairs.
Oil Quantity Transmitter		4	0*	0*	Oil pressure and temp indications will be operational. Verify oil quantity prior to flight.
Oil Temperature Indication System		4	4	4	
Low Oil Pressure Indication		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 (amber engine start button) 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.
EMERGENCY EQUIPMENT					

FEDS Life Rafts (includes Retractor Assembly and Ladders)		3	3*	3*	Raft quantity will be adequate to accommodate total persons onboard when flight exceeds power off gliding distance from land.
FEDS Initiators		7	7	7	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
Warning Horn		4	2*	2*	One Cargo Bay and one underfloor Warning Horn must be operational
EQUIPMENT AND FURNISHINGS					
Lavatory		1	1	1*	Continue mission (if practical) to a repair capability facility with IAW 4.5.1.1. Can be inop with comfort pallet onboard. See AFI 11-2C-17V3 Addenda-A for additional guidance.
Potable Water System		1	0	0	If inop, ensure adequate supply of water
Refrigerator		1	0*	0	Mission may continue if meal refrigeration is not required or comfort pallet is available.
FIRE PROTECTION					
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 X Low"	4	4	4*	A one-time flight to a repair capable facility is authorized IAW 4.5.1.1.
Fire Bottle, APU		1	1	0*	If inop then APU may not be used.
FLIGHT CONTROLS (AUTO-FLIGHT)					
Flight Control Computer	FCC X	4	4	4*	With one FCC inop, a one-time flight to a repair capable facility is authorized IAW para 4.5.1.1. For one-time flights, both SCEFCs will be operational, no (Pitch, Yaw, Roll, Pitch Trim Fail) Fail Op messages will be illuminated and the FCC PFBIT must have been accomplished in the previous 24 hours. Air refueling may be restricted IAW T.O. 1C-17A-1. If FCC 1 or FCC 4 is the failed FCC, flight is limited to FL200.
AOA Vanes		6	6	5*	If one AOA vane is INOP, a one-time flight to a repair capable facility is authorized IAW 4.5.1.1. as long as both APDMC's are operational. Verify that only one AOA vane is INOP by comparing Avionic, EFCS, APDMC Fault List and WAP.
EFCS BLIN codes		*	*	*	No more than 1 CAT 2 fault for Home Station, and no more than 2 CAT 2 faults for Enroute departures.
Spoiler Control/ Electronic Flap Computer	SCEFC X	2	2	2*	With 1 inop and 4 FCCs operational, a one-time flight to a repair capable facility is authorized IAW 4.5.1.1 provided SCEFC PFBIT was accomplished in the previous 24 hours. Air refueling may be restricted IAW T.O. 1C-17A-1.
SCEFCS BLIN Codes		*	*	*	No more than 1 CAT 2 fault for Home Station, and no more than 2 CAT 2 faults for Enroute departures.
Electronic Flight Control Axis	FCS cue with any EFCS Axis "FAIL"	5	5	5	

	Light				
Alpha Limiter System	ALPHA LIMIT INOP	1	1	1	
Stall Warning System	STALL WARNING INOP	1	1	1*	If one system is INOP, a one-time flight to a repair capable facility is authorized IAW 4.5.1.1. STALL WARNING INOP will be annunciated when both Stall Systems are INOP.
Stick Shaker		2	2	1*	If one stick shaker is INOP, a one-time flight to a repair capable facility is authorized IAW 4.5.1.1.
Ground Proximity Warning System	GPWS FAIL	1	1	1*	If inop, TAWS is required. A one-time flight to a repair capable facility is authorized IAW 4.5.1.1
Terrain Avoidance Warning System	TAWS FAIL	1	1	1*	If inop, continue mission to a station with repair capability IAW 4.5.1.2.1.
Auto Throttles		1	0	0	
Auto Pilot Panel		1	*	*	Auto-pilot required per mission requirements
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, a one-time flight to a repair capable facility is authorized IAW 4.5.1.1.
System Fail Operation Modes	ALS, Pitch Trim, ADC Fail Op		Req	*	A one-time flight to a repair capable facility is authorized IAW 4.5.1.1.
SCEFC THRTL FAIL	SCEFC THRTL FAIL		Req	*	a one-time flight to a repair capable facility is authorized IAW 4.5.1.1.
Aileron Trim Actuator		1	1	1	
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,		1	0*	0*	MFD indication will be operational.

Aileron, Rudder, Horizontal Stabilizer					
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	
Transducer, RVDT, Stick, Roll		4	4	3*	4 required for ALZ operations.
Integrated Flight Control Module (IFCM), Rudder		2	2	2*	With the upper IFCM inop, a one-time flight to a repair capable facility is authorized IAW 4.5.1.1.
Elevator Actuator, Ratio Changer		1	1	1	
Autothrottle Disengage Switch		1	1	0*	Required for A/R missions.
Integrated Flight Control Module, Elevator		4	4	4	
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		*	*	If no A/R is planned, continue mission to a station with repair capability IAW 4.5.1.2.1.
FUEL					

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, Wing Tanks		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.
Transfer Pump, E/R Jet		4	0*	0*	For extended range missions, one pump required per side.
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.
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		2	0*	0*	Ground Refuel Panel will be

Switch, Overhead Panel					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, a one-time flight to a repair capable facility is authorized IAW 4.5.1.1.
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	0*	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	0*	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	0*	0*	Required for night A/R missions.
Annunciator Lights, READY, DISC. & LATCHED, Center Post		1	0*	0*	For A/R missions READY light may be inop if overhead panel READY light is operational.
Rheostat, Air Refuel Ann/Slipway, Overhead Panel		1	1	0*	For night missions, A/R may only be accomplished if at least one tanker boom nozzle light is operable.
Switch, L/R Master, DISAG,		2	1*	0*	Separation valve will be operable. Inop valves will be closed prior to

Air Refuel, Overhead Panel					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
Hydraulics					
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 repair capable facility is authorized IAW 4.5.1.1.
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 repair capable facility is authorized IAW 4.5.1.1.
Transfer Pump		1	1	0*	If inop, all system 2 and 3 (engine driven and AUX) pumps will be operational
Hydraulic System Control Panel	HYD PANEL SINGLE/INOP	1	1	1*	A one-time flight to a repair capable facility is authorized IAW 4.5.1.1.
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
Indicating Systems					
Proximity Sensor Interface Unit (PSDAU, PIU)	PROX UNIT 1,2	2	2	2	
Central Aural		1	1	1	

Warning Computer					
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, a one-time flight to a repair capable facility is authorized IAW 4.5.1.1.
Underwater Beacon		1	1	0	
Cockpit Voice Recorder (CVR)		1	1	1*	If inop, a one-time flight to a repair capable facility is authorized IAW 4.5.1.1, provided the FDR is operating
Single Flight Data Recorder (FDR)		1	1	1*	If inop, a one-time flight to a repair capable facility is authorized IAW 4.5.1.1, provided the CVR is operating.
Quick Access recorder (QAR)		1	1	1*	If inop, a one-time flight to a repair capable facility is authorized IAW 4.5.1.1.
Landing Gear and Brakes					
Wheel & Tire Assy, Main Gear		12	12	12*	See Tire Limits in TO 1C-17A-1 Chapter 5. With any tire exceeding the Maximum Wear Limit (three cords showing), a one-time flight to a repair capable facility is authorized IAW 4.5.1.1.
Multiple Disk Brakes		12	12	10*	
Brake Accumulator		2	2	2	
Control Unit, Anti-skid-Brake		1	1	1	

Temp Monitor					
Anti-Skid Braking	ANTI-SKID INOP	1	1	1	
Transducer, Motional Pickup, Wheel Speed, MLG		12	12	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 repair capable facility is authorized IAW 4.5.1.1. (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	2	1*	A one-time flight to a repair capable facility is authorized IAW 4.5.1.1.
LIGHTING					
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
Wingtip Landing Lights, Overt		2	2	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.
Winglet Covert IR Retractable Landing Lights		2	0*	0*	

Nose Landing Light, Overt		2	2	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.
Overt Runway Turnoff Light / Covert Runway Turnoff Light		2/2	0	0	
Wingtip Navigation Lamp, Fwd Position		4	4	2*	One bulb per wing will be operational. (Note: there are 2 bulbs in each lighting assembly.)
Wingtip Navigation Lamp, Aft Position		4	4	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 Light		2	2*	2*	See AFI 11-202V3 for requirements. If either the upper or lower light is inop, a one-time flight to a repair capable facility is authorized IAW 4.5.1.1. 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.
Fuselage In-Trail Light		2	0*	0*	Two required for night formation flight.
A/R Flood Light		1	0*	0*	Required for night A/R.
UARRSI Perimeter Light Panel		3	0*	0*	For night missions, A/R may only be accomplished if at least one tanker TMF (Tail Mounted Floodlight) is operable.

UARRSI Slipway Light					
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 11-202V3 for requirements
NAVIGATION SYSTEMS					
Pitot Static Probes	P/S XX MAST/ HEAD HTR	4	3*	3*	Upper left (1A) and upper right (2B) probes will be operational to provide standby pitot static instruments. All operative ADC channels will have operable corresponding probes. Corresponding probe heaters must be operational for flights into known icing conditions.
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.
Bearing Distance and Heading Indicator	Blank display or OFF flags	2	2	1*	Pilot will have a full set of standby indicators.
Core Integrated Processor (CIP)		2	2	2	
Air Data Computer Channels	ADC 1A, 1B, 2A, 2B	4	4	3*	With ADC 1A inop, a one-time flight to a repair capable facility is authorized IAW 4.5.1.1.
IRUs and Batteries	IRU INOP X	4	4	3*	Includes IRU batteries. See FCC inop guidance.

Military Global Positioning System (MGPS)		2	1	0*	As required for ATC airspace restrictions. Both may be inoperative if CGPS is installed/operational. If both inop APS-150 Wx Radar will revert to degrade mode and FPV will revert to degrade. If both inop, FFS will not function and airdrop not authorized.
Commercial Global Positioning System (CGPS)		2	0*	0*	As required for ATC airspace restrictions. Both may be inoperative if MGPS is installed/operational.
TACAN		1	1	0*	As required for mission accomplishment
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 when TCAS is inop and when thunderstorms are forecast for the planned route of flight
IFF		1	1	1*	Mode 1, 2, 4, may be inop based on mission/airspace requirements.
TCAS		1	1	1*	Required if ATC airspace mandates equipment, otherwise a one-time flight to a repair capable facility is authorized IAW 4.5.1.1. Required for SKE/TCAS overlay missions.
SKE/FFS		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	2	
OBIGGS					
OBIGGS Systems		2	0*	0*	As required for mission tasking and tank inerting requirements.
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 11-202V3, Table 6.1, are met.
Quick Don Mask		15	15	3*	Required for each primary crewmember. Ensure requirements of AFI 11-202V3, Table 6.1, are met.
DEFENSIVE SYSTEMS					
Missile Warning System		1	0*	0*	If defensive systems are required for the mission, the MWS may be inop if LAIRCM is operational.
LAIRCM		1	0*	0*	If defensive systems are required for the mission, LAIRCM may be inop if MWS and CMDS are operational (and turret not required).
CMDS		1	0*	0*	As required for the mission.

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/A3V and the AFMC Flight Manual Manager are the checklist insert approval authorities. Send checklist inserts to MAJCOM/A3V, who will in turn coordinate with AFMC for approval. All checklist inserts must have a POC. OGVs shall approve local in-flight guides and inserts not affecting T.O. guidance and procedures.

5.2. Duty Station. Both pilots shall be in their seats during flight. 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). 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 provided one pilot remains at a primary duty station during flight. Crewmembers will coordinate with the PF before departing their assigned primary duty stations.

5.2.1. Use of non-mission related material (watching movies, video games, music, PME, newspapers/magazines, performance reports, etc.) is prohibited by any crewmember at a primary duty position or acting as a primary crewmember.

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 is limited to the number of seats with operable seat belts and oxygen. Passengers and observers will not be permitted access to the pilot, copilot, or loadmaster positions.

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

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

5.4.1.1. Aircraft emergencies, unless conditions prevent compliance.

5.4.1.2. Emergency airlift of nuclear weapons (ENAO).

5.4.1.3. Assault or substandard airfield operations. ***EXCEPTION:*** Pilots receiving upgrade training or receiving an evaluation.

5.4.1.4. Category II ILS approaches and landings when the weather is below Category I minimums.

5.4.2. Not Used.

5.4.3. Unless the other pilot in the seat is a certified AC or higher, pilots in command (PIC) with less than 100 primary assigned aircraft (PAA) hours since AC certification will make all takeoffs and landings under any of the following conditions:

5.4.3.1. Ceiling/visibility less than 300 feet and/or RVR 4000 (3/4 SM visibility).

5.4.3.2. RCR less than 12.

5.4.3.3. Crosswind component greater than 15 knots.

5.5. Landing Gear and Slat/Flap Operating Policy. The pilot flying (PF) will command configuration changes. The pilot monitoring (PM) will verify appropriate airspeed and configuration prior to echoing the gear or slat/flap actuation command. The landing gear will be operated by the pilot in the right seat. The slats/flaps will be operated by the PM.

5.6. Outside Observer/Jump Seat Duties. Available crewmembers will assist in clearing during taxi operations and any time the aircraft is below 10,000 feet MSL. Use available crewmembers to assist in ensuring correct aircraft configuration for the selected phase of flight.

5.7. Seat Belts.

5.7.1. All occupants will have a designated seat with a seat belt. A crew bunk does not meet the requirement of a designated seat. Crewmembers will have seat belts fastened when occupying a duty position, unless crew duties dictate otherwise.

5.7.2. Equipment will be properly secured and all crewmembers and passengers will be seated with seat belts and shoulder harnesses (shoulder harness does not apply to pax) fastened during taxi, takeoff, landing, AAR, and low levels unless crew duties dictate otherwise. The PIC may authorize passengers to observe AAR, but seat changes will be completed no closer than 100ft in trail. The PIC may authorize passenger movement via the aircraft Seat Belt sign. Crewmembers may remove the shoulder harness during non-critical phases of flight (i.e. cruise). Crewmembers performing instructor or flight examiner duties are exempt from seat belt requirements if not occupying a primary crew position; however, they will have a seat available with an operable seat belt.

5.7.3. Litter patients, actual or simulated, must 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 T.O.s.

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 (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. ***NOTE:*** At least one aircraft in a formation will comply with single aircraft lighting restrictions.

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.

5.9.3. The following handheld (HH) GPS units meet the requirements of AFI 11-202V3 and may be used with approved laptop computers in flight: Bendix King KLX100 and Garmin GPS 35-USB.

5.9.3.1. The use of HH GPS for moving map display (MMD) is designed as a situational awareness tool and its use is voluntary.

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

5.11. Advisory Calls. The PF will announce intentions for departures, arrivals, approaches, and when circumstances require deviating from normal procedures. The PM will make all advisory calls except those designated for other crewmembers. ***NOTE:*** Automated aircraft advisories satisfy this requirement.

5.11.1. Refer to Table 5.1 through Table 5.4 for a listing of mandatory advisory calls, responses, and aircrew actions.

Table 5.1. Mandatory Advisory Calls, Responses, and Aircrew Actions.

Climb Out	PM Call	PF Response
Transition Altitude	"Transition Altitude, 29.92"	"Transition Altitude, 29.92"

1000’ below assigned altitude	“Altitude (passing) for Altitude (Assigned)”	“Altitude (passing) for Altitude (Assigned)”

Table 5.2. Mandatory Advisory Calls, Responses, and Aircrew Actions.

Descent	PM Call	PF Response
Transition Level	“Transition Level, (local altimeter)”	“Transition Level, (local altimeter)”
1000’ above assigned altitude	“Altitude (passing) for Altitude (Assigned)”	“Altitude (passing) for Altitude (Assigned)”

Table 5.3. Mandatory Advisory Calls, Responses, and Aircrew Actions.

Non-precision Approaches (4)	PM Call	PF Response
100’ above Final Approach Fix (FAF) Altitude	“100 above”	
100’ above step down altitude	“100 above”	
100’ above Minimum Descent Altitude (MDA)	“Approaching Minimums”	Acknowledge
At MDA	“Minimums”	
Runway environment in sight	“Runway in Sight”	“Landing” or “Go Around”
Missed Approach Point (MAP)	“Missed Approach Point” (3)	“Landing” or “Going Around”

Table 5.4. Mandatory Advisory Calls, Responses, and Aircrew Actions.

Precision Approaches (4)	PM CALL	PF RESPONSE
100’ above glide slope intercept altitude	“100 above”	
100’ above Decision Height (DH)/ Decision Altitude (DA)	“Approaching Minimums”	Acknowledge
At DH/DA	“Minimums”	(2)
Only Approach Lights in sight (CAT I ILS)	“Approach lights in sight”	“Continuing” (1)
Runway environment in sight	“Runway in Sight”	“Landing” or “Go Around”
Approach Lights and/or Runway environment not in sight	“Go-around”	“Go Around”
At 100’ Above TDZE (CAT I ILS)	“100 Feet” See note (3)	“Landing” or “Go Around”

NOTES:

(1) With weather at CAT I minimums on a CAT I ILS, the pilot may not see the runway environment at DA; however, the initial portion of the approach lights may be visible. The pilot may continue to 100 HAT with reference to the approach lights only. 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.

(2) The PF will announce his/her intentions to either land, continue (Cat I), or go-around. Respond with the intention to land if runway environment is in sight, will remain in sight throughout touchdown and the aircraft is in a position for a safe landing.

(3) If the pilot flying has stated "landing" then this call is not required.

(4) On the approach, if the PF can maintain visual contact with the landing runway, and states "Visual", subsequent instrument advisory calls are not required. Refer to stabilized approach criteria in paragraph **5.12**.

5.11.2. Deviations:

5.11.2.1. Any crewmember will immediately notify the PF when deviation of heading (+/- 10 degrees), airspeed (+/-10 kts), or altitude (+/- 100 feet) is observed and no attempt is being made to correct the deviation.

5.11.2.2. Any crewmember seeing a potential terrain or obstruction problem will immediately notify the PF.

5.12. Stabilized Approach. Unstable approaches are primary contributors to numerous military and civilian mishaps. Stabilized approaches are essential for the safe operation of aircraft and are mandatory. The following criteria define specific parameters that mitigate risk during this critical phase of flight. This philosophy requires aircrew to take immediate corrective actions to stabilize the approach when outside designated parameters.

5.12.1. The following criteria apply to all approaches:

5.12.1.1. At 1000 feet AGL:

5.12.1.1.1. Aircraft is in approach configuration. Circling configuration is acceptable for circling approaches.

5.12.1.1.2. Airspeed is appropriate for the configuration and conditions.

5.12.1.1.3. Sink rate is no greater than 1000fpm. Note: Under certain conditions (WX, Threats, Terrain, etc.) some IAPs and tactical approaches may require greater than a 1000 fpm descent rate.

5.12.1.1.3.1. Non-precision Approaches. Pilots should calculate a constant descent gradient profile from the FAF altitude to the VDP (IAW AFMAN 11-217V1). This is considered the safest profile and should be used to the max extent possible. During a go-around, ensure descent below the MDA does not occur.

5.12.1.1.4. All briefings and checklists are complete unless contrary to T.O. guidance.

5.12.1.1.5. Aircraft is on the correct track.

5.12.1.1.6. Aircraft in the correct bank angle to maintain proper approach track for instrument, circling, or visual/tactical approach.

5.12.1.1.7. Power set to maintain the descent profile at approach speed.

5.12.1.1.8. If these criteria are not met by 1000 feet AGL, the PM will announce the deviation and the PF will take immediate corrective action. PM states "1000 xxxx," where "xxxx" equates to a concise description of the unstable characteristic(s) which clearly relay to the PF what actions are required to return the aircraft to a stable platform. Examples: "1000, fast," or "1000, half dot low". If criteria are met, PM will simply state "1000."

5.12.1.2. If these criteria are not met by 500 feet AGL, the PM will announce the deviation using the "xxxx" format and the PF will take immediate action. If criteria are met, PM will simply state "500."

5.12.1.2.1. Parameters are the same as those at 1000 feet AGL.

5.12.1.2.2. If unstable at 500' crews should perform a go-around.

5.12.1.3. From 300 AGL to the runway, if these parameters are exceeded the PM will announce "Go-Around" and the PF will execute a go-around/missed approach. If criteria for stable approach are met, the PM will state "300"

5.12.1.3.1. Momentary minor corrections or deviations are acceptable and defined as:

5.12.1.3.1.1. Airspeed: +10/-5 kts from target

5.12.1.3.1.2. Bank Angle: +/- 15 degrees from target

5.12.1.3.1.3. Rate of Descent: +/- 300 FPM from target

5.12.2. Descent Planning and Energy Management. Aircrews will ensure the aircraft is following the planned descent profile. All non-tactical descents should follow a normal descent profile IAW AFMAN 11-217 procedures and techniques in the absence of ATC or FLIP guidance. All tactical descents should follow published tactical procedures/profiles. When unforeseen interruptions alter the planned descent, immediately correct any deviations. It may be necessary to hold, request vectors, or take alternate actions in order to comply with the planned descent profile.

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

5.12.4. Missed Approach/Go-Around. Aircrews will conduct a thorough briefing for anticipated missed approach/go-around scenarios. This briefing will include a discussion of specific crewmember duties.

5.12.5. Tactical Approaches. It is recognized the above criteria is not always valid due to the type of tactical approach required. In these situations (either real-world or training as briefed by Intel/Tactics or attained from other valid threat sources, e.g. GCI, AWACS, Tower, etc.) the PF is required to brief the maneuver parameters prior to execution, to include when to expect the aircraft to be stable and when to go around. If the threat is known prior to departure, the crew will accomplish briefing prior to departure during mission planning. If the threat arises during the sortie, the PIC will include the stability requirements as part of the arrival briefing.

5.12.6. FTUs only. FTUs will train students to ensure they understand and are capable of complying with all aspects of stabilized approach criterion. FTU instructors must use their expertise and experience to deviate from the guidelines of stabilized approach criteria as required during appropriate instructional scenarios.

5.13. 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.

5.13.1. Aircraft Interphone. Primary crewmembers will monitor interphone during critical phases of flight. Crewmembers will advise the PF before checking off interphone or operating in ISOLATE. Crewmembers will ensure personnel on headset, or within listening distance, are cleared prior to discussing classified information over interphone.

5.13.2. Command Radios.

5.13.2.1. The PM normally makes all air traffic control (ATC) radio calls.

5.13.2.2. In terminal areas, all crewmembers (if able) will monitor the command radio unless directed otherwise. A crewmember will be designated to monitor C2 frequencies on the inbound and outbound legs.

5.13.2.3. The pilot operating the radios will notify the crew which radio is primary, and update the crew when the primary radio changes.

5.13.2.4. One pilot should record and will read back all ATC clearances.

5.13.2.5. 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 AAR.

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

5.13.3. 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.

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

5.13.4. 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.

5.14. Crew Resource Management (CRM)/Threat and Error Management.

5.14.1. Threat and Error Management provides strategies and tactics to help crews target threats to safe flight operations and decreases the potential for crew error. External threats are events that occur outside the influence of the flight crew and require crew attention and management to maintain adequate safety margins. Internal threats are crew related and are factors that could lead to an error if not recognized and controlled.

5.14.2. "Time Out" is the common assertive statement for use by all crewmembers. The use of "Time Out" will:

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

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

5.14.2.3. 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.

5.14.2.4. As soon as possible after a **"Time Out"** has been called, the aircrew will take the following actions:

5.14.2.5. Safety permitting, stabilize the aircraft and ensure terrain clearance.

5.14.2.6. The initiating crewmember will voice their concerns to the crew.

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

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

5.14.3. Sterile Cockpit. With the exception of cruise flight, conversation below 18,000' MSL will be limited to mission, departure, or approach essential items. Every effort will be made to accomplish briefings and appropriate checklists prior to top of descent (TOD). Sterile cockpit procedures also apply during taxi, low level, and air refueling operations.

5.14.4. Heads-up/Heads-down. Any crewmember that observes both pilots heads-down at the same time (other than heads-down instrument flying) shall alert the PF without delay.

5.14.5. CRM Enhancement. PICs will conduct a CRM exercise on the first suitable segment of each mission. This will be done at level off on a non interference basis with other mission requirements. Take the exercise to a logical conclusion and ensure crew communications and duties are appropriate. Suggested topics are rapid decompression, oceanic contingency operation, emergency divert or other MAJCOM or locally generated Special Interest Item (SII).

5.14.6. Critical Action Coordination. Those actions that are flight critical/irreversible in nature and should always be confirmed by two crew members. These actions include, but are not limited to, pulling the engine fire handle, movement of the engine or APU start switch, discharging agent, or dumping fuel. Both pilots must verbally and visually identify the

affected control, (i.e. “CONFIRM NUMBER ONE”). The pilot performing the action will point to the affected control. The pilot monitoring the action will verbally and visually confirm the proper control is selected, (i.e. “NUMBER ONE CONFIRMED”). The pilot performing the action then actuates the affected control.

5.15. Use of Automation.

5.15.1. General Automation Procedures. There must be a clear understanding of the Pilot Flying (PF) and the Pilot Monitoring (PM) duties at all times. Aircrews are expected to fly the aircraft using the highest level of automation, balanced with the requirement to maintain basic flying skills. However, pilots are authorized to choose an appropriate level of automation consistent with changing flight environments. If the use of automation creates a loss of situational awareness or results in task saturation, shift to a less demanding level or disconnect the automation entirely and re-establish desired aircraft path and control. Both pilots are responsible for ensuring the aircraft is following the desired flight path.. The Automatic Flight Control System (AFCS) and Mission Computer (MC) are intended to aid in workload management, not complicate it.

5.15.1.1. 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.

5.15.1.2. The pilot flying (PF) should make AFCS panel changes during coupled operations. During uncoupled flight, the PF should direct the pilot monitoring (PM) to make changes to the AFCS panel IAW paragraph **5.31**. Confirm all mode changes by observing the correct flight mode annunciator (FMA) indications.

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

5.15.2.1. Prior to making any changes to the selected/armed Flight Guidance including Altitude, or performing any T.O. 1-C-17A-1 defined irreversible/critical action, the pilot performing the action will VERBALIZE the intended changes. The other pilot will acknowledge the step by stating “Confirm.”

5.15.2.2. Both pilots will VERIFY the intended changes prior to execution to include the correct mode is selected (e.g. ensure LNAV is selected when cleared to a point while on a heading).

5.15.2.3. Both pilots will MONITOR the aircraft to ensure the expected performance is achieved.

5.15.2.4. The PF will announce changes to the level of automation, flight director and autopilot mode selections, and mode transitions to the maximum extent possible (e.g. “Autopilot engaged ”,“Altitude Hold”, “Autothrottles”, “VOR-Capture”, etc.).The PM will acknowledge the call. Use appropriate levels of automation as required by the flight conditions.

5.16. 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.

5.17. Alcoholic Beverages. The MAJCOM/A3/DO or NAF/CC may authorize the dispensing of alcoholic beverages.

5.18. Runway, Taxiway, and Airfield Requirements.

5.18.1. Minimum Runway and Taxiway Requirements. Minimum runway width is 90 feet/27.5 Meters. Minimum runway length is 3,500 feet. Minimum taxiway width is 50 feet/15.5 Meters. Minimum width for Star Turn is 90 feet/27.5 Meters. MAJCOM/A3/DO may waive runway/taxiway width requirements.

5.18.2. Runway Length for Takeoff and Landing. Do not takeoff if computed critical field length exceeds runway available. Minimum runway for a normal landing (3/4 or full flap) is computed landing distance with idle reverse. Minimum runway length for a full flap assault landing is computed ground roll, with max reverse, plus marked landing zone distance. (Marked landing zone distance is normally 500 feet) Touchdown will be within the marked landing zone. 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 also consider elevated brake temperatures and Vbo when determining the minimum runway required for landing to preclude melting the fuse plugs.

5.18.2.1. Runway Length for Takeoff and 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.

5.18.2.2. Pilots may accomplish intersection takeoffs provided the operating environment (i.e., gross weight, obstructions, climb criteria, weather, etc.) allows a safe takeoff and departure. Calculate takeoff performance based on the runway remaining from the point at which the takeoff is initiated.

5.18.2.3. During operations on runways partially covered with snow or ice, base takeoff computations on the reported runway surface condition (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, compute takeoff data based on the uncleared portion up to 45 feet either side of centerline.

5.18.2.4. 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.

5.18.2.5. 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.

5.18.3. Arresting Cables.

5.18.3.1. 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.

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

5.18.3.3. 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.

5.18.4. Other Airfield Requirements.

5.18.4.1. Consult with HQ AMC/A3AS (Airfield Suitability Branch) for suitability guidance. Airfield certification requirements are detailed in the ASRR.

5.18.4.2. Aircrews and planning agencies will contact HQ AMC/A3AS for all questions pertaining to airfield weight bearing capacity and will review the GDSS/GDSS2/ASRR before all off-station 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/A3AS. HQ AMC/A3V 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. Consult the ASRR for airfield certification requirements.

5.18.4.3. A current landing zone (LZ) survey (within the past five years as specified in AFI 13-217) is needed before using other than hard-surfaced runways or taxiways.

5.18.4.4. **(Added-452AMW)** KRIV Painted Assault Landing Zone procedures.

5.18.4.4.1. **(Added-452AMW)** March ARB painted assault landing zone. A 3,500' x 90' ALZ is painted on March ARB's runway 32/14 between TWY B and C**.** Stop and go operations are authorized, provided TOLD is updated.

5.18.4.4.2. **(Added-452AMW)** Victorville (VCV) Operations. Crews will avoid the community of Silver Lake 10 NM North of the approach end of RWY 17. Crews will coordinate with Victorville tower for use of the desired runway to set up temporary assault landing zone upon arrival at Victorville pattern. For night NVG operations, crews will set up lighting in accordance with AFI 13-217 on designated markings. Reference the local C-17 Inflight Guide. For evaluations, comply with AFI 11-2C-17V2, para 2.4.

5.18.5. RCR Limitations. When no RCR is available, the PIC will refer to GP for standard ICAO conversions based on general runway condition; be conservative when dealing with unknown conditions (e.g., forward operating bases (FOBs), unpaved runways).Normally, RCR values are not reported for taxiways and ramps. During periods of reported low RCR,

the taxiways and ramps may have an even lower RCR than reported for the runway. The runway surface should be considered wet when water on the runway causes a reflective glare.

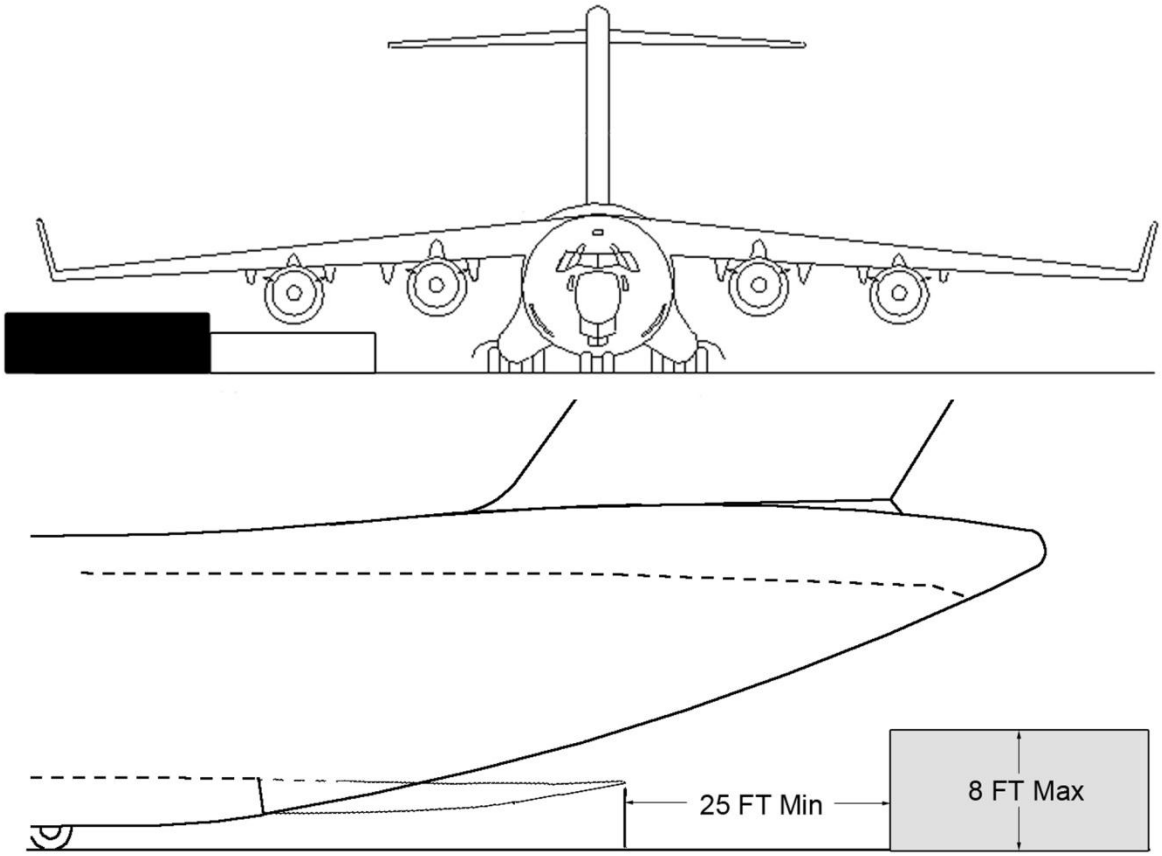
5.18.6. Semi-Prepared Runway Operations (SPRO). See TO 1C-17A-1-1 Appendix B. OG/CC approval is required for semi-prepared runway operations within the CONUS, Alaska, and Hawaii. MAJCOM/A3/DO approval is required in all other instances. For semi-prepared ALZs other than matted surfaces, Mission Commanders 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.

5.18.6.1. **(Added-452AMW)** SPRO Mission Planning. Before departure, ensure the aircraft is prepared for SPRO by maintenance personnel. Aircrew should review section 3.4 of AFTTP 3-3.C-17 as well as Section 2 SPRO procedures from 1C-17A-1 prior to an SPRO mission or sortie.

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

5.19.1. The pilot will coordinate taxi directions and signals to be used with the loadmaster and marshaller (when available). Do not taxi an aircraft within 25 feet of obstructions without wing walkers monitoring the clearance between aircraft and obstruction. With wing walkers, avoid taxi obstructions by at least 10 feet. Wing walkers do not absolve the crew of their responsibility for obstruction clearance. For small permanent obstructions underneath the wing and tail, follow clearance criteria in **Figure 5.1** 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 marshalers/wing walkers at home station along fixed taxi lines which have been measured to ensure a minimum of 10 feet clearance from any obstruction and the obstruction is permanent. Adjacent aircraft are also considered a permanent obstruction, provided the aircraft is parked properly in its designated spot and is not moving. Aerospace Ground Equipment (AGE) and vehicles are considered a permanent obstruction, provided it is parked entirely within a designated area. Areas will be designated by permanent markings such as painted boxes or lines on the ramp or another suitable means.

Figure 5.1. Taxi Obstruction Diagram.



3' High max (this is 10' from the landing gear doors to 10' outside of the outboard nacelle).

5' High max (this is from 10' outside the outboard nacelle to 10' outside the wingtip).

8' High max (this is 25' from ramp in coplaner. Obstacles higher than 8' require 25' from aft end of tail which is 88' from ramp).

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', 5', and 8' high obstacles to ensure specified clearances from the wing, engines, landing gear doors, and ramp toes or ramp.

5.19.2. Stop the aircraft any time clearance is in question and deplane a crewmember to verify clearance and walk the wing, if necessary. 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, marshalers 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.

5.19.2.1. **(Added-452AMW)** Blocking in at March ARB: Missions returning to March ARB should be blocked in by a maintenance block-in crew or onboard Crew Chief. For after-hours parking, March ARB C-17 aircrews can block into spots P4 and R4 (if available) using the guidance listed in local FCBs/Inflight Guide.

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

5.19.3.1. Carefully review airfield layout paying particular attention to taxi routes, turn requirements, and areas for potential FOD.

5.19.3.2. Minimize power settings during all taxi operations.

5.19.3.3. Where possible, avoid 180° turns. If required to accomplish a 180° turn on a narrow runway, the turn should be accomplished at an intersection of a link taxiway or at a designated turn around pad.

5.19.3.4. Where possible, avoid taxi operations that position an engine over an unprepared or un-swept surface. If unavoidable, leave the engine in idle (to the maximum extent possible) until the engine is over an improved surface.

5.19.4. Reverse Taxi:

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

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

5.19.4.3. 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.

5.19.4.4. 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.

5.19.4.5. 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**.**

5.20. Fuel Jettison Procedures.

5.20.1. Aircrews should consider burning 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.

5.20.2. For missions tasked by higher headquarters authority, the tasking C2 agency 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.

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

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

5.20.4.1. **(Added-452AMW)** If fuel dumping is required, SoCal Approach/Los Angeles Center will be directive as to the location. If time and situation permits, request fuel jettison above 5,000 ft AGL and beyond 12 NM from the coast (over the Pacific Ocean).

5.20.5. All jettisons will be followed up with a detailed report filed by the PIC immediately after landing using a MAJCOM approved form for unusual occurrence or inflight emergency. Submit completed form through unit OGV to MAJCOM/Stan Eval. Unit OGVs will retain forms for 6 months. Document all pertinent information, including the following items:

5.20.5.1. Scheduled Duration.

5.20.5.2. Actual Duration.

5.20.5.3. Landing Gross Weight.

5.20.5.4. Computed Stopping Distance.

5.20.5.5. Recovery Field.

5.20.5.6. Runway Available.

5.20.5.7. Jettison Altitude/Location.

5.20.5.8. Outside air temperature.

5.20.5.9. Wind direction and velocity.

5.20.5.10. Jettison Amount.

5.20.5.11. Reason for Jettison.

5.20.5.12. Approval Authority.

5.21. Aircraft Speed. IAW AFI11-202V3. In accordance with applicable tech orders, aircraft may exceed 250 KIAS or in-flight minimum maneuver speed below 10,000 feet to safely maintain formation position. All formation members may exceed 250 KIAS below 10,000 feet to accommodate the minimum maneuver speed of the heaviest formation member.

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

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

5.22.1.1. Bird Watch Condition Low - No operating restrictions.

5.22.1.2. 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.

5.22.1.3. 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.

5.22.2. 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.

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

5.22.4. 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.

5.22.5. Following a bird strike, aircrews should land as soon as conditions permit, or 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.

5.22.6. **(Added-452AMW)** In order to decrease the frequency of bird encounters in the March ARB pattern, review the following guidance extracted from the 452 AMW OPLAN 91-202 IBASH. Of particular emphasis, please note that takeoffs under BWC MODERATE require approval of the 452 OG/CC. This is a local restriction beyond the requirements of the parent AFI. Contact the 452 AMW Command Post prior to takeoff under BWC MODERATE to ensure the 452 OG/CC has approved your takeoff. All aircraft operating at March (includes AFRC, ANG, Aero Club and U.S. Customs) will adhere to the following restrictions: **BWC *SEVERE*:** All *takeoffs and landings* are prohibited. Airborne aircraft will hold or divert. Deviations require 452 OG/CC or higher approval. Consideration should be given to fuel, weather or any other circumstances placing the crew at equal or greater risk. Airfield Management will aggressively pursue dispersal objectives to minimize operational impact. **BWC *MODERATE*:** All local IFR/VFR traffic pattern activity for runway 32/14 will cease. Airborne aircraft/crews will terminate transition training in the March local

pattern. All controlled aircraft takeoffs require approval by 452 OG/CC after Airfield Management has visually surveyed the runways/airfield environment for significant bird activity. ATC and the 452 AMW Command Post, in coordination with Airfield Management, will advise aircraft on the anticipated delay, if known, for bird dispersal or a return to a ***LOW*** BWC. Aircraft commanders may request reassessment of bird conditions at any time. The 452 AMW Command Post, ATC, and Airfield Management will advise aircraft on the anticipated delay, if known, for a return to a ***LOW*** BWC. Airborne aircraft will hold, divert or full stop. Aircraft commanders should assess all factors before accepting the risk of landing during periods of elevated BWC. **BWC *LOW*:** There are no restrictions to operations during Phase I (outside the BASH Window).

5.22.6.1. **(Added-452AMW)** Bird hazard for low-level training. This guidance applies to all low level flights (local and off station).The Avian Hazard Advisory System (AHAS) is operational for the entire CONUS. The AHAS has a dynamic Bird Avoidance Model (BAM), which uses historical data to predict bird activity. The AHAS model takes current and forecast weather conditions, as well as near-real time NEXRAD radar data, to further refine the bird prediction. Tests show AHAS can predict bird conditions 24 hours in advance (for predictions in excess of 24 hours, the AHAS and BAM models are the same). Reference the AHAS data at **http://www.usahas.com** . Once you have obtained the AHAS Bird Condition, follow this guidance for low level operations:

5.22.6.1.1. **(Added-452AMW)** A. "LOW" – No restrictions to speed or altitude.

5.22.6.1.2. **(Added-452AMW)** B. "MODERATE" – Restrict speed to 250 knots on the **affected route segments.** No altitude restrictions.

5.22.6.1.3. **(Added-452AMW)** C. "SEVERE" – The PIC will obtain 452 OG/CC approval prior to commencing any flight on affected route segments during Bird Condition SEVERE. Restrict speed to 250 knots and fly no lower than 1,000 feet AGL (3,000 feet AGL at night) on the **affected route segments**.

5.22.7. **(Added-452AMW)** Further BASH PLAN guidance exists in 452 AMW OPLAN 91-202 IBASH and the local FCBs.

5.23. Functional Check Flights (FCFs), Acceptance Check Flights (ACFs) and Operational Check Flights (OCFs). Check flights will be accomplished IAW T.O. 1C-17A-6, AFI 21-101, *Aircraft and Equipment Maintenance Management*, T.O. 1-1-300, *Functional Check Flights and Maintenance Operational Checks*, and T.O. 1C-17A-6CF-1, *Acceptance and/or Functional Check 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.

5.23.1. FCF Restrictions. See T.O. 1-1-300 and AFI 21-101.

5.23.2. The OG/CC, or deployed equivalent, may authorize temporary waivers to FCF procedures for aircrew qualification when operationally necessary. Permanent waivers require MAJCOM/A3/DO approval IAW Chapter 1.

5.23.3. 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.

5.23.4. Conduct check flights within the designated check flight airspace of the base from which the flight was launched except when the flight must be conducted under specific conditions, not compatible with local conditions and area restrictions.

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

5.23.6. The OG/CC will only certify highly experienced instructors as FCF crewmembers. The OG/CC will determine FCF crew complement after a thorough ORM assessment for that specific FCF flight.

5.23.7. Ideally, conduct FCFs in daylight, VMC. OG/CCs may authorize a flight under a combination of VMC and IMC. Begin the flight in VMC. 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.

5.23.8. 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.

5.23.9. 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**.

5.23.10. **(Added-452AMW)** Only 452 OG/OGV C-17 Examiners and Senior 729 AS Examiners will be assigned to an FCF crew. All FCF crew members will be designated in writing by the 452 OG/CC. No passengers or MEPs (except required maintenance or Boeing representatives) will be allowed on FCF flights. The 452 OG/CC will authorize each FCF required by maintenance. **All required FCF flights will be coordinated through 452 OG/OGV.**

5.23.11. **(Added-452AMW)** All FCF -6CF flights will be conducted in VMC conditions. All FCF -6CF flights will be accomplished at March ARB home station. 452 OG/OGV and maintenance will maintain a complete set of FCF cards and -6 manuals for all FCF related functions. EXCEPTION: The RAT EXTENSION check required by maintenance may be conducted in conditions other than VMC and may be flown by any qualified crew.

5.23.12. **(Added-452AMW)** RAT Extension Checks. The Ram Air Turbine (RAT) Extension Check is required by maintenance prior to the aircraft entering a Home Station Check (HSC). Maintenance will coordinate with the flight crew to perform this check IAW TO 1C-17A-6CF-1 (In most cases maintenance will provide a hard copy. Aircrews can also review via e-pubs the Approach section of 6CF-1 for specific RAT extension procedures). The following criteria must also be met:

5.23.12.1. **(Added-452AMW)** Maintenance systems experts WILL thoroughly brief the aircraft commander on check requirements. This briefing MUST be done face-to-face prior to flight

5.23.12.2. **(Added-452AMW)** Aircraft has no hydraulic or flight control discrepancies

5.23.12.3. **(Added-452AMW)** 15-knot maximum crosswind

5.23.12.4. **(Added-452AMW)** 400,000 lbs maximum gross weight

5.23.12.5. **(Added-452AMW)** Check will be conducted on the last landing of the mission

5.23.12.6. **(Added-452AMW)** Accomplish the Approach check. When the Approach check is complete accomplish the RAT Deployment Check

5.23.12.7. **(Added-452AMW)** Ground Ops training will not be accomplished after deploying the RAT

5.24. Participation in Aerial Events. See AFI 11-209, *Aerial Event Policy and Procedures*, and the appropriate MAJCOM supplement.

5.24.1. **(Added-452AMW)** 452 OSS/OSO is the OPR for coordination of air shows/flyovers with the user(s) and higher headquarters. Aircrews participating in these events will work closely with the mission scheduler. PICs will receive a briefing from Current Operations on event requirements.

5.24.1.1. **(Added-452AMW)** When planning a static display, aircrew should reference TO 00-80G-27, *Make Safe for Static Display Manual*, a copy of which is included in mission kits.

5.24.2. **(Added-452AMW)** Aerial reviews and fly-bys are not intended to demonstrate the performance limits of the aircraft. PICs will operate the aircraft IAW flight manual procedures. In no case will a PIC respond to an impromptu request for changes to the program which would result in the execution of maneuvers not previously approved by the 452 OG/CC.

5.24.3. **(Added-452AMW)** Aircrew members selected for the Aerial Demonstration Team will complete applicable training and comply with AMC directed guidance.

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

5.25.1. Refer to T.O. 1C-17A-1 for TCAS Traffic Alert and Warning procedures.

5.25.1.1. PM will 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.

5.25.2. Multi-ship formation.

5.25.2.1. 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.

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

5.25.3. 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.

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

5.25.5. Additional information.

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

5.25.5.2. Per MNPS Manual, FAA Advisory Circular AC 120-55B, excessive climb and descent rates in excess of 1500fpm when approaching level-off altitude could lead to inadvertent TA/RA warnings.

5.25.6. 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.

5.26. Radar Altimeter.

5.26.1. Any crewmember detecting the "TOO LOW" annunciation (PFD/HUD) will immediately notify the PF. Terrain clearance and aircraft position must be verified.

5.27. Buddy Starts. Buddy starts may be performed when approved by MAJCOM A3/DO or equivalent (OG/CC for local training missions). This is a one-time authorization and will not be construed to allow repeated buddy starts at various scheduled en route stops.

5.28. Bank Angles. Do not exceed bank angles greater than 45 degrees (except MAJCOM-approved tactics maneuvers).

5.29. Aircraft Recovery from Unprepared Surfaces. Aircrews should not 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 618 AOC (TACC), or appropriate C2 agency.

5.30. Ground Proximity Warning System (GPWS) / Terrain Alert Warning System (TAWS). During GPWS/TAWS WARNINGS, apply the escape maneuver IAW TO 1C-17A-1 during: Day VMC operations <u>without</u> terrain/obstacle clearly in sight, Night VMC, or IMC. ***WARNING:*** Do not delay pull-up for diagnosis of the low altitude WARNINGS. Failure to roll wings level during the maneuver described above will decrease stall margin at heavy aircraft gross weights. ***NOTE:*** Reference TO 1C-17A-1 for detailed descriptions of GPWS/TAWS WARNINGS, CAUTIONS, and Advisories

5.30.1. Exceptions to this policy are addressed in the GDSS Giant Report and ASRR for specific airfields. The PIC may only disregard GPWS/TAWS warnings at night or in IMC if all the following conditions are met:

5.30.1.1. The airfield has a known GPWS/TAWS anomaly as listed in the GDSS Giant Report and ASRR.

5.30.1.2. The warning occurs inside the FAF.

5.30.1.3. A plan of action is briefed to the crew prior to commencing the approach.

5.30.1.4. Either the aircraft is at or above the ILS glideslope or MDA on a Localizer approach with both PLSRs being monitored, or the runway is in sight with the aircraft at or above the glideslope as determined by the VASI, PAPI, or similar device. ***WARNING:*** If any of these conditions are not met execute the escape maneuver.

5.30.2. Ensure the mode of the GPWS/TAWS is commensurate with the aircraft's phase of flight.

5.30.3. Aircrews will annotate all TAWS and GPWS alerts deemed to be nuisance warnings in the aircraft forms (AFTO 781). Write-ups must include type of alert (TAWS/GPWS), aural warning received, location, and time of incident. Maintenance, in turn, will forward the event data IAW the deficiency report procedures through appropriate command channels. In addition, crews will annotate nuisance warning information on the TAWS/GPWS nuisance event worksheet (AMC/A3V website) and forward to their unit OGV office via scan, e-mail, or fax.

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.

5.31.1.1. For ATC assigned altitudes, one pilot will select and arm the assigned altitude in the ALT window. Both pilots will confirm the altitude in the ALT window is correct.

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 PM. At any time the PM 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.

5.33.1. **(Added-452AMW)** For home station engine starts, there will be either a maintenance member or a crewmember in front of the aircraft on the communication cord monitoring the engine start.

5.34. (Added-452AMW) ERCC. Engine running crew change (ERCC) will normally be conducted on Lima parking row in front of base operations. The first half of the ERCC will leave the publications/navigation kits onboard for the next crew. If the second half ERCC will include Victorville NVG work, the first half crew will take IR and/or overt lights with them to the aircraft.

Chapter 6

AIRCREW PROCEDURES

Section 6A—Pre-Mission

6.1. Aircrew Uniform.

6.1.1. Aircrew will wear the aircrew uniform, IAW 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 Flight Equipment (AFE) Program*, for minimum aircrew clothing requirements. All crewmembers will have Nomex gloves in their possession.

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

6.1.3. For any mission with a flight planned route above 78 degrees north (North Polar Area) or below 60 degrees south , the aircraft will be configured with the appropriate quantity of personal cold weather equipment prior to mission execution.

6.1.4. Aircrews flying into designated laser threat areas will be issued, if available, a minimum of 2 sets of block 0+ or block 1 ALEP from home station aircrew flight equipment and comply with AMC risk assessment database (RAD) guidance (available on the SIPRNET at **www.amcin.scott.af.smil.mil**) or specific airfield NOTAMs.

6.1.4.1. Don ALEP when directed by NOTAM or RAD. Aircraft Commanders maintain final authority on distribution of ALEP and may direct removal for safety of flight. ALEP is safe for day or night usage but is not to be used in conjunction with night vision devices or during low-level operations (restricted to a minimum of 1,000 ft above the highest obstacle within a 2,000 ft radius of the aircraft, with the exception of takeoff and landings.

6.2. Personal Requirements.

6.2.1. Refer to current Unit Deployment Manager guidance for applicable deployment requirements.

6.2.2. Passport. Crewmembers will carry a valid passport on all missions outside the US. ***EXCEPTION:*** Unit commanders may authorize newly assigned personnel who have applied for, but not yet received, a passport to act as crewmembers on missions not scheduled to transit locations where passports are required.

6.2.3. Shot Record. Crewmembers must maintain worldwide shot requirements.

6.2.4. 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.

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

6.2.6. 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.

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

6.2.7.1. Anytime parachutes are required to be carried by the mission directive.

6.2.7.2. Whenever the aircrew requires night vision goggles.

6.2.7.3. When required for wear of the aircrew chemical defense ensemble.

6.2.8. Flashlights. Each crewmember must carry an operable flashlight for all flights.

6.2.9. A reflective belt or suitable substitute will be worn on flight lines during hours of darkness or periods of reduced visibility.

6.2.10. AF Form 1199, Air Force Entry Control Card.

6.2.11. **(Added-452AMW)** AF Form 1199, Restricted Area Badge, is required at all times within a Restricted Area on the flight line.

6.3. Pre-Mission Actions.

6.3.1. Before transiting areas outside the CONUS, aircrews will review and obtain theater-specific information necessary to successfully operate there. The review, at a minimum, should include AFI 11-202V3, AFTTP 3-3.C-17, and the following:

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

6.3.1.2. Review applicable OPORD, SPINS, Virtual Risk Assessment Database (VRAD), Country Risk Assessment (CRA), and FLIP. Obtain and carry this information as required.

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

6.3.2. Obtain required customs forms.

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

6.3.4. Ensure physiological training, annual physical, immunizations, and flight evaluations will remain current for all crewmembers throughout the TDY period.

6.3.5. Ensure visas have been received, if required.

6.3.6. Obtain terrain charts for unfamiliar destinations if available.

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

6.3.8. Release available seats to passenger terminal. Coordinate with C2 agency to release available seats to the passenger terminal.

6.3.9. Ensure the correct aircraft navigation database is loaded or will be carried, as appropriate.

6.3.9.1. The current worldwide navigation database (WWNDB) will be loaded prior to home station departure.

6.3.9.2. Enroute, maintenance personnel will load monthly worldwide navigation databases.

6.3.9.3. Aircrews will make an aircraft forms entry when a database is expired.

6.3.9.4. Aircrews will compare their scheduled return times with the expiration of the loaded navigation database prior to departure from home station. If the scheduled return time exceeds the expiration of the database, add the appropriate info note to the aircraft forms prior to departure from home station.

6.3.9.5. **(Added-452AMW)** 452 AMW COMSEC Policy.

6.3.9.5.1. **(Added-452AMW)** C-17 local training missions or off-station missions as identified in PEX or GDSS2 or by the aircrew member via telephone (x2534 or cell 951-329-7080) will be provided a COMSEC kit. Local trainers will have designated kits assigned to the C-17 aircraft. Aircrews are required to carry an SKL and sufficient COMSEC material to complete all missions leaving the CONUS. Most CONUS-only taskings do not require aircrew to carry COMSEC materials. COMSEC kits will be picked up either at the Combat Crew Comm (CCC) office or at the dispatcher's area of Base Ops. During normal duty hours 0730-1630, Monday-Friday, and 0700-1600, on UTA weekends, COMSEC kits will be picked up at the CCC office. For missions not during duty hours, aircrew members should pick up kits from the Base Ops dispatcher.

6.3.9.5.2. **(Added-452AMW)** 452d Combat Crew Comm issues this combination within the COMSEC kit.

6.3.9.6. **(Added-452AMW)** All aircrew will carry a paper copy of the March ARB Inflight Guide.

6.3.10. LAIRCM.

6.3.10.1. To use the LAIRCM system, a UDM card must be present in the CIU.

6.3.10.2. The UDM cards are classified SECRET.

6.3.10.3. Unless a greater directive or maintenance condition with LAIRCM exists, use LAIRCM IAW the CONEMP for all OCONUS mission segments.

6.3.10.4. Aircrew should utilize the LAIRCM on local tactical training missions.

6.3.10.5. The UDM card will be stored in the secure stowage facility (gun box) on board the aircraft anytime the LAIRCM system is not in use.

6.3.10.5.1. Each LAIRCM aircraft will have a certified combo lock on its gun box, provided by the aircraft's home unit.

6.3.10.6. A SF 702 (security container check sheet) will be annotated by each aircrew upon opening and closing the gun box.

6.3.10.7. The PIC is responsible for ensuring the UDM card is in the gun box prior to the flight, and before leaving the aircraft at the end of the duty day.

6.3.10.7.1. If the UDM card is missing, notify appropriate C2 agency.

6.4. Aircrew Publications Requirements. Primary crewmembers will carry (or have in-flight access to) the publications specified in **Table 6.1** 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. Reference AFI 11-215, *USAF Flight Manuals Program*, for guidance on electronic publications.

Table 6.1. Aircrew Publications.

PUBLICATION	AIRCREW
TO 1C-17A-1	P
TO 1C-17A-1-1	P
TO 1C-17A-1-2	D
TO 1C-17A-1-4	P (Airdrop only)
Abbreviated Checklists	P (All crewmembers will carry the abbreviated checklist(s) for their crew position.)
Checklist Inserts/Briefing Guides	All crewmembers will carry the "Required" insert(s)/guide(s) as listed on the AMC/A3V website. "Approved" insert(s)/guide(s) are authorized for carry but not required.
ATP-56	D
TO 1C-17A-9	P
AFI 11-202V3	D
AFI 11-2C-17V3	P
AFI 13-217	D
AFI 11-231	D (Airdrop 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/A3AS (Airfield Suitability Branch) and comply with the GDSS/GDSS2/ASRR for updates to airfield operability and weight bearing capability. Refer to AFI 11-202V3 Chapter 8 for non-DoD published approach criteria. As a minimum, airfield review will include:

6.5.1. Airspace/Airfield Review. FLIP, FIR/UIR/ADIZ procedures.

6.5.2. Airspace classifications, GDSS/ ASRR, and Giant Report.

6.5.3. Special Pilot in Command (SPIC) airport review.

6.6. Aircrew Intelligence Briefing. Aircrews 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. Obtain timely intelligence updates prior to entering a specific area of operations (AOR). In theater, aircrews should receive intelligence updates on initial arrival at a forward operating location (FOL), or en route stop, and thereafter when significant developments occur. Report information of possible intelligence value to the local intelligence office as soon as practical to ensure timely dissemination of mission reports (MISREPs).

Section 6B—Predeparture

6.7. Global Decision Scheduling System 2 (GDSS2) Account. Pilots will obtain a GDSS2 account prior to operating on IFM-planned sorties. Download aircrew departure papers using the GDSS2 account, at locations without an AMC C2 presence. For operational missions, ensure GDSS2 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.

6.8.1.1. Electronic signatures, including MAJCOM approved systems (PEX , GTIMS, etc), may be used for FCIFs.

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 after their name on the file copy of the flight authorization or file copy of their crew orders. This applies to any crewmember whose electronic sign-in system is not working at show time.

6.8.4. **(Added-452AMW)** In addition to signing off FCIFs, the crew member will also initial the flight orders by their name.

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. Publications and forms may be maintained and carried electronically provided operable in-flight viewing capability exists. Suggested items include: ***NOTE:*** * Indicates mandatory for all TACC or AMC missions away from home station and as directed by C2 authority.

6.10.1. Publications:

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

6.10.1.2. * DoDM 4140.25-M, Vol. II Ch 16, *Government Fuel Card Program Management Office DoD Fleet Card, AIR Card®, and SEA Card®.*

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. *Airfield Suitability and Restrictions Report (ASRR).

6.10.1.6. *AMC Aircrew Border Clearance Guide.

6.10.1.7. *AMC Handbook 11-214, *AMC Aircrew Hazardous Materials Handbook.*

6.10.1.8. *Flight Crew Bulletin (FCB).

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

6.10.1.10. *AMCI 24-101 V11, Transportation, Cargo and Mail Policy

6.10.1.11. *AMCI 90-903, Aviation Operational Risk Management

6.10.2. Forms:

6.10.2.1. DD1351-2, Travel Voucher or Sub Voucher.

6.10.2.2. DD1351-2C, *Travel Voucher or Sub Voucher (Continuation Sheet)* .

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

6.10.2.4. DD1748-2, *Airdrop Malfunction Report (Personnel-Cargo).*

6.10.2.5. *DD2131, *Cargo/Passenger Manifest*.

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

6.10.2.7. *AF IMT 15, *United States Air Force Invoice*.

6.10.2.8. AF IMT 457, *USAF Hazard Report*.

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

6.10.2.10. *AFTO IMT 781, *ARMS Aircrew/Mission Flight Data Document*

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

6.10.2.12. AF IMT 3211, *Customer Comments*.

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

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

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

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

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

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

6.10.2.19. SF Form 702 ***Security Container Check Sheet***

6.10.2.20. Japanese Customs Service Forms.

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

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

6.10.4. Miscellaneous:

6.10.4.1. *Box car seals.

6.10.4.2. *Masking tape.

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. The minimum contents of route navigation kits are in **Table 6.2**.

6.11.3. On local unit training sorties, local area navigation kits may be used in lieu of route navigation kits in **Table 6.2**. Contents of these kits will be determined by the unit.

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, AP/4)	1
FLIP IFR Supplement	1
FLIP Flight Information Handbook	1
FLIP En route (high and low)	1
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
TERPS approved Host Nation/Jeppesen Approach Procedures/Charts	As required
Topographical and Sectional Charts for areas of operation (GNC/OPC/TPC/JNC/JOG/Sectionals)	As required
FLIP VFR Supplement	1
DoD Area Arrival Charts	1
Navigation and Comm Database Disks	As required
NOTE: * Units issuing laptops to aircrews with updated electronic FLIP planning documents do not have to issue paper versions.	

6.12. Briefing Requirements.

6.12.1. Pre-Departure Briefing Items. The PIC and controlling agency jointly share responsibility to identify special briefing requirements. The PIC will contact the local C2 agency to confirm mission support requirements.

6.12.2. Pilot in Command Briefing. Cover all applicable items of the mission briefing guide, including MAJCOM, NAF, unit special interest items (SIIs), CRM, ORM levels, taxi brief with ground crew and mitigating factors. Brief crewmembers on the specific mission details if not previously accomplished. Use a MAJCOM approved briefing guide. Reference AFTTP 3-3.C-17 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), CRM, and the ORM level and mitigating factors for the mission. Complete this briefing prior to engine start.

6.12.2.2. NVG Briefing Requirements. Refer to MAJCOM Approved Briefing Guide and AFTTP 3-3.C-17 for expanded techniques.

6.12.2.3. Departure/Arrival Briefings. The PF will reference the departure/arrival briefings of MAJCOM approved Mission Briefing Guide to verify all applicable items have been briefed prior to calling the brief complete.

6.12.2.3.1. The departure brief will be accomplished when called for in the aircrew checklist. The PF will brief all applicable items of the departure brief. For multiple takeoffs and departures at the same airfield, PF is only required to brief items that changed from the previous brief.

6.12.2.3.2. The arrival brief will be completed prior to the start of descent. For local transition training, complete the arrival brief as soon as possible after departure but no later than configuring for the approach. The PF will brief all applicable items of the arrival brief. If planning a visual approach, the PF will brief a suitable backup instrument approach if available. For multiple approaches and/or landings at the same airfield, PF is only required to brief items that changed from the previous brief.

6.12.3. Specialized Briefing. Use specialized briefings to detail operating procedures or SIIs peculiar to various crew positions, and to answer questions relating to those specialties.

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 618 AOC (TACC) weather operations (or the Operational Weather Squadron (OWS) supporting the theater C2 Agency) 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 618 AOC (TACC) weather operations, obtain weather through any means available prior to mission accomplishment.

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

6.12.4.4. Local Training Flights. Verbal weather briefings are authorized.

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.

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.

6.12.8. Training/Evaluation Briefing. Before all training/evaluation missions, instructors/flight examiners will brief the crew on requirements and objectives for each student or examinee.

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.

6.13.1.1. **(Added-452AMW)** 452 OG/OGV will issue all static 2-digit call signs to Instructor Pilots.

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 has 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. Instrument Flight Rules. Conduct flight operations under IFR to the maximum extent possible without unacceptable mission degradation.

6.15. Flight Plan/Data Verification. All waypoint data not retrieved from a current database (WWNDB) will be verified from a current source (FLIP, NAT message, etc) for each waypoint entered. Reference paragraph **11.2** for additional procedures.

6.16. Departure Planning. Use AFI 11-202V3 *General Flight Rules*, AFMAN 11-217V1 *Instrument Flight Procedures*, AFMAN 11-217V2 *Visual 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, NOTAMS, GDSS 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 procedure 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 sortie is planned as a VFR flight. VFR departures require detailed planning to ensure obstacles and terrain are avoided.

6.16.1.2. IAW AFI 11-202V3 and AFMAN 11-217V2 crews are specifically authorized to depart VFR without meeting IFR departure procedure restrictions along the planned departure route with one engine inoperative while adhering to the following:

6.16.1.2.1. Utilize radar advisory, monitoring, or control services when practical, and ensure flight following by any available means (i.e. FSS or C2).

6.16.1.2.2. Consider reducing aircraft gross weight and/or delaying the mission until environmental conditions improve.

6.16.1.2.3. Crews must be knowledgeable of and comply with guidance contained in AFMAN 11-217V2.

6.16.1.2.4. Crews are responsible for terrain and obstacle planning/avoidance and must climb to the Minimum IFR Altitude (MIA) as soon as practical.

6.16.1.2.5. Crews will use all available resources to mitigate risk. This includes (but not limited to) supervisors, ORM, aircraft flight manuals, and aircraft commander discretion.

6.16.1.2.6. Operations IAW this authorization are to be used as the last resort when the mission justifies the increased risk.

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

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

6.16.1.3.2. 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 can be met.

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

6.16.1.5. When departing VFR, maintain VFR cloud clearances until obtaining an IFR clearance and 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. 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. (Reference AFMAN 11-217V1 for Runway End Crossing Heights)

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 MAJCOM approved SDP website. ‘Ad hoc’ requests for fields not currently listed may be requested through OGV NLT 48 hrs prior to scheduled departure. HQ AMC/A3V authorizes the use of Ad Hoc SDPs for a maximum of 30 days after the analysis date.

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.

6.16.2.4.2.1. If operational requirements dictate, the mission execution authority may authorize the PIC to subtract up to 48’/NM from the published (or standard) climb gradient for OEI departure planning.

6.16.2.4.2.1.1. For all 618 AOC (TACC) and CVAM tasked missions, and for training missions with external users, the PIC is authorized to subtract up to 48’/NM.

6.16.2.4.2.1.2. For all other missions, the OG/CC or equivalent (delegated no lower than SQ/DO) may authorize the PIC to subtract up to 48'/NM.

6.16.2.4.2.2. Minimum climb gradients do not take into account low, close in obstacles (obstacles or terrain 200' AGL and below) which should normally be published as a NOTE on the SID or IFR departure procedure (Trouble T). Crews must also ensure the aircraft can clear these obstacles. ***NOTE:*** If the requirements of 6.16.2.4. cannot be met, download cargo/fuel or delay until more favorable conditions exist.

6.16.3. Preflight Predictive RAIM Check. Pilots are required to accomplish a predictive RAIM check when terminal RNAV operations (SIDs/STARs/Approaches) are flight planned and no other backup navigation aids/procedures are available.

6.16.3.1. If RAIM will not be available at the time(s) and location(s) when GPS updating is required, the mission must be altered to a time when RAIM will be available. If the predictive RAIM check cannot be completed, the crew will not file terminal RNAV procedures.

6.16.3.2. The following websites are available to meet this requirement and contain KGPS NOTAM coverage.

6.16.3.2.1. Worldwide. <**http://augur.ecacnav.com/augur/app/home**>. Users will select the terminal/approach tool and input ICAO departure and arrival points. The following options must also be selected: Estimated mask angle and FDE algorithm. Two printouts must be generated (one for approach and one for terminal). The text format result option provides an easy-to-read printout of what times RAIM will be unavailable at the selected ICAO (baro aided column applies to C-17A aircraft).

6.16.3.2.2. CONUS. (accessible from non dot-mil computers) WWW.RAIMPREDICTION.NET. Users will select the grid display tool along with "baro-aiding". Terminal and NPA (non-precision approach) displays both need to be checked.

6.17. Weather Minimums for Takeoff. Departures with weather below landing minimums is authorized IAW AFI 11-202V3, Ch 8. When weather is below approach and landing minimums (ceiling or visibility) a departure alternate is required (see paragraph **6.19**).

Table 6.3. Weather Minimums for Takeoff.

MISSION	VIS	REMARKS
Operational	1000 RVR (300 meters)	When less than RVR 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 (minimum RVR 1000 on both) and runway centerline lighting is operational. For any takeoff below 1600 RVR, the crew must be fully qualified.
All others	1600 RVR (490 Meters)	For runways with more than one operating RVR readout, RVR must read 1600 minimum on all.

NOTES: If no RVR readout is available for the departure runway, visibility must be reported to be 1/2 mile (800 meters). When weather is below approach and landing minimums (ceiling or visibility) a takeoff alternate is required (See paragraph **6.19.**)

6.18. Alternate Planning. Select alternate airports meeting the requirements of AFI 11-202V3. Choose alternates that best meet mission requirements and conserve fuel (see **Chapter 14**). 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 lowest suitable approach (at departure aerodrome). Do not use Category II ILS weather 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. For an alternate within 30 minutes flying time, the existing weather 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. For an alternate within two hours flying time, the existing weather 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 the available DoD or National Aeronautical Charting Office (NACO) precision approach; or

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; or

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***: OCONUS, intra-theater flights that do not exceed 3-hours, comply with basic AFI 11-202V3.

6.20.3. When filing to a remote or island destination, aircrews may use 2+00 holding fuel (in lieu of an alternate). 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:*** See **Chapter 14** for fuel planning considerations to a remote or island destination.

6.21. Adverse Weather.

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

6.21.1.1. The C-17A is a category III aircraft for turbulence. 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. Turbulence category charts are found in Air Force Weather Agency technical note AFWA/TN 98/002, *Meteorological Techniques*.

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. When freezing fog is forecast or reported, aircrews will confirm with weather agencies what type (if any) icing is associated with the freezing fog.

6.21.2.1. Do not takeoff under conditions of freezing rain. Do not takeoff under conditions of freezing drizzle except when 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 takeoff, 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 provide little anti-icing benefit, and therefore have limited 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. 20 NMs at or above flight level FL 230.

6.21.3.2. 10 NMs below FL230.

6.21.3.3. 5 NMs for tactical low-level operations below FL230 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 hazards. Refer to TO 1C-17A-1 and AFH 11-203V1, *Weather for Aircrews*.

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 providing they are not producing any hazardous conditions (such as hail, lightning, strong winds, gusts fronts, heavy rain, wind shear, or microburst) at the airport, and are not 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 AFI 11-202V3 and 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. Refer to AFH 11-203V1, Weather for Aircrews, for additional information on 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 Ash Operations.

6.21.10.1. Aircraft flight operations through, over, or under areas of forecast or known volcanic activity or ash is prohibited. Plan all missions to avoid forecast of known volcanic activity/ash by at least 20 NMs. ***EXCEPTION:*** Operations near volcanic activity/ash may become operational necessary (i.e. humanitarian evacuation). In such cases, supplementary MAJCOM guidance will be released when operations are expected in known or predicted volcanic activity/ash areas.

6.21.10.2. Anytime flight operations are directed within the vicinity of volcanic activity/ash, crews must stay alert for pockets of increased ash concentrations. Inadvertent ash penetration may be difficult to recognize, particularly at night or in IMC. Refer to TO 1C-17A-1 for further guidance.

6.21.10.3. If volcanic ash is encountered (refer to TO 1C-17A-1 for indications), immediate action must be taken to protect the aircraft and exit the affected area.

6.21.10.4. Crews that encounter volcanic ash or, when MAJCOM directed, are planned to operate through low concentrations of volcanic ash will make a write-up in the AFTO Form 781 annotating altitude flown and duration of flight.

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

6.21.11.1. Within 8C of freezing.

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

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 preflight activities.

6.22.1. Flying units will develop a local ORM program to include personal ORM assessment for all missions and accomplished by all crewmembers prior to each flight.

6.22.2. **(Added-452AMW)** IAW AMCI 90-903, the latest versions of the ORM Worksheet will be used for all missions, including local training sorties.

6.22.3. **(Added-452AMW)** Worksheet Tier 4 (Aircrew column) will be completed prior to flight for each crew duty day. The ORM worksheet will be signed by the aircraft commander (AC). For home station departures, Tier 3 (SQ column) will be completed at the discretion of the person signing the flight authorization. Completed ORM worksheets will be filed and routed for archiving, IAW squadron policies, upon mission completion.

6.22.4. **(Added-452AMW)** While the mission is in execution, Tier 4 will be completed prior to each crew duty day and the worksheet will be signed by the AC. The completed worksheet will be given to the appropriate C2 agency and a copy will also be placed in the post mission paperwork folder for turn-in upon return to March ARB.

Section 6C—Preflight

6.23. Hazard Identification and Mitigation. After the entire crew is assembled at the aircraft, the PIC will brief primary mission hazards facing the crew during takeoff and climb-out.

6.24. AFTO Forms 781 Series.

6.24.1. Review AFTO Forms 781 series before applying power to the aircraft or operating aircraft systems. An 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 DD1896, *Jet Fuel Identaplate***,** and AIR card are aboard the aircraft.

6.24.2. One-Time Flights. An aircraft may be released for a one-time flight (see **Chapter 4**) 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. Although a one-time flight may be authorized per **Chapter 4**, maintenance release (clearing the Red X) will still be required. Coordinate the maintenance release and mission requirements with the controlling agency. The PIC's concurrence is required before the aircraft can be flown.

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

6.25. Aircraft Servicing and Ground Operations. Reference paragraph **12.4** for additional information.

6.25.1. APU Usage. For fuel conservation, minimize use of APU. Aircrews will utilize Aerospace Ground Equipment (AGE) to the maximum extent possible consistent with T.O. guidance and mission requirements. AGE will include electrical power and heating/cooling units as applicable. Normal APU procedures apply for engine start/shutdown operations and when specifically required to accomplish pre-/post-flight checklist items.

6.25.2. Aircrew TO 1C-17A-1 Preflight Inspection Requirements.

6.25.2.1. The aircrew T.O 1C-17A-1preflight inspection will remain valid until either:

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

6.25.2.1.2. Another maintenance TO 1C-17A-6 preflight is performed.

6.25.2.2. When an aircrew assumes a preflighted spare or quick turn, a thorough visual inspection will be performed.

6.25.3. Fire Protection and Crash Rescue.

6.25.3.1. The aircraft engine/APU fire extinguisher system fulfills the minimum requirements for fire protection during engine/APU start.

6.25.3.2. A fireguard should be used for all engine starts. A crewmember or ground controller may act as fireguard.

6.26. Aircraft Recovery Away from Main Operating Base (MOB). Reference paragraph **12.6**

6.27. Aircrew Flight Equipment Requirements.

6.27.1. 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.

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

6.27.1.2. Normally, unpressurized flight will not be planned above 18,000 feet cabin altitude (except HALO). Aircrews required to fly unpressurized missions above 20,000 will prebreathe 100 percent oxygen in accordance with AFI 11-409

6.27.2. Rafts. On overwater flights do not carry more passengers and crewmembers than life rafts will accommodate.

6.27.3. Life preserver units (LPUs) or Personal Floatation Device. The loadmaster will place an LPU within easy reach of each passenger and aircrew member before takeoff on overwater flights (outside gliding distance to land). Ensure the appropriate number and type of life preservers are aboard for overwater missions carrying children and infants.

6.27.4. Parachutes:

6.27.4.1. Parachutes will be carried on aircraft IAW AFI 11-301V2.

6.27.4.2. Wear (or pre-fit and preposition) parachutes and helmets when specified by mission directive.

6.27.5. Fall Protection. Aircrew members are prohibited from climbing onto the upper fuselage or wing surfaces. Aircraft Commanders will ensure no other personnel (excluding qualified ops/maintenance personnel), have access to, or be allowed to, climb onto the fuselage or wings.

6.27.6. **(Added-452AMW)** Life Support Equipment Locker:

6.27.6.1. **(Added-452AMW)** The survival locker will not be utilized as a repository for various types of loose items. Aircrews must be able to readily access emergency equipment in all situations. The only items authorized to be stowed in the survival locker

are required life support equipment for the mission (i.e., all type LPUs, parachutes, EPOS and EEBDs):

6.27.6.1.1. **(Added-452AMW)** Helmets

6.27.6.1.2. **(Added-452AMW)** Protective clothing kit

6.27.6.1.3. **(Added-452AMW)** Passenger service kit

6.27.6.1.4. **(Added-452AMW)** Pillows and blankets

6.27.6.1.5. **(Added-452AMW)** Wheel chocks (only on aircraft modified with specific stowage provisions)

6.27.6.2. **(Added-452AMW)** The crew will ensure all other items are removed from the survival locker by the respective agency (i.e., maintenance, passenger service, etc.) and stowed in its correct location. If there are items that do not currently have a designated storage location on the aircraft and are required for that particular mission, they will be placed in the stowage bins on the cargo door or will be strapped to the cargo floor.

6.27.7. **(Added-452AMW)** AFE equipment. When required, helmet and oxygen mask equipment inspection dates should be checked to ensure the equipment will not expire prior to mission completion. A helmet/mask pre-flight is required prior to each flight to identify any component malfunctions. All helmets/masks will be returned to the Aircrew Flight Equipment (AFE) shop at the end of each mission to be post-flighted and report any component malfunctions. AFE will store helmets/masks in individual storage lockers. Helmet bags will be used to transport helmets and oxygen masks. These items are the only items authorized to be stored inside AFE helmet bags, so as to prevent damage to this equipment.

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

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

6.29.1. Load Data Information (Applicable to AFRC/ANG completing 618 AOC (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 Form 4075, *Aircraft Load Data Worksheet*.

6.30. 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.

6.30.1. AMCH 11-214, *AMC Aircrew Hazardous Material Handbook*, contains a description of the types and classes of hazardous cargo that may be carried. AMC and AMC-gained PICs are responsible for ensuring that all procedures contained in AMCH 11-214 are complied with when airlifting hazardous cargo.

6.30.1.1. For more information regarding hazardous materials, refer to AFMAN 24-204, *Preparing Hazardous Materials for Military Air Shipment.*

6.30.2. Flight Planning. Based on the Hazardous Cargo Briefing, the PIC will:

6.30.2.1. Enter "Hazardous Cargo" and the mission identifier or flight number in the appropriate section of the flight plan. Use *Remarks* section of DD175, *Military Flight Plan*, and *Other Information* section of DD1801, *International Flight Plan, DOD*. Refer to the FCG for country specific requirements concerning over-flight when transporting hazardous materials cargo.

6.30.2.2. If possible, plan the flight to minimize overflying heavily populated or otherwise critical areas. Approach, landing, and takeoff tracks are excluded.

6.30.2.3. 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.). This message can be sent via AOC, if available.

6.30.2.4. 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 **6.30.2.3** If available, C2 will relay required information to next destination.

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

6.31.1. 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, *Cargo Manifest* or similar automated product (such as CALM or AALPS), 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.

6.31.1.1. 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:

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

6.31.1.1.2. 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.

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

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

6.31.2.1.1. DCS courier.

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

6.31.2.1.3. US Department of State Diplomatic Courier.

6.31.2.1.4. US Department of State activity.

6.31.2.1.5. US military guards.

6.31.2.1.6. US DOD civilian guards.

6.31.3. 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.

6.31.4. 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

6.32. 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.

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

6.32.2. 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.

6.33. NVG Departures.

6.33.1. 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.

6.33.2. NVG Crosswind Limits for Departure.

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

6.33.2.2. Runways wider than 120. Maximum crosswind component is 20 knots. ***EXCEPTION:*** OG/CC may approve up to a 30 knot crosswind component.

6.33.3. 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. The PIC will brief NVG failure on takeoff procedures. The PM will be ready to immediately assume aircraft control if the PF experiences spatial disorientation or an NVG malfunction.

Section 6E—En route

6.34. Flight Progress. In-flight, use all available navigational aids to monitor mission computer navigation performance. Immediately report malfunctions or any loss of navigation capability that degrades centerline accuracy to the controlling air route traffic control center (ARTCC).

6.34.1. Oceanic procedures. Crews will use only the MNPS Oceanic Checklist and the Oceanic Expanded Checklist for oceanic crossings. Locally generated oceanic checklists are prohibited. Where appropriate, units may augment the MNPS checklist with local supplements such as ALTRV, formation, and other unique mission requirements but in no case will they substitute for the MNPS checklist.

6.34.1.1. For North Atlantic Oceanic airspace, pilots will follow the procedures written in the latest version of the MNPS manual. The MNPS manual is produced by the North Atlantic Systems Planning Group (NAT SPG) which does not have the authority to direct crew actions, hence the use of the word “should” throughout the document. However, where the MNPS manual uses “should,” crews will interpret this as “shall.” DoD Area Planning procedures will be followed only if they do not conflict with the MNPSA manual.

6.34.1.2. For Northern Pacific Oceanic airspace, pilots will follow the procedures written in the FAA Alaska or Pacific Supplement. DoD Area Planning procedures will be followed only if they do not conflict with these Supplements.

6.34.1.3. Pilots will use the following procedure prior to entering oceanic airspace to comply with coast out/in (gross nav) navigation accuracy checks.

6.34.1.3.1. Select a NAVAID that provides a DME signal (within its standard service volume range) as close to the beam position from the aircraft as possible. DME distance should be no closer than the first two digits of the flight level value (e.g. FL310 equals a minimum distance of 31 miles).

6.34.1.3.2. Display progress page 1on an MCD and enter the NAVAID identifier at BRG DST TO LSK 5R.

6.34.1.3.3. Change one MFD to the ND Compass display and associated MFC HDG REF SEL switch to TRUE.

6.34.1.3.4. Change the NAVAID CDI course selector so as to center the CDI for a course TO the NAVAID, note the DME distance then immediately record the progress page course and distance information displayed onto the Master Document.

6.34.1.3.5. Record the following navigation accuracy check information on the master document: NAVAID identifier, time (UTC), MC ANP or FOM value, and courses and distances from progress page display and ND Compass display.

6.34.1.3.6. If the noted DME distance and course in the CNC window are not within 4 miles and 4 degrees attempt another navigation accuracy check with another NAVAID, check MC position during over flight of a VOR /NDB, or use ATC radar position information referencing a NAVAID or airfield compared with the progress page 1 BRG DST TO LSK 5R.

6.34.1.4. Ten minute plotting information will include the following:

6.34.1.4.1. Full Lat/Long position

6.34.1.4.2. UTC time at that position

6.34.1.4.3. Flight level/Altitude

6.34.1.4.4. MC position update source with MC ANP/FOM

6.34.1.4.5. Pilot ID switch position

6.34.1.5. Hourly altimeter checks (if required) will be annotated on the master document.

6.34.2. Another pilot will verify waypoint data inserted into the Mission Computer. Check both the coordinate information and the distances between waypoints against the flight plan.

6.34.2.1. Once the oceanic clearance is received and any time the oceanic clearance is changed, both pilots will reverify waypoint data inserted into the Mission Computer

6.34.3. Obtain a coast out fix prior to, or immediately on entering the Category I Route or over-water segment. Perform a gross navigational error check using available NAVAIDS and annotate the position and time on the chart.

6.34.4. When approaching each waypoint on a Category I route, recheck coordinates for the next waypoint.

6.34.5. Approximately 10 minutes after passing each oceanic waypoint, record and plot the aircraft position and time on the chart, and ensure compliance with courses and ETA tolerances.

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

6.34.7. 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).

6.34.7.1. 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.

6.34.7.2. 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.

6.34.7.3. 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).

6.34.7.4. 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.

6.34.7.5. 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.

6.34.7.6. 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.

6.34.7.7. 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.

6.34.7.8. 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.

6.35. Communications Instructions Reporting Vital Intelligence Sightings 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 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.

6.35.2. Other incidents will be reported as indicated in JCS Pub 6V5 and AFMAN10-206, *Operational Reporting.*

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.

6.37.1. CPDLC/ADS data link communications will only be used on AERO-I.

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

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

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.

6.38.1. Notification of Control Agencies. When practical after completing the aircraft emergency action checklists and associated actions, the PIC shall furnish ATC 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. Use appropriate UHF or VHF frequencies.

6.38.2.2. En route. Attempt to establish a phone patch with the nearest or controlling C2 Center using AERO-I, global HF network, UHF/VHF stations, SATCOM, etc. If unable, aircrews are permitted to use ARINC radio service as an additional avenue for phone patch connectivity.

6.38.2.3. Provide the following information when time permits:

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

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. Number of personnel and DVs on board.

6.38.2.3.7. Qualification of PIC.

6.38.2.3.8. Planned landing destination and ETA.

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 618 AOC (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 612 SPTS/WX (612th Support Squadron/Weather Flight) at Davis-Monthan AFB, AZ. The ATC system can provide weather information to en route aircraft.

Section 6F—Arrival

6.41. Descent. Prior to the top of descent (TOD), the PIC will identify and discuss mitigation of associated hazards to the penetration, approach, landing, and airfield. Before descent into unfamiliar areas, pilots will review appropriate terrain charts to increase aircrew situational awareness of obstructions. Every effort will be made to accomplish briefings and appropriate checklists prior to TOD. 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. 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.

6.41.1.1. On training/evaluation flights, pilots may fly non-precision approaches or VFR traffic patterns to accomplish required training and evaluations. The pilot monitoring will monitor a precision approach when practical to enhance safety.

6.41.1.2. 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. Aircraft approach category. The C-17 is a category "D" aircraft. If maneuvering speed exceeds 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 hundred 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. Inoperative Approach Lighting. Increase the published visibility minimums of an instrument approach by ½ SM or as noted in NOTAMs, on ATIS, or on the approach plate, when any component of 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 the ceiling is below the value depicted for published DoD or approved precision approach, but visibility is at or above authorized minimums, comply with fuel requirements of **Chapter 14** before initiating enroute descent, penetration, or approach.

6.42.3.5. Variable visibility/ceiling reports. If variable visibilities/ceilings are reported, pilots may use the greatest value reported. If it is subsequently determined that weather is below minimums for the approach, comply with **6.42.10**. Do not attempt further approaches until the lowest visibility/ceiling reported is at/above approach minimums.

6.42.4. Flight Instrumentation Requirements. Aircraft are limited to a DH/MDA based on a HAT of 300-feet and RVR 4000, or ¾-mile visibility (1220-meters) with no RVR if full flight instrumentation is not available and operational.

6.42.4.1. PAR and Category I ILS. Full flight instrumentation consists of: the flight director, a HUD or PFD and NAV display at each station, and no shared ADC or IRU.

6.42.4.2. 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 altitude 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 certification.

6.42.7. MLS Approaches. Manual MLS approaches are not authorized without MAJCOM/A3/DO approval.

6.42.8. NDB Approach 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 navaids/GPS to include loading the NDB coordinates in the Mission Computer .

6.42.9. RNAV Procedures. See Chapter 11.

6.42.10. After beginning an Enroute Descent. IAW the Descent, Approach, and Landing section of AFI 11-202V3, after starting an enroute descent, and the weather is reported or observed to be below approach minimums, the AC has the option of continuing the approach to the missed approach point (MAP)/DH. Comply with the last assigned clearance until a new or amended clearance is received.

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

6.42.11.1. 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.

6.42.11.2. 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. Aircrews may fly NVG instrument approaches which transition to NVG landings with weather down to 600/2(180m/3200m) (OG/CC or equivalent may approve down to 300/1[90m/1600m]) or circling minimums (whichever is higher).

6.43.2. NVG Crosswind Limits for Approach.

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

6.43.2.2. Runways wider than 120. Maximum 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. PIC will brief NVG failure procedures after touchdown.

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 SF 44, **United States Air Force Invoice** authority to acquire the appropriate lodging accommodations. Upon return to home station, the PIC will send the SF 44 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 SF 44 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 SF 44 authority to acquire the appropriate meals, quarters, and transportation to support the service members. Upon return to home station, the PIC will send the SF 44 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 SF 44 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. Complete the AFTO Form 781 after each flight. After landing, crewmembers debrief maintenance personnel on the condition of the aircraft, engines, 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 all AMC/AFRC missions, notify 618 AOC (TACC) Logistics Control (618 AOC (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 over water, under 1000 feet above sea level for longer than 30 minutes.

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. Border Clearance. The border clearance responsibility will be as designated by the base or area command in accordance with AFI 24-401, AFI 24-402, AFI 24-403, *Border Clearance, Customs Program, and other United States Entry Requirements and Related Areas*.

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. When support is not available, 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 on-loaded 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 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.

6.46.2.5. **(Added-452AMW)** At March ARB, US Customs requires 24 hrs notice to meet inbound aircraft.

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

6.46.3.1. Follow USAF 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 (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 not under command of the troop commander, 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 and accept the troop commander's certificate with respect to troop baggage. Individual baggage declarations are not required. The troop commander should have inspected troop baggage.

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 U.S. Customs Baggage Declaration Form for each passenger. This includes observers, support personnel, civilians, news media personnel, and crewmembers. Personnel may use DD 1854, *Customs Accompanied Baggage, U.S.***,** or Customs Form 6059B.

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 AC 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**).

6.46.4.6. 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 crewmembers 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, *Medical and Agricultural Foreign and Domestic Quarantine Regulations for*

Vessels, Aircraft, and Other Transports of the Armed Forces (Joint), Department of Defense FCG, or as directed by higher headquarters. Certify the spraying on Customs Form 7507, or on forms provided by the country transited. Aircraft should never be sprayed with passengers on board. The only exception is when mandated by the FCG.

6.47.1.1. 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. ***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.

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

6.47.2. 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 TACC or the controlling 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 circuit breaker. Do not get confused between the CVR and SFDR. Crews should NOT pull the SFDR circuit breaker following a mishap or incident.

6.50. Aircrew Flight Equipment 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, aircrew flight equipment, 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 Aircrew Flight Equipment*, to ensure all required protective clothing and aircrew flight equipment and survival equipment have been certified as installed by aircrew flight equipment personnel 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 equipment found missing. 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 appropriate aircrew flight equipment or 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/A3AS.

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 impound the aircraft immediately after landing IAW AFI 21-101and contact the controlling C2 agency for further instructions.

6.54. 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) for more information concerning wake turbulence separation.

6.55. Overflying En Route Stops. The C2 agency may approve a request to overfly a scheduled en route stop (ANG Command Center for ANG-directed missions, AFRC command center for AFRC-directed missions).

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

6.56.1. Equipment. When classified equipment is onboard, ensure the C2 Center or airfield management operations office is aware of the requirement for aircraft security according to **Chapter 7** of this 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.

6.56.2. Material. Ensure COMSEC and other classified materials are turned in at destination and receipts are obtained for COMSEC and classified material. The on-site C2 center 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.

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

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

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

6.56.6. Aircraft with inoperable Mode 4 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 4 as directed in the applicable airspace control order or Air Tasking Order (ATO).

6.56.7. Ground and in-flight checks of the Mode 4, when conducted, are mandatory maintenance debrief items. Crews will annotate successful and unsuccessful interrogation of the Mode 4 on all aircraft forms (AFTO Form781A).

6.56.8. Aircrews will carry COMSEC equipment and documents required to operate the Mode 4 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.

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

6.58. Hung Flare Procedures. Conduct the following procedures after the live firing of chaff/flares or the crew suspects aircraft battle damage:

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

6.58.1.1. **(Added-452AMW)** See MARBI 13-201, Chapter 5 for local Hung Ordnance Procedures. For all hung flares, the aircraft will be directed to either Foxtrot taxiway, the hot cargo pad (taxiway Charlie) or taxiway Delta. Call 452 AMW Command Post to coordinate for EOD personnel to come to the aircraft, if needed. Only EOD personnel are qualified to address any hung flare situations. If you have a hung flare, the aircraft will be shut down and the crew will evacuate to a safe distance as determined by EOD/fire department.

6.58.2. A loadmaster, pilot, or flying crew chief (if available) will deplane the aircraft and check all chaff/flare dispensers for hung flares or damage. ***NOTE:*** Flare squibs that fail to fire are not considered hung flares.

6.58.3. If a hung flare 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 flares.

6.58.4. If a hung flare is not found, the aircraft can proceed to the parking location.

6.59. (Added-452AMW) ADTD.

6.59.1. **(Added-452AMW)** Prior to leaving home station, ensure extra printer paper is on board the aircraft. MX personnel are responsible for ensuring spare paper is on the aircraft. Loadmasters should check storage drawers or crew galley storage bins before contacting MX.

6.59.2. **(Added-452AMW)** Do not make changes to any of the operating properties of the ADTD. Many of the features of the ADTD are directly linked to the properties set at the factory on the computer. Making changes to these properties can result in malfunctions of the ADTD. It is prohibited for personnel to add unauthorized programs (i.e., games, pictures,

wallpaper, etc.) to the ADTD. Do not save mission histories, travel vouchers, EPRs, OPRs, etc., to the ADTD hard drive.

6.59.2.1. **(Added-452AMW)** The ADTD has not been granted approval for viewing/accessing electronic pubs, regardless of whether the program or file is saved to the hard drive or read and executed from a removable media source. All required in-flight reference to flight manual publications will be via paper copy or current approved eReader policy.

6.59.3. **(Added-452AMW)** Do not make an AFTO Form 781 write-up in the aircraft forms when the Norton Anti-virus information box appears on the ADTD stating the definition file is more than 30 days old.

6.59.4. **(Added-452AMW)** WWNDB Disks are included in the local trip kit and include both the WWNDB and the Terrain Awareness and Warning System (TAWS) database. The databases will be uploaded IAW 1C-17A-1CL-1.

6.60. (Added-452AMW) Aircraft Cleanliness. For aircraft arriving back at home station, the following procedures have been implemented for all missions (local and off-station):

6.60.1. **(Added-452AMW)** The cargo floor will be returned to a slick floor (all rails and rollers stowed)

6.60.2. **(Added-452AMW)** Toes will be stowed and rollers/side rails removed

6.60.3. **(Added-452AMW)** All seats will be stowed and life vests will be properly positioned behind the seats

6.60.4. **(Added-452AMW)** Blankets/pillows will be neatly stacked at one location in the aircraft

6.60.5. **(Added-452AMW)** All trash in the cargo compartment, galley and refrigerator will be disposed of in a trash bag

6.61. (Added-452AMW) Pax After Hours. After Hours Passenger Operations at March ARB. Due to the limited operation of the March ARB Passenger Terminal, the following procedures are implemented:

6.61.1. **(Added-452AMW)** After Hours Departures: Passengers departing from March ARB will process thru the passenger terminal when manning is available. Under no circumstances will the aircrew manifest passengers leaving March ARB. Command Post/Aerial Port will notify you if you have passengers.

6.61.2. **(Added-452AMW)** After Hours Arrivals: Aircrew should not expect passenger service support for passengers arriving at March ARB. The crew may become responsible for getting the passengers from the aircraft to Base Ops/Terminal. Prior to leaving the departure airfield, the loadmaster will brief all passengers on the following items:

6.61.2.1. **(Added-452AMW)** There may be no passenger support at March ARB

6.61.2.2. **(Added-452AMW)** Passengers may be required to carry their baggage and walk off of the flight line

6.61.2.3. **(Added-452AMW)** It is over a mile and a half walk from Base Ops/terminal to the Main Gate

6.61.2.4. **(Added-452AMW)** Available billeting and ground transportation are very limited, especially at night

6.61.2.5. **(Added-452AMW)** Passenger Service will handle the passengers when they are available, but the crew and passengers need to be aware of the possibility of no support being available; aircrew members are expected to do whatever possible to minimize the impact on their passengers

6.61.2.6. **(Added-452AMW)** Passengers and crews coming in from OCONUS locations still need to have agriculture and customs inspections; if there is no passenger service available and Customs need to bring in any passenger or crew, contact the 452 AMW Command Post.

6.62. (Added-452AMW) Maintenance Debrief. All aircrew debriefing will be accomplished in Bldg 356. Debriefs will be conducted during normal duty hours, 0600-2400 M-F, and 0700-1600 SAT/SUN 0700-2200 on UTAs.

6.62.1. **(Added-452AMW)** After Hours Maintenance Debrief. The aircraft forms themselves should be left on the aircraft. AF Form 664 and receipts should be turned in to the squadron in the completed forms folder along with 781s. The 729 AS SARM will provide maintenance with copies on the next business day.

Chapter 7

AIRCRAFT 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)*, AFI 31-101, *The Air Force Installation Security Program*, 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.

7.1.1. **(Added-452AMW)** 452d Aircrew Intel maintains a copy of AFI 13-207 for aircrew review.

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. Integrated Defense. The following security procedures will implement AFI 31-101, requirements for C-17 aircraft:

7.3.1. The aircraft will be parked in an established restricted area and afforded protection IAW AFI 31-101.

7.3.2. When no permanent or established restricted area parking space is available, establish a temporary restricted area consisting of a raised rope barrier, and post with restricted area signs. Portable security lighting will be provided during the hours of darkness if sufficient permanent lighting is not available. Post security forces IAW AFI 31-101.

7.3.3. At non-United States military installations, the PIC determines the adequacy of local security capabilities to provide aircraft security commensurate with this chapter. If he or she 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 support is a continual requirement and is not negated by the presence of aircrew or ground crewmembers. Security force support terminates only after the aircraft doors are closed and the aircraft taxis.

7.4. Standby Aircraft Security. Ensure aircraft hatches and doors are secure to show unauthorized entry. 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-preflight 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. The 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 a minimum of three US Air Force security force members, but may include more depending on security requirements. The team's travel status is determined by MAJCOM. The team travels in MEP status and is responsible to the PIC at all times. In turn, the PIC is responsible for the team's welfare (transportation, lodging, etc.). Ensure security team members receive a mission briefing and 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 Form 15 *United States Air Force 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 opinion of the PIC, airfield security is inadequate and the PIC determines the safety of the aircraft is in question, the PIC may waive the FDP 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 a 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 aircrew members and support personnel assigned to the mission who possess their home station AF Form 1199, **Air Force Entry Control Card**, supported by an Entry Access List (EAL) or aircrew orders. Aircrew members 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 EAL 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 aircraft ground security locking devices (i.e. box car seals/cargo straps on troop doors and escape hatch).

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 Office of Special Investigation (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, does not allow opening, 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. 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 comply with this chapter and AFI 13-207, as supplemented.

7.7.1. 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.

7.7.2. 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.

7.7.3. 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.

7.7.4. Passengers will not carry weapons or ammunition on their person or in hand-carried baggage aboard an aircraft. ***EXECPTION:*** Special agents, guards of the Secret Service or State Department, RAVEN Team Members, and other individuals specifically authorized to carry weapons.

7.7.4.1. Troops or MEP 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.

7.7.4.2. Dummy clips that can be easily identified may be loaded for training at the order of the team leader in coordination with the aircrew.

7.7.4.3. RAVENs will only be armed in-flight on specifically designated missions identified on the mission "FRAG" as "RAVEN in-flight arming required".

7.7.5. If weapons must be cleared, instruct the individual(s) to:

7.7.5.1. Move to a safe, clear area at least 50 feet from any aircraft, equipment, or personnel before un-holstering or un-slinging their weapons.

7.7.5.2. Clear weapons in accordance with standard safety procedures. Ensure troop/PIC retains ammunition IAW paragraph **7.7.4.1**

7.8. Preventing and Resisting Hijacking.

7.8.1. The Administrator, Federal Aviation Administration (FAA), has exclusive responsibility to direct law enforcement activity related to actual or attempted aircraft piracy (hijacking) in the United States. See CJCSI 3610.01A, dated 20 Jun 06, and 49 USC 46501 and 49 USC 44903(e).

7.8.2. In taking action during an aircraft hijacking situation, military forces will act under military command within the scope of their duties.

7.8.3. 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 Federal Bureau of Investigation (FBI) with all pertinent information. Where possible, the FAA will consult and cooperate with DoD prior to directing any law enforcement activity.

7.8.4. An aircraft is most vulnerable to hijacking when the aircrew is aboard and the aircraft is operationally ready for flight.

7.8.5. 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.

7.8.6. Should preventive efforts fail, any actual attempt to hijack a military aircraft must be resisted in a manner appropriate to the situation.

7.8.7. 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.

7.8.8. Delaying actions have been most successful in overcoming hijackings without loss of life or property.

7.8.9. In the case of an aircraft carrying passengers, the primary concern is the safety of the passengers.

7.8.10. 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.

7.9. 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 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, *Nuclear Weapon Security Manual*, paragraph 9B(3), 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 transmit an in-the-clear notification of hijacking to ATC. If an in-the-clear transmission is not possible, set transponder to 7500. If unable to set transponder, or if not under radar control, transmit a radio message indicating transponder change to 7500. Notify ground agencies by any means available as soon as practical and follow-up with situation reports as circumstances permit. Covert signals are no longer to be used per FAA guidance.

7.12. Forced Penetration of Unfriendly Airspace. Refer to FIH for international signals for air intercept.

7.12.1. PICs will immediately report all uncoordinated aircraft interceptions to TACC via the most expeditious means available (UHF/VHF, AERO-I, HF, AOC, etc.) after complying with guidance in the FIH. Consideration will be given to phase of flight (descent/approach/landing) and aircraft emergencies. When an airborne report is not accomplished, PICs must directly notify TACC upon landing. In all cases, ensure local C2 and intel agencies are informed.

7.13. Arming of Crewmembers. Crews will arm IAW mission directive (Form 59, SPINS, OPORD, etc.). Unless otherwise directed, one pilot and one loadmaster will be armed. Aircraft commander will identify which crewmembers will arm. 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. Crews will arm with hollow-point ammunition anytime while armed in the aircraft. If a crewmember leaves the aircraft, they must only use ammunition approved/directed per regional guidance (SPINs, OPORD, FCG, etc). If an armed crew member must leave the crew en route, transfer the weapon to another authorized crew member using AF Form 1297, *Temporary Issue Receipt.*

7.13.1.1. **(Added-452AMW)** PIC (or designee) will check out a gun box from Crew Control prior to departing on a mission that requires arming. Current Operations (452 OSS/OSO) will annotate in GDSS2 remarks if arming is required. Crew Control will call the armory NLT 15 minutes prior to the crew departing bldg 2240. The crew will arm according to this instruction and AFI 31-207. When required to arm, an aircrew member will carry a valid AF Form 523, *Authorization to Bear Firearms* and a holster capable of carrying the M9 pistol concealed.

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, onload or offload 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.

7.13.2.1. Upon initiation of the Combat Entry Checklist, crewmembers armed for anti-hijacking requirements may transfer their weapon from their concealed holster to the survival vest holster or to a holster worn outside/over combat/survival gear. At the Combat Exit checklist, transfer the weapon back to the concealed holster.

7.13.2.2. 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, their 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 passengers are not onboard, weapons may be stored in the gun box in-flight after a satisfactory stowaway check. Crewmembers will rearm before landing. Weapons will not be unloaded before placing them in a gun box.

7.13.4. Weapons Storage on the Ground.

7.13.4.1. Aircrews will store weapons and ammunition in the most secure facility available, normally the base armory.

7.13.4.2. In the event a secure facility is unavailable:

7.13.4.2.1. Non-stage aircrews may store weapons and ammunition in the aircraft gun box.

7.13.4.2.2. Stage aircrews should contact C2 for guidance.

7.13.5. When storing weapons in the gun box:

7.13.5.1. Weapons should not normally be unloaded.

7.13.5.2. Inform C2 which crew member has the gun box key.

7.13.6. Crewmembers 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.

7.13.7.1. PIC will visually verify with the designated armed crew members that they are armed, and the weapons container is accounted for, prior to releasing transportation.

7.14. Force Protection. Crews must be alert to possibility of terrorist activities at all times. Reference AFPAN 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,* for Force Protection measures.

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 657 is a tool to report near midair collisions and alleged hazardous air traffic conditions. See Attachment 3 of AFI 91-202 for more information concerning the HATR program.

8.3.1. AFI 91-204, *Safety Investigations and Reports*, and AFMAN 91-223, *Aviation Safety Investigations and Reports*, 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. Unless other MAJCOM guidance directs, PICs shall complete all appropriate areas of the form in as much detail as possible. When notified, MAJCOM 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.

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). These include:

8.4.1.1.1. Proven or suspected case(s) of hypoxia.

8.4.1.1.2. Carbon monoxide poisoning or other toxic exposure.

8.4.1.1.3. Decompression sickness due to evolved gas (bends, chokes, neurocirculatory collapse), or severe reaction to trapped gas that results in incapacitation.

8.4.1.1.4. Hyperventilation.

8.4.1.1.5. Spatial disorientation or distraction that results in an unusual attitude.

8.4.1.1.6. Loss of consciousness regardless of cause.

8.4.1.1.7. Death of any crewmember during flight.

8.4.1.1.8. Unintentional loss of pressurization if cabin altitude is above FL180, regardless of effects on people on board.

8.4.1.1.9. Inappropriate use of alcohol and effects of hangover that affect in-flight duties (crewmembers only).

8.4.1.1.10. Illness (both acute and preexisting), including food poisoning, dehydration, myocardial infarction, seizure, and so forth.

8.4.1.1.11. Exposure to toxic, noxious, or irritating materials such as smoke, fumes, or liquids.

8.4.1.1.12. A lasing incident. ***NOTE:*** Crewmembers and passengers involved in a physiological episode will see a flight surgeon as soon as practical. If direct eye exposure to laser energy is received but no visual disturbance is experienced, report to the nearest flight surgeon as soon as possible. If symptoms of visual disturbance after exposure to laser energy are experienced, report immediately to the nearest emergency room.

8.4.1.2. A human factors 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 FCF unless the engine fails to restart. N/A for AFMC.

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. A cargo door, ramp or other door malfunction when intent for flight exists which could affect system integrity.

8.4.1.7. An in-flight loss of all pitot-static or gyro-stabilized attitude/directional instrument indications.

8.4.1.8. Any spillage/leakage of radioactive, toxic, corrosive, or flammable material from aircraft stores or cargo.

8.4.1.9. Conditions that required pilot to depart takeoff or landing surface.

8.4.1.10. All in-flight fires regardless of damage.

8.4.1.11. All bird strikes regardless of damage.

8.4.1.12. 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).

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. AMC IMT 41 or 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. Affected 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. 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 Form 664. 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 Form 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 Form 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 Form 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 Form 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 Form 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 Form 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. Use host country forms to effect purchases at foreign military airfields, including "replacement-in-kind" locations. Hand scribe information from aircraft identaplate on the local form. Log and place a copy inside the AF Form 664,.

8.6.3.6. AF Form 1994, *Fuels Issue/Defuel Document***,** records fuel purchases at USAF bases using a valid DD1896. The PIC or designated representative shall complete the form then log and place a copy inside the AF Form 664.

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 submit to maintenance debrief.

8.6.3.8. DD1896, *Jet Fuel Identaplate*, is the aircraft fuel and oil charge card.

8.6.3.9. The PIC will verify the AFTO Form 781H is completed and turned in to maintenance debriefing following the mission.

8.6.3.10. For off-station missions, the PIC will complete or verify accuracy of the SF 44, AF Form 664, AFTO Form 781H, DD1898, and associated fuels receipts then place them in the AF Form 664 (use eight digits for all USAF aircraft tail number entries). The PIC will transmit all AF Form 664 information via phone, fax, or message if mission causes him/her to be off-station past the last day of the month

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 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. DD1748-2, *Airdrop Malfunction Report* (Personnel-Cargo). The DD1748-2 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 Form 4096, *Airdrop/Tactical Airland/Air Refueling Mission Recap, SKE/ZM Debrief*. The AF Form 4096 is a tool to document details of airdrop, tactical airland, AR, or station keeping equipment SKE)/zone marker (ZM) missions. PIC or designated representative shall complete Form 4096 (or command supplement) and submit same to home-station tactics office.

8.14. Operation Forms for Loadmasters. Detailed instructions for the preparation, distribution, and use of the following forms may be found in the governing directive.

8.14.1. DD Form 2131, *Passenger Manifest* (AMCI 24-101V14)

8.14.2. DD Form 1385, *Cargo Manifest* (DoD 4500.32R)

8.14.3. DD 1854, *US Customs Accompanied Baggage Declaration* (DoD 5030.49R)

8.14.4. DD 1907, *Signature and Tally Record* (DoD 4500 32.R)

8.14.5. CF 6059B, *US Customs Accompanied Baggage Declaration* (DoD 5030.49R)

8.14.6. CF 7507, *General Declaration* (Outbound/Inbound)(AFI 24-401, 402, 403,404)

8.14.7. AF Form 4069, *Tiedown Equipment Checklist*

8.14.8. AF Form 4075, *Aircraft Load Data Worksheet*

8.14.9. AMC Form 148, *Boarding Pass/Ticket/Receipt*

8.14.10. I-94, *Immigration Form, Arrival/Departure Record* (AFI 24-401, 402, 403, 404)

8.15. (Added-452AMW) Aviation Safety Action Program (ASAP).

8.15.1. **(Added-452AMW)** ASAP is a program designed to enhance aviation safety through the prevention of accidents and incidents. It is an identity protected, self-reporting system modeled after systems currently in place at many airlines that encourage the voluntary reporting of operations and maintenance safety issues and events. It is designed to provide a non-punitive environment for the open reporting of safety concerns and information that might be critical to identifying precursors to accidents. These safety concerns may be either observed or experienced by the submitter. The goal is to prevent mishaps by addressing those unintentional errors, hazardous situations and events or high-risk activities not identified and/or correctable by other methods or through traditional safety reporting sources. The reported information is used to reduce mishaps through operational, logistics/maintenance, training and procedural enhancements. Due to its capability of providing early identification of needed safety improvements, ASAP offers significant potential for avoiding mishaps.

8.15.2. **(Added-452AMW)** All crews are encouraged to submit an ASAP for any flight-related safety concerns. The website establish for doing so requires Common Access Card (CAC) operations: **http://safety-masap.com/**. To ensure identity protection, the AF Safety

Center program management has taken steps to ensure PKI information imbedded in the CAC will not be collected, stored or used for any reason. It is highly recommended that any ASAP report be submitted within 24 hours of the related event.

Chapter 9

TRAINING AND OPERATING LIMITATIONS

9.1. Passengers on Training Missions.

9.1.1. Initial qualification or re-qualification for pilots will not be conducted with passengers onboard (N/A MEP).

9.1.2. Mission certification training, upgrade training, evaluations, off station trainers, and JA/ATTs may carry passengers only if the aircrew in training is qualified. Tanker and receiver AAR is authorized if the pilot flying is qualified (AF Form 8 on file documenting successful completion of an aircraft checkride including air refueling).

9.1.3. Touch-and-go landings, multiple practice approaches, doors open in flight, practice emergency separations, and airdrops are prohibited with passengers onboard. (N/A with MEP. MEP is defined in AFI 11-401.) ***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.

9.1.4. IAW 11-202V3, practice emergency procedures are prohibited with any passengers onboard. Passengers are defined as anyone listed on a passenger manifest.

9.2. Touch-and-go Landing Limitations.

9.2.1. Touch-and-go landings will only be accomplished under the direct supervision of an IP.

9.2.2. Not Used

9.2.3. Limitations.

9.2.3.1. Comply with all flight manual restrictions and procedures to include performance degradation with fuel, cargo limits, etc.

9.2.3.2. Minimum runway length: 7000 ft. Minimum runway width: 120 ft.

9.2.3.2.1. Raised barriers reduce runway available for touch-and-go landings.

9.2.3.3. Minimum ceiling/visibility: 300 ft and RVR 40 (3/4 SM visibility).

9.2.3.4. RCR shall be 12 or higher.

9.2.3.5. Do not accomplish touch-and-go landings on runways reported with standing water, slush, or snow.

9.2.3.6. Maximum crosswind component: 25 knots.

9.2.3.7. Touch-and-go landings may be performed with cargo onboard. **Touch-and-go landings with hazardous cargo on board are prohibited.** ***EXCEPTION:*** If hazardous cargo is not required to be documented on the flight plan, touch-and-go landings are authorized.

9.2.3.7.1. Cargo security is checked prior to the first touch-and-go and thereafter at an interval determined by the PIC (should not exceed 1 hour). PICs must allow additional time required for this inspection.

9.3. Training on Operational Missions.

9.3.1. Crews may perform multiple approaches and touch-and-go landings on operational airlift and 618 AOC (TACC) directed missions provided the following requirements are met:

9.3.1.1. Normal touch-and-go limitations apply and MEPs are briefed of the activity.

9.3.1.2. All transition training will be accomplished during the first 12 hours of the FDP.

9.3.1.3. Pre-mission coordination requirements. Activity shall be approved by TWCF/TACC tasking authority and unit training is charged to unit. As part of pre-mission planning, aircraft commanders 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, aircraft commanders will coordinate with and receive approval from unit OG/CC and the airfield(s) where training is to be accomplished. They will then coordinate with the 618 AOC (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 618 AOC (TACC) to re-cut the mission and add the training mission number(s) in GDSS2/C2IPS.

9.3.1.4. Upon initial arrival at the training location, close out the current line on the AFTO Form 781 and log the training time on the next line using the appropriate training mission symbol and number.

9.3.2. Crews may accomplish AAR training on operational missions provided the following requirements are met:

9.3.2.1. All mission-required fuel is onloaded prior to commencing any training.

9.3.2.2. Passengers and MEPs are briefed on the activity.

9.3.2.3. AAR training may be accomplished with an unqualified receiver pilot at the controls if under IP supervision and no passengers are on board the aircraft.

9.3.2.4. Unscheduled AAR is not authorized without pre-coordination with appropriate C2 agencies.

9.4. Simulated Emergency Flight Procedures.

9.4.1. 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 procedure training with degraded aircraft performance or non-standard configurations will only be accomplished in the simulator.

9.4.1.1. The PIC or IP will alert all crewmembers prior to practicing emergency procedures. In an actual emergency, terminate all training and flight maneuvers practice. Training should be resumed only when the PIC determines it is safe.

9.5. Flight Maneuvers.

9.5.1. Practice of the following maneuvers are prohibited in flight.

9.5.1.1. Stall and approach to stalls including initial buffet.

9.5.1.2. Dutch roll.

9.5.1.3. Abnormal configuration approaches.

9.5.1.4. Unusual Attitudes

9.5.1.5. Bank angles greater than 60 degrees.

9.6. Briefing Requirements.

9.6.1. Training/Evaluation Briefing. Before all training/evaluation missions, instructors/flight examiners will brief the crew on requirements and objectives for each student or examinee.

9.6.2. 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

9.7. 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.

9.8. Not Used.

9.9. Flight Pilot Training.

9.9.1. FP may practice AAR from either seat (to include the contact position) with the following restrictions:

9.9.1.1. Accomplished under direct IP supervision.

9.9.1.2. No passengers are authorized. (N/A for Senior Officer Qual FPs with a Form 8 documenting AR accomplishment)

9.9.1.3. Contacts by non-AR qualified pilots will only be made after receiving acknowledgment from the tanker pilot and boom operator.

9.9.2. An FP may perform any tactical maneuver under the direct supervision of an IP.

9.10. Night Vision Goggle (NVG) Training.

9.10.1. Airland Training.

9.10.1.1. Ground Operations Training. NVG combat offloads and ground maneuvering are approved. Combat offloads may be conducted with cargo compartment lighting set to minimum red/ANVIS (overt) or IR (covert).

9.10.1.2. Takeoff and Landing Restrictions.

9.10.1.2.1. Maximum crosswind component is 15 knots.

9.10.1.2.2. One RA and one GPS must be operational.

9.10.1.2.3. Both HUDs must be operational.

9.10.1.2.4. NVG touch-and-go landings are authorized.

9.10.1.2.5. Runway must be lit with an authorized covert/overt lighting pattern.

9.10.2. Airdrop Training.

9.10.2.1. Restrictions.

9.10.2.1.1. Drop zones will be lit IAW AFI 13-217 Lighting Patterns (Covert or Overt).

9.10.2.1.2. Loadmasters are authorized to perform heavy equipment, container delivery system, dual row and JPADS 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 personnel operations are not authorized. (Restriction applies to back end of the aircraft only.)

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. The approach and landing for the GOAT are accomplished IAW the approach and assault landing sections of T.O. 1C-17A-1. No later than main gear touchdown, a go-around will be initiated IAW T.O. 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 and brake temperatures must support a full stop. For GOATs to a marked ALZ on a larger than 5000ft runway, crews may calculate brake temperature-corrected landing distance for the actual runway remaining, not the marked ALZ.

9.11.2.2. T.O. 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. A "TAKEOFF" or "LANDING" cannot be logged for currency, but will be logged on AFTO 781H as touch-and-go landings.

9.11.2.5. Will not be accomplished on Semi-Prepared Runways.

Table 9.1. Training 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	Initiate above 500	

on runway	ft AGL	
CAT II ILS	As published	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 ceiling is 5000 feet AGL. NVG tactical descents for training must remain VMC at all times.
Assault Landing Zone Operations (N/A to GOAT)		Max brake temperature 150°C.
NOTE: These restrictions do not apply to operational missions.		

9.12. Maintenance Opportune Training.

9.12.1. All aircraft in the en route system on AMC missions are available for opportune training except those designated non-available in the advisory section of GDSS Form 59 by the 18 AF/TACC (i.e. SAAM, 1A1, Phoenix Banner, and Medevac missions). Mission planners will annotate the GDSS Form 59 for those missions not allowed to be used for opportune training. The en route maintenance production supervisor will brief the aircraft commander of the intention to train, either at the aircraft or at the air mobility command center, prior to entering crew rest. If a conflict arises between the crew and en route maintenance teams it should be routed through TACC duty officer/operations director for resolution. ***NOTE:*** Aircraft Commander approval is not required.

9.12.2. Training will not be performed on aircraft carrying hot cargo or on CLOSE WATCH missions. All training will be complete and the aircraft ready for flight not later than 2 hours prior to crew show. Crews are not required to remain with the aircraft while training is performed.

9.12.3. Use of non-AMC aircraft will be supported on a pre-coordinated basis. The en route unit POC will coordinate with the owning wing command post to obtain permission to utilize the aircraft for training purposes.

9.13. (Added-452AMW) See Chapter 17 for local Combat Offload procedures.

Chapter 10

AIRCREW OPERATIONS IN CHEMICAL, BIOLOGICAL, RADIOLOGICAL, AND NUCLEAR THREAT ENVIRONMENT

10.1. Overview. The proliferation of Chemical, Biological, Radiological, and Nuclear (CBRN) weapons and the means to deliver them present serious security threats to the global operations of air mobility forces. This chapter describes the CBRN threat, passive defense measures to mitigate that threat, and guidance for ground and flight operations in a contaminated environment.

10.2. Understanding the CBRN 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 decontaminate 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, initial 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.

10.3. CBRN Passive Defense Measures. Passive defense measures are those activities conducted to negate, contain, and manage the effects of CBRN attack. Passive defense measures include pre, trans, and post-attack actions designed to mitigate the CBRN 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 CBRN 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, and the attack is a missile attack, remain in the sealed aircraft for a minimum of one-hour after the attack and/or follow host-base guidance.

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 CBRN 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 Flight Equipment (AFE) 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 CBRN 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. 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 room above the first floor when 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. Refer to Smoke and Fumes in the Aircraft checklist procedures to help purge interior contamination.

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 vice versa, without cross-contamination. Additional information on the EZ is available through HQ AMC/A3X.

10.4. Flight Operations.

10.4.1. **Mission Planning.** Aircrews must be mentally prepared to face the dangers of CBRN weapons. Flight/mission planning must be thorough. Aircraft commanders should emphasize ACDE wear, crew coordination, CBRN 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 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 618 AOC (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 or issue of dosimetry for potential radiological hazards.

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, *AERP Donning Checklist* and AMCVA 11-304, *ACDE Donning Checklist*, 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 CBRN threat area or when an alarm "yellow" or higher has been declared. When inbound to a CBRN 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 CBRN

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 and ACDE donning with assistance from ALS personnel. If possible, aircrew transport should be provided in a covered vehicle. Aircrews should avoid pre-flighting the aircraft prior to departure to prevent contamination spread to them and/or the aircraft. As aircrews proceed to fly, they 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. A more extensive discussion of this subject is found in AFMAN 10-2602, *Nuclear, Biological, Chemical, and Conventional (NBCC) Defense Operations and Standards*.

Table 10.1. Task Time Multipliers.

Heat Category	WBGT[1] Index (ºF)	Light (Easy) Work		Moderate Work		Hard (Heavy) Work	
		Work/ Rest[2]	Water Intake[3] (Quart/Hour)	Work/ Rest[2]	Water Intake[3] (Quart/Hour)	Work/ Rest[2]	Water Intake[3] (Quart/Hour)
1	78-81.9	NL[4]	1/2	NL	3/4	40/20 min	3/4
2	82-84.9	NL	1/2	50/10 min	3/4	30/30 min	1
3	85-87.9	NL	3/4	40/20 min	3/4	30/30	1
4	88-89.9	NL	3/4	30/30 min	3/4	20/40 min	1
5	≥90	50/10 min	1	20/40 min	1	10/50 min	1

NOTES:
1. If wearing MOPP 4, add 10ºF to Wet Bulb Globe Temperature (WBGT). If wearing personal body armor in humid climates, add 5ºF to WBGT.
2. Rest means minimal physical activity (sitting or standing), accomplished in shade if possible.
3. ***CAUTION:*** Daily fluid intake should not exceed 12 quarts. Hourly fluid intake should not exceed
1 quart. The work/rest time and fluid replacement volumes will sustain performance and hydration for
at least 4 hours of work in the specified work category. Individual water needs will vary ±¼ quart/ hour.
4. NL=no limit to work time per hour.

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 will be entered 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 of a sort (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 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

NAVIGATION PROCEDURES

11.1. General. This chapter establishes procedures and requirements for worldwide enroute C-17 navigation. It is to be used in conjunction with procedures and requirements set forth in AFI 11-202V3, AFMAN 11-217, and FLIP. Since airspace and associated navigational aid equipment capability are rapidly evolving, pilots must maintain an in depth knowledge of current requirements/policies.

11.1.1. Prolonged Loss of Contact. Aircrews must ensure they are following proper navigation crosscheck procedures to maintain airspace situational awareness.

11.1.1.1. Aircrews will use navigation charts to identify radio frequency changeover points to minimize the likelihood of prolonged loss of communication with ATC/radio operators. Additionally, both pilots must monitor both VHF and UHF Guard to the maximum extent possible.

11.1.1.2. At the first indication of a suspected or known loss of two-way radio capability, aircrews shall change their transponder mode 3/A to 7600. Squawking 7600 highlights the loss of two-way radio capability to ATC/radio operators and minimizes the risk of being intercepted.

11.1.1.3. In cases of suspected loss of contact with ATC, attempt to reestablish contact using other aircraft to relay messages to ATC controllers.

11.1.2. Post Flight.

11.1.2.1. For legs in which suspected or reported 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, ACFP, PFPS materials, 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.

11.1.2.2. For suspected/reported airdrop malfunctions or off-DZ drops, record ADXX RECALL page information before leaving the aircraft.

11.1.3. GPS and Global Navigation Satellite System (GNSS) are synonymous terms when referencing GPS equipment and /or procedures.

11.1.4. Sources for obtaining IRU PPOS coordinates will be in the following priority:

11.1.4.1. GPS PPOS IAW flight manual.

11.1.4.2. FLIP/Jeppesen Airfield diagrams or MAJCOM approved parking spot handouts.

11.1.4.3. DoD FLIP En Route Supplement.

11.1.4.4. Best available chart.

11.2. 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 Attache Officers (DAOs).

11.2.1. 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.

11.2.2. 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.

11.2.3. Flight Information Region (FIR). A 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 PIC avoids flight in territorial airspace.

11.2.4. 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/exit point(s).

11.2.5. 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.

11.2.6. 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.

11.2.7. In the event ATC agency challenges the validity of a flight routing or attempts to negate existing clearances, PICs 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.

11.2.8. 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.

11.2.9. Aircrews (except on weather reconnaissance missions) normally are not tasked to and will 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 PIC to be their own ATC agency to separate their aircraft from all other air traffic. If operational requirements dictate, PICs may exercise the "due regard" option to protect their aircraft. Aircraft will return to normal air traffic services as soon as practical. Refer to FLIP GP for additional guidance on due regard.

11.3. Navigation Databases/Flight Plans/Data Verification.

11.3.1. While the DOD migrates toward the use of digital products, aircrews must remain aware that there may be cases where coding errors could result in discrepancies between the database and the published procedure. For this reason, always crosscheck WWNDB procedures (DAFIF) against traditional paper FLIP prior to flying any procedure IAW AFMAN 11-217, Volume 1. If a discrepancy is identified, submit the details to their unit OGV or Stan/Eval office. Unclassified confirmed discrepancies will be emailed to National Geospatial-Intelligence Agency's (NGA) aero quality feedback section at **QUALITY@NGA.MIL** and AMC/A3VX.

11.3.1.1. **(Added-452AMW)** Navigation data base: The crew will make every effort to ensure they depart home station with a current navigation data base. If, due to mission priority, the PIC elects to depart with an out-of-date data base, the PIC will review and comply with AFI 11-202v3 requirements described in section 5.11.3.

11.3.2. Advanced Computer Flight Plan (ACFP) Use. ACFPs 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 ACFPs.

11.3.2.1. Use ACFPs to the maximum extent practical. A printed PFPS computer flight plan is an approved substitute if it includes all ACFP navigational/waypoint data and enroute wind and temperature deviation data. The PFPS computer flight plan must also include the planned payload and ramp fuel. The PIC has final responsibility for flight plan accuracy and diplomatic clearance compliance.

11.3.2.2. Verify ACFPs for route of flight and fuel computation accuracy before departure. Pass any flight plan discrepancies to the TACC flight planning office. On flight-managed sorties, promptly notify the flight manager of any flight plan discrepancies. Identify inaccurate ACFP winds to the flight manager in-flight or TACC flight planners post flight when the wind at the ACFP flight level exceeds either 30° error in direction or 25 knots in speed.

11.3.2.3. Flight plan course values may differ between the ACFP and the mission computer flight plan. The ACFP course value (mag or true) is the average course direction for that leg. The mission computer flight plan course is the initial course outbound measured from the leg's beginning waypoint after any rollouts. Therefore, the mission computer's flight plan course may differ by a few degrees from the ACFP's flight plan course. The magnitude of this difference is more pronounced depending on leg length and direction.

11.3.3. Aeronautical Information Regulation and Control (AIRAC) cycle

11.3.3.1. Effectivity of the aircraft's WWNDB and aircrew Aeronautical Information Publication (AIP)/FLIP documents are based on AIRAC cycles.

11.3.3.2. ICAO Document 8126 (Aeronautical Information Services Manual) specifies that 00:01 UTC shall be used to indicate the time when new AIP/FLIP documents will become effective. However, some countries have filed an exception. For example, the United States is 09:01 UTC on the effective date while Australia is 16:00 UTC the day prior to the effective date. AIRAC cycle changes require ATC computer systems to be updated. For that reason, some countries have modified their AIRAC cycle change day/time when air traffic is at the normal daily minimum for their airspace.

11.3.3.3. Pilot considerations during non 0001 UTC AIRAC cycle changes. Even though numerous NGA FLIP products have 0001 UTC effective times printed on them, plan not to receive a clearance for new or changed published procedures/ routings until that ATC system's airspace computers have been updated.

11.4. Master Flight Plan / Plotting Chart.

11.4.1. Crews will use the MAJCOM approved plotting chart to plot all oceanic waypoints from entry to exit. DOD enroute charts that cover the oceanic routing are the only suitable substitute to the approved plotting chart and must be turned into unit OGV upon mission completion. ***NOTE:*** The AMC approved plotting chart is located on the AMC/A3V website under publications.

11.4.2. Prior to flight, the PIC or designated representative shall plot the oceanic portion of the flight on an appropriate plotting chart. Place the following information on the chart:

11.4.2.1. Mission number.

11.4.2.2. Preparer's and PIC's name.

11.4.2.3. Date.

11.4.2.4. Flight plan route depicting reporting points with proper names or coordinates.

11.4.2.5. Equal Time Point for emergency recovery to alternate airfield.

11.4.2.6. On AR missions, plot the ARIP, ARCP, exit, and turn points.

11.4.3. Multiple legs on the same chart are permissible when practical.

11.4.4. Following mission completion, turn in applicable items: plotting charts, ACFP (master document copy), and the filed flight plan (DD 1801). Units will maintain these items as part of flight records for a minimum of 120 days.

11.5. Navigation Capability / Airspace Requirements.

11.5.1. RNAV/RNP.

11.5.1.1. C-17A aircraft are approved for unrestricted MNPS (RNAV 12.6), RNP-10, BRNAV (RNP-5), RNAV 2, RNAV 1, and PRNAV operations.

11.5.1.1.1. C-17A aircraft with Block 17 software are approved for enroute and terminal RNP operations down to and including RNP 0.3.

11.5.2. MNPS, RNP-x, P-RNAV, BRNAV, RNAV-2, and RNAV-1 are defined in FLIP and are considered special qualification airspace. Additional restrictions to include CPDLC/ADS equipment may be required in special qualification airspace.

11.5.2.1. Should any required equipment fail before entering such airspace, comply with FLIP restrictions or request a new clearance to avoid this airspace.

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

11.5.2.3. Document (AFTO 781) malfunctions or failures of required equipment, including the failure of this equipment to meet tolerances.

11.5.3. RNAV airspace/procedure restrictions.

11.5.3.1. Manual entry of waypoints using Latitude/Longitude or Place/Bearing is prohibited on any RNAV procedure. RNAV point-to-point navigation, e.g. Navigation Reference System (NRS) waypoints, NAT tracks, remote oceanic navigation, etc. are the only times when Lat/Long entry is allowed for RNAV.

11.5.3.2. Pilots will not change any RNAV database waypoint turn property from “no” to “yes” or vice versa.

11.5.3.3. Waypoints may be deleted in order to comply with NOTAMs or ATC clearances,, e.g. deleting the course reversal on an approach when cleared via a NO PT routing.

11.5.3.4. Altitude and airspeed parameters may be adjusted to match current NOTAMs, ATC clearance, or cold weather adjustments.

11.5.3.5. Do not use PPS-loaded GPS/MGPS as the update source for IFR navigation in civil airspace. The FAA has not certified PPS-coded GPS for civil navigation due to the classified nature of the PPS codes. ***EXCEPTION:*** PPS-loaded GPS may be utilized for navigation when specifically authorized in FLIP (AP series), specified in an OPORD, or by MAJCOM/A3 (or equivalent).

11.5.3.6. RNAV procedures or routes requiring WAAS or LAAS equipment are not authorized; the C-17’s GPS equipment does not have WAAS or LAAS capabilities.

11.5.4. RNAV SID/STAR restrictions.

11.5.4.1. The RNAV procedure will not be flown if course and distance discrepancies exist between the WWNDB procedure and charted procedure, and the differences are greater than allowed in AFMAN 11-217 Volume 1.

11.5.4.2. There are cases where non-RNAV procedures have the same routing, NAVAIDs, and/or waypoints published as an RNAV procedure (RNAV in the title). AFMAN 11-217v1 may be misleading to crew actions in stating that underlying NAVAIDs must be monitored if available for stand-alone RNAV SID/STAR. First, do not assume the courses on the RNAV procedure are the NAVAID radials. Second, when flying an RNAV procedure, do not use radials and/or courses from a conventional non-RNAV procedure with the same routing to the RNAV procedure. There are several technical reasons differences may exist. RNAV procedures do not put NAVAID frequencies and Morse code on the procedure for these reasons. Bottom line: when

flying an RNAV procedure and RNAV capability is lost, notify ATC that RNAV capability is lost and request an alternate clearance.

11.5.4.3. NGA (DOD) published RNAV terminal procedures SID/STARs, and approaches are the only type authorized. Using other published RNAV terminal procedures are prohibited, e.g. Jeppesen, host nation flip, etc.

11.5.4.4. At least one GPS must be operational and updating the MC present position (MC PPOS) before departing on an RNAV departure. Radio updating is not authorized as an update source on the ground prior to departing on an RNAV departure. ***EXCEPTION:*** If GPS updating fails during takeoff, the takeoff and planned RNAV departure may be continued. RNAV guidance will remain valid for up to fifteen minutes following failure. When able, follow flight manual section three procedures after safely airborne regarding failure of RNAV components. ***NOTE:*** Complete GPS failure will be indicated by a NAV MCD/GPS MCD cue with accompanying MCD message GPS INOP (Block 16) or both MGPS INOP and CGPS INOP (Block 17).

11.5.5. RNAV/GPS Approach Restrictions (Block 17 aircraft only).

11.5.5.1. Aircrews may fly any procedure with "RNAV (GPS) RWY" in the approach title or those that have ONLY "GPS RWY" in the approach title. These are stand-alone GPS-based approaches. These approaches can be identified on approach plates by the presence of GPS waypoint depictions (black diamond waypoints). ***EXAMPLES:*** "RNAV (GPS) RWY 19" at Andrews AFB, "ILS Z or RNAV (GPS) RWY 23" at Cherry Point MCAS, and "GPS RWY 22" at Mankato regional.

11.5.5.2. C-17 aircrews are not authorized to maintain overlay ground tracks based solely on GPS. GPS overlay approach construction is subject to coding errors and may not provide course guidance over the proper ground track. These approaches can be identified on approach plates by the absence of GPS waypoint depictions (black diamond waypoints). ***EXAMPLES:*** "NDB or GPS-A" at Blackstone AAF or "VOR or GPS RWY 31" at Butts AAF can only be flown while referencing ground based NAVAIDs and not as a stand-alone GPS approach.

11.5.5.3. Instrument approach procedures titled "RNAV (RNP)" or "RNAV (RNP AR)" or RNAV procedures that have "Special Aircraft & Aircrew Authorization Required (SAAAR)" statements in the profile view are not authorized.

11.5.5.4. GPS approaches are flown to non-precision MDA (LNAV MDA or S-xx) or circling minima only.

11.5.5.5. GPS approaches in civilian airspace require the use of CGPS equipment. MAJCOM/A3 or equivalent may approve RNAV operations and approaches utilizing MGPS only.

11.5.5.6. Charting discrepancies. Aircrews must confirm all IAP components match the charted IAP (e.g. waypoint type, course, distance, altitude constraints, etc.). If differences greater than specified in AFMAN 11-217v1 exist between the WWNDB procedure and charted procedure, the procedure will not be flown. ***EXCEPTION:*** aircrew may fly GPS approaches if the only difference between the charted instrument

approach procedure (IAP) and the DAFIF database procedure is the name of the missed approach point.

11.5.5.7. Accepting ATC vectors. Aircrews may accept ATC vectors to a published point on the approach or ATC vectors to intercept the final course. Direct-to function: if established on vectors to intercept an RNAV course, crews may utilize the 1R LSK direct-to/intercept to waypoint function. Use the inbound course value for the intercept from the MC FPLAN page. Once crews confirm that the ND map displays their intended action, crews will arm LNAV and ensure it is engaged. Crews will not descend to the next applicable altitude until established on a published segment of the approach.

11.5.5.8. VNAV is not authorized between the FAF and missed approach waypoint. MSN VNAV (MSN descent) may be used between the Initial Approach Fix (IAF) and Final Approach Fix (FAF). However, crewmembers are reminded that the MSN VNAV algorithm remains a "dive and drive system" and may command descents greater than authorized during intermediate approach segments (TERPS criteria is based on a maximum descent of 500 ft/nm, approximately 1500 VVI, between the IAF and FAF). Furthermore, MSN speeds may revert to tech order after vertical profile calculations. As a result, speed select mode (speed on thrust/pitch) and/or vertical speed mode (vertical speed command wheel) used in conjunction with MSN LNAV is the recommended mode for most RNAV approaches.

11.6. Enroute / Flight Progress.

11.6.1. Use all available FLIP en route charts, and prior to departures and arrivals, terrain charts, to ensure navigational accuracy and terrain clearance. For non-RNP software aircraft, periodically crosscheck the navigation solution (MC FOM).

11.6.2. For waypoints entered using Lat/Long, 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.

11.6.3. If a revised clearance is received, revise the flight plan in the mission computer and both pilots review the revised route before executing the change.

11.6.4. Flying In Polar Regions.

11.6.4.1. Because the C-17 does not rely on magnetic field sensors for heading determination, navigation in Polar Regions poses no significant difficulties. Magnetic and grid headings are provided for pilot selection by converting true heading information from IRU sources.

11.6.4.2. Magnetic variation information is stored as a look-up table in the IRU and provides variation data from 72°N to 60°S. No variation data is supplied above/below these latitudes. Refer to the 1-C-17A-1-2 for Polar Operations. Manual magnetic variation should only be selected when magnetic headings must be flown.

11.6.4.3. Manual magnetic variation is not taken into consideration when displaying runways from the PERMANENT NAV DATABASE, as display logic assumes a zero magnetic variation. To get correct runway displays on the NAV display, a new runway must be created in the CUSTOM NAV DATABASE oriented to true or grid as applicable.

11.6.4.4. Whenever a magnetic heading is displayed pilots will see a jump in the heading scale as the magnetic variation is significantly changed. This occurs normally at 72°N/60°S or when manual magnetic variations are inserted into the MC. If the AP/FD is engaged in HDG or HDG HOLD modes while following this magnetic heading, the aircraft will execute a turn in order to maintain the magnetic heading selected prior to the jump. These turns do not occur if the heading reference for the pilot ID switch was in TRUE or GRID when the heading was selected on the AP/FD. No turns will occur if the AP/FD is engaged in the MSN lateral mode when crossing 72°N/60°S.

11.6.4.5. Grid heading reference is provided to pilots with a mathematical relationship defined in USAF air navigation manuals using a grid chart conversion factor of 1.0. While grid heading is selectable for display anytime via the MFC panel, it is only accurate at high latitudes where the grid convergence factor is actually 1.0. Pilots should consider this heading accurate at the latitudes near and above 72°N/60°S. The message GRID MODE is displayed on the WAP when passing these latitudes for higher ones to indicate to the pilot that valid grid headings are available for navigation. If pilots have entered a manual magnetic variation as described above, the GRID MODE message is removed. Accurate grid headings are still available, but the MC interprets the pilot entered manual magnetic variation as a desire to fly magnetic headings, not grid headings.

11.6.4.6. The BDHI is oriented to magnetic headings and is not affected by HDG REF SEL knob (Block 16), however, for Block 17, Grid reference is provided when GRID is selected on HDG REF SEL. As mentioned above, for latitudes above 72°N/60°S, the programmed magnetic variation is zero and the magnetic heading is incorrect; the BDHI essentially displays true headings. The VOR/TACAN/ADF needles still operate; the ADF continues to give relative bearing, and the VOR/TACAN needles are slaved to the correct radials. However, to determine correct magnetic headings for VOR/TACAN intercepts, a manual magnetic variation must be input if the stations are oriented to magnetic north. This is also true if trying to determine magnetic bearing from an NDB. If the VOR/TACAN/NDB is oriented to true north, then the magnetic variation must be zero for correct display on the BDHI.

11.6.4.7. For VOR and TACAN navigational aids, the course select knob on the CNC is consistent with the orientation of the NAVAID as defined in the NAV DATABASE. If the NAVAID is oriented to true, then a 300 course set in the CNC is a 300 true course; if the NAVAID is oriented to grid, then the course is a 300 grid course. Currently all NAVAIDs in the PERMANENT NAV DATABASE are defined as magnetic; pilots must use the custom database to define a true or grid oriented NAVAID. Navigation position information is most easily interpreted when the displayed heading is consistent with the orientation of the NAVAID used (i.e., fly true headings when flying true TACAN radials, grid headings for grid courses, etc.).

11.6.4.8. For ILS approaches, the MC always assumes the course in the CNC to be magnetic. This has no effect on the ability of the aircraft to correctly fly the ILS, but is necessary for the MC to determine the ILS intercept angle and display NAV data. Pilots desiring to fly a magnetic ILS approach above 72°N/60°S should dial the magnetic course in the CNC and insert a manual magnetic variation in the MC. To fly a true ILS, pilots should dial the true course and ensure the MAG VAR is zero. Attempts to fly a

magnetic ILS with incorrect magnetic variation should not cause problems once established on final; the intercept may be erratic and the NAV display will show a heading different from the ILS course equal to the error in magnetic variation as the aircraft tracks the ILS beam (no wind situation). Grid only ILS procedures are not supported; pilots must convert the grid ILS approach course in the instrument approach procedure to a magnetic or true course, then ensure the correct MANUAL MAG VAR is inserted in the MC (local terminal magnetic variation for MAG ILS, zero magnetic variation for true ILS).

11.7. Low-Level Navigation. Threat and emission control requirements permitting, use all available aids (.i.e. mission computer data, navigational aid fixes, map reading) to remain position oriented

11.7.1. 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 shall 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.

11.7.2. A navigation display (ND) map format shall be displayed on at least one MFD at all times.

11.7.3. Time of Arrival (TOA) control is primarily accomplished by airspeed adjustments.

11.7.4. Means of Navigation.

11.7.4.1. One radar altimeter will be operational for all low levels. The mission computer navigation solution is the primary means of navigation backed-up with map reading, on VFR low level routes. If conditions permit, ground-based navigational aids can be used as additional information sources.

11.7.4.2. The mission computer is the primary means of route navigation in IMC. Onboard radar, ground-based radar, and/or bearing/distance fixes should be used as backups.

11.7.5. Low level modified contour flight may result in small deviations above and below the base altitude for smoothness of flight.

11.7.6. Altimeter Settings. In the absence of reported or forecasted barometric setting, crews may use the MC GPS barometric setting with the following restrictions:

11.7.6.1. Day VMC. Crews will use visual references to ensure terrain and obstacle clearance

11.7.6.1.1. Barometric altitudes (MSA, ESA, etc) will be increased by 1000 feet.

11.7.6.2. Night or IMC. Crews will add 1000 feet to their planned minimum altitudes.

11.8. Mission Computer Approaches.

11.8.1. The C-17 mission computer approach uses the MC APPROACH page of the mission computer. It only mathematically derives a final approach course and glide path from default or pilot input data. ***NOTE:*** Reference AFTTP 3-3.C-17 for techniques on programming Mission Computer approaches.

11.8.2. In a contingency, the crew will be provided an approved (TERPS'ed) approach procedure leading to a mission computer approach final approach fix. All course data and altitude restrictions 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.

11.8.3. Restrictions on Mission Computer Approaches.

11.8.3.1. Mission computer approach procedures in IMC will only be used when no other published approach procedure is available and with specific authorization from MAJCOM/A3/DO. All crews are authorized to use these procedures for training in VFR conditions IAW AFI 11-202V3.

11.8.3.2. Mission computer navigation accuracy.

11.8.3.2.1. RNP aircraft require an RNP value of 0.3 nm from the FAF to the Runway (unless non-std TERPs values used).

11.8.3.2.2. Non-RNP aircraft require a FOM of 3 or less. The PM will confirm the MC FOM is 3 or less after departing the FAF.

11.8.3.3. It is highly recommended that the approach be flown with the autopilot coupled.

11.8.3.4. Weather minima for approved MC approaches will be no lower than 600-2.

11.8.3.5. Lateral Deviation.

11.8.3.5.1. Non RNP aircraft. The PM will monitor the approach on the ND map display with MAP/RDR RNG set to 5 NM. Prior to the FAF, 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. After the FAF, ensure LDI does not exceed ½ full scale deflection.

11.8.3.5.2. For RNP aircraft, ensure LDI does not exceed ½ full scale deflection.

11.8.3.6. Navigation System Malfunctions.

11.8.3.6.1. Non-RNP aircraft. Unless the runway is in sight execute the missed approach procedure if "DEGRADED NAV ACC", "INSUFF NAV ACC", or "FLUSH ALL" is displayed on the WAP during the approach.

11.8.3.6.2. RNP aircraft. Unless the runway is in sight, execute the missed approach procedure if "UNABLE RNP" or "OVRFLY NOT POSSIBLE" appears on the MCD.

11.8.3.7. 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, aircrews will be provided the required waypoints to be loaded electronically into the custom navigation database. Aircrew will not manually enter or alter the latitude or longitude coordinates for any portion of the approach, or missed approach.

11.8.3.8. Enter all of the waypoints for the approach up to the FAF in the primary flight plan.

11.8.3.9. Enter all of the waypoints for the missed approach, starting with the missed approach waypoint (MAWP), in the secondary flight plan. Special attention should be paid to whether each waypoint is an “over fly” or “under fly”. The MAWP is usually an “over fly” waypoint.

11.8.3.9.1. Secondary FPLAN will be displayed on at least one ND Map display.

11.8.3.10. 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. If any portion does not agree with the approved procedure, the approach will not be flown.

11.8.4. Mission Computer Approach Planning Guidance. Planners will reference AFJMAN 11-226, *United States Standard for Terminal Instrument Procedures (TERPS)* and/or AFI 11-2C-17, Volume 3, addenda B.*C-17 Special Operations (FOUO).*

Chapter 12

AIRCREW MAINTENANCE SUPPORT PROCEDURES

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 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 T.O. 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.

12.4.2. 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.

12.4.2.1. Hot Refueling. Hot refueling (refueling with aircraft engines running) will only be conducted by crews that have been authorized and certified IAW AFI 11-235, *Forward Area Refueling/Rearming Point (FARRP) Operations* and AFI 11-2C-17, Volume 3, Addenda B.

12.4.3. Concurrent Servicing operations are not required on MAF aircraft unless refueling/defueling with JP-4, loading/downloading flares, or servicing LOX. Simultaneous servicing of fuel while loading passengers, cargo (including hazardous or explosive), performing maintenance, aircrew members performing inspections, or operating aircraft systems is considered to be a normal fuel servicing operation.

12.4.3.1. If required refer to TO 00-25-172, *Ground Servicing of Aircraft and Static Grounding/Bonding.*

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. Reference TO 00-20-1/AMC1.

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.

12.7.1. **(Added-452AMW)** The crew will confirm, prior to home station departure, that all required job guides are onboard the aircraft.

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

Chapter 13

CARGO AND PASSENGER PROCEDURES

13.1. General. The loadmaster coordinates loading or offloading with air terminal operations or the shipping agency; plans loads; provides in-flight services to passengers, and supervises onloading or off-loading operations. If airdrop qualified, the loadmaster participates in the aerial delivery of equipment, supplies and personnel.

13.2. Responsibilities for Aircraft Loading.

13.2.1. AMC Designated Stations:

13.2.1.1. Aerial port personnel are responsible for selecting cargo and mail for airlift, promptly completing documentation, palletizing cargo, load planning (as required), computing load distribution, and moving cargo to and from the aircraft to meet scheduled departure. Before starting loading operations, they will brief the loadmaster of destination, size, weight, and types of cargo (classified, hazardous, etc.) to permit proper positioning. They will also coordinate traffic activities affecting loading and offloading, and assign sufficient aerial port loading personnel for cargo loading. Aerial port personnel are responsible for safe positioning of material handling equipment (MHE) and cargo to or from the aircraft cargo door, ramp or ramp toes. Under the supervision of the loadmaster, aerial port personnel will prepare the aircraft for loading, stow loading equipment if the aircraft is not to be reloaded, physically load the aircraft, tie down cargo and equipment, release tie down and physically offload cargo.

13.2.1.2. The loadmaster is responsible for aircraft preflight, load planning (as required), certifying load plans, preparing weight and balance documentation, operating aircraft equipment, and cargo tie down. The loadmaster coordinates with the loading crew supervisor to validate the cargo against manifests, supervises and directs on/offloading and is responsible for safe movement of cargo into and out of the aircraft. The loadmaster will notify the PIC, C2, or terminal operations officer if loading personnel are injured or if cargo, aircraft equipment, or aircraft structure is damaged during on/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/MAJCOM publications. If cargo is refused or rearranged for these reasons, forward all applicable information, including a copy of the load plan, to MAJCOM Stan/Eval through Stan/Eval channels. AMC personnel attach an AMC Form 54, *Aircraft Commander's Report on Services/Facilities.* ***EXCEPTION:*** The aircraft loadmaster may deviate from load plans to facilitate ease of on/offloading of cargo, accommodate additional passengers, to alleviate unnecessary aircraft reconfiguration and if practical to load to optimum aircraft performance CG 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. A new load plan is not required.

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/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 the advice of other personnel (i.e., squadron, group, wing or MAJCOM Stan/Eval personnel).

13.2.1.4.1. Cargo/equipment not contained in TO 1C-17A-9 Section VI that exceeds TO 1C-17A-9 Section IV limitations, requires excessive shoring, or unique restraint provisions 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 MAJCOM Stan/Eval for questions concerning cargo certification.

13.2.1.4.1.1. Items contained in TO 1C-17A-9 Section VI have specific loading procedures that must be adhered to. A certification letter is not required unless it is discovered that an item cannot be loaded as defined. Forward a copy of the load plan to HQ AMC/A3VX along with detailed reasoning for rejection.

13.2.1.4.2. 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-17-9 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 on load, a Cargo On/Off Loading Validation Worksheet following the procedures in para 13.9 will be required. State the reason for rejection or comments and recommendations that aided in a safe on/offload. Forward worksheet to HQ AMC/A3VX.

13.2.2. At locations without AMC air terminal or traffic personnel, the shipper assumes responsibilities in paragraph **13.2.1.1**. and provides sufficient qualified personnel and MHE for on/offloading. Loadmaster responsibilities and authority are the same as described in paragraphs **13.2.1.2** and **13.2.1.3**

13.2.3. During joint airborne air transportability training (JA/ATT), special assignment airlift missions (SAAM), USAF mobility, and contingency missions, the loadmaster can accept DD Form 2133, *Joint Airlift Inspection Record*, as valid pre-inspection of equipment being offered for air shipment**.** This form, validated by two joint inspector signatures (user and transporting force), may be used in lieu of applicable portions of the vehicle inspection portion of the applicable loading checklist. However, this does not relieve the loadmaster from ensuring accompanying loads are secured prior to takeoff. 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. A clear unobstructed path must be maintained in case of an emergency evacuation of personnel. OBLE, crew or passenger bags will not be

secured in a manner that will impede the use of emergency exits. No part of the cargo load will extend over the edge of the walkway. ***EXCEPTION:*** Equipment such as spare tires, mirrors, etc., protruding from rolling stock may extend over the walkway. Palletized cargo may extend beyond the vertical stacking line of the pallet only if specifically authorized in the loading manual or a load certification letter.

13.3.1. All passenger hand-carried items must be of a size to fit under the seat and must not obstruct the safety aisle. Any item that does not fit under a seat or obstruct an aisle way will be stowed with checked baggage and secured for flight.

13.3.2. 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:*** For patient access maintain a 30 inch spacing on Aeromedical Evacuation (AE) missions, when carrying litters patients regardless of type tiedown used.

13.4. Pre-Mission Duties.

13.4.1. Cargo Missions:

13.4.1.1. The loadmaster will coordinate with aerial port personnel to establish loading times. Loading times that differ from the normal pre-departure sequence of events will be established, with PIC coordination, before the loadmaster enters crewrest. 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 operations center or other designated location to obtain load brief 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, when units are deployed as part of an Expeditionary Airlift Squadron (EAS) or a tactical/contingency operation. Duty loadmasters do not relieve the primary aircrew loadmaster(s) of their duties. Duty loadmasters ensure items loaded on aircraft do not exceed aircraft limitations and adequate restraint is applied to cargo to prevent movement. Duty loadmasters are not required to restrain cargo for flight limits. Duty Loadmasters will accomplish an Exterior and 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.

13.4.1.1.1.1. Upon arrival at an aircraft where loading operations are being directed by a duty loadmaster, the primary loadmaster will coordinate with the duty loadmaster on assumption of direct loading supervision.

13.4.1.1.2. Aerial Port Expediter (APEX) Loading Operations. APEX is an aerial port loading program directly managed and supervised by HQ AMC/A4TC and validated by MAJCOM/Wing/Operations Group Stan/Eval Loadmasters. It provides aerial port management the flexibility to determine the best time to on/offload aircraft

and 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.

13.4.1.1.2.1. APEX load directors are responsible for all loading operations IAW Technical Orders (TO) Air Mobility Command Instructions (AMCI) and related guidance. Load directors are qualified to on/offload all types of cargo, operate the aircraft winch, cargo door, ramp and struts without the presence of an aircraft loadmaster. A maintenance representative must be present at the aircraft during APEX operations, load directors are not authorized to apply/remove aircraft power or monitor aircraft operating systems.

13.4.1.1.2.2. Load directors are required to ensure restraint of cargo meets flight criteria. Load directors will accomplish a basic cargo compartment inspection IAW current APEX guidance and appropriate loading preparation checklist prior to conducting loading operations. APEX operations do not alleviate the loadmaster from accomplishing applicable checklist.

13.4.1.1.2.3. Load directors have overall control until relieved by the outbound loadmaster(s). A coordination briefing is required prior to the loadmaster assuming overall control.

13.4.1.1.2.4. Loadmasters who need on/offloads for training or evaluations should notify ATOC prior to entering crewrest. ATOC should make every effort to accommodate the request.

13.4.1.1.2.5. Loadmasters shall treat APEX loaded aircraft like any duty-loaded or staged aircraft. Any cargo discrepancies that cannot be corrected by the loadmasters in a timely manner will be reported to ATOC. Forward negative APEX trend data to AMC/A3VX through Stan/Eval channels.

13.4.1.2. Proper cargo documentation will 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 load plan with transportation control numbers (TCN) will accompany the load.

13.4.1.2.1. Load Data Information (Applicable to AFRC/ANG completing 618 AOC (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 Form 4075, *Aircraft Load Data Worksheet*.

13.4.1.2.2. AMC inspectors and aircrew are authorized access to all cargo containers placed on AMC aircraft except when accompanied by a letter signed by HQ AMC/A3 or HQ AMC/A4TC for protected or sensitive shipments.

13.4.1.3. Tiedown equipment will be exchanged on a one-for-one basis. If this is not possible, annotate the AF Form 4069, *Tiedown Equipment Checklist*.

13.4.1.4. Fleet Service Checklist.

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

13.4.1.4.2. Annotate inventory changes in section III. Place item nomenclature, increase/decrease amounts, station, date, and reason for change.

13.4.2. Passenger Missions: Maximize seat availability on all missions.

13.4.2.1. Manifesting. Passenger service or airfield management personnel manifest passengers at locations with an AMC passenger processing activity.

13.4.2.1.1. When 20 or more passengers/troops are planned, a pallet position shall be left open to accommodate palletized/floor loaded baggage.

13.4.2.2. The PIC and loadmaster are responsible for ensuring all passengers are properly manifested.

13.4.2.3. At locations without an AMC passenger processing activity 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. When the aircrew accomplishes manifesting, anti-hijack-processing is completed by the aircrew IAW AFI 13-207, *Preventing and Resisting Aircraft Piracy (Hijacking)* (FOUO). Do not hesitate to contact 618 AOC (TACC/XOGX), Aerial Port Control Center (APCC); DSN 779-0350/0355, commercial; 618-229-0350/0355, if any questions arise such as who may travel to specific locations or pass-port/visa requirements. Aircraft operating within other MAJCOMs which have operational C2 over that aircraft will contact the appropriate AMOCC for specific details. File a copy of the DD Form 2131, *Passenger Manifest*, with the flight plan. If not filed with the flight plan, annotate the location of the manifest on the flight plan IAW AFI 11-202 V3.

13.4.2.4. A passenger service representative or crewmember will assist passengers at the bottom of the steps/stairs, and the loadmaster will assist in seating passengers. DVs, passengers requiring assistance, and families should be boarded first to minimize separation. Make every effort to seat families together. Ensure that only adult, English speaking, physically capable, and willing passengers are seated next to emergency exits. To the maximum extent possible, do not seat passengers with infants, or children under 15 years old, in seats adjacent to emergency exits. The loadmaster will brief those passengers seated next to troop door(s) and/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/her in a Department of Transportation-approved Infant Car Seat (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 at the sponsors discretion; this mirrors current FAA (commercial)

standards. The FAA and USAF have banned the use of booster seats, harnesses, and vest child restraints.

13.4.2.5.1. Passengers may hand-carry their ICS. If used, secure the ICS to the seat using the seat belt. Adults will not hold the ICS during any phase of flight. In the event of turbulence or emergency landing, it is highly recommended for infants to be secured in an ICS. To prevent blocking an exit route when palletized seats are used, the ICS will not be secured in an outboard seat.

13.4.2.6. Decisions regarding eligibility or acceptance of a passenger with disabilities for flight need to be determined at the lowest level possible. Problems concerning eligibility or acceptance that cannot be resolved locally must be reported (circumstances, chronology, names, units, etc.) to HQ AMC/A4T. For time sensitive problems, telephone HQ AMC/A4TP DSN 779-4592 or 618 AOC (TACC/APCC).

13.4.2.7. 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 CRG or deploying unit CC to decide if downloading of baggage is necessary.

13.4.2.8. RUSH baggage movement will be accomplished IAW AMCI 24-101 V14, *Military Airlift Passenger Service.* The loadmaster will ensure ATOC provides a copy of the AMC Form 70, *RUSH Baggage Manifest*, for the shipment of RUSH baggage.

13.4.2.8.1. Aircrew will not accept unaccompanied baggage unless the baggage has been processed through Traffic Management Office (TMO) or Installation Transportation Office (ITO) and arrives to the aircraft as freight IAW AMCI 24-101. ***NOTE:*** Baggage that becomes separated from the owner becomes freight. Direct personnel to turn unaccompanied baggage over to TMO/ITO for proper manifesting. TMO/ITO requirements: 1) Complete DD Form 1149, Requisition and Invoice/Shipping Document. 2) Ensure baggage is free of unsafe items.

13.4.2.9. Ensure all food items are removed from the aircraft by fleet service and returned to the flight kitchen if an extended delay occurs. Ensure that a copy of AF Form 3516, *Food Service Inventory Transfer Receipt*, is received from fleet service to relieve the loadmaster of meal accountability.

13.4.2.10. Pillow and Blanket Distribution. Hand out pillows and blankets only when requested by passengers. At enroute locations, leave used pillows and blankets on seats for thru-load passengers. Do not mix used and unused pillows and blankets.

13.5. Passenger Handling.

13.5.1. The loadmaster is a key figure in good passenger relations. The following 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.

13.5.1.4. When passengers are onboard, loadmasters occupying the forward loadmaster station will not position the seat or be distracted in a manner that would prevent them from immediately viewing or assisting passengers.

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.

13.5.2.1. Ensure crewmember's entertainment media (magazines, DVD, etc.) are of an appropriate nature.

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 on/in or under cargo or baggage. Discourage passengers from congregating around galley, lavatory and crew bunk areas.

13.5.3.2. Make frequent checks on cabin temperature, passengers with small children, and cleanliness of the cabin and lavatories.

13.5.3.3. Do not allow passengers to tamper with cargo or 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. Refer to paragraph **5.3**. for further guidance.

13.5.4. Body Fluid/Bio-Hazard Clean-Up:

13.5.4.1. Aircrew members are not trained, immunized or properly equipped to clean Body Fluid/Bio Hazard. Because of the potential health risk to passengers and crew, the loadmaster will request the individuals, troop commanders, team leaders, or traveling companions to clean all body fluids/waste to the best of their ability that does not put them in further danger. If available and doing so does not detract from primary duties, the loadmaster will provide materials and assistance to accomplish the following.

13.5.4.1.1. Cordon off the contaminated area.

13.5.4.1.2. Non-sterile vinyl or nitrile gloves that cover part of the arm.

13.5.4.1.3. Safety goggles or glasses and a N-95 disposable respirator or equivalent surgical mask that protect the mucous membranes and inhalation of blood-borne pathogens that may exist.

13.5.4.1.4. Disposable coveralls and footwear covers that protect skin, clothing and footwear.

13.5.4.1.5. Paper towels or other absorbent material that absorb the fluids to minimize the spill area.

13.5.4.1.6. Place all material into sealed bag.

13.5.4.2. Avoid touching the mouth or face area with soiled hands or gloves. Wash hands thoroughly with soap and water after cleaning or clean hands with a alcohol-based hand gel (at least 60% alcohol) when soap and water is not available.

13.5.4.3. Annotate type of body fluid/bio-hazard spill location in AFTO Form 781A, *Aircraft Maintenance Discrepancy and Work Document*.

13.5.4.4. When clean-up during flight is not possible, fleet service will be notified prior to landing.

13.5.5. Meal Service. Ensure each passenger receives the meal ordered by verifying the passenger's AMC Form 148, *AMC Boarding Pass/Ticket*.

13.5.5.1. Box Meals. After takeoff, distribute box meals to passengers who boarded at the previous station. This lessens confusion when flight segments are short and more passengers board at subsequent stations. Frozen/Cooked meals will not be accepted for passengers. Box meals should be served in the following sequence:

13.5.5.1.1. Small children requiring assistance.

13.5.5.1.2. Distinguished Visitors (DV).

13.5.5.1.3. All other passengers.

13.5.5.2. Do not serve liquids or hot foods during turbulence.

13.5.5.3. When purchased meals are not furnished to passenger(s), the loadmaster will annotate the individual's AMC Form 148, *AMC Boarding Pass/Ticket* to reflect reimbursement is authorized. Inform the passenger(s) they may receive refunds at the passenger service counter at the next station, originating location, or destination terminal.

13.5.5.4. Complimentary snacks and beverages are authorized on Transportation Working Capital Fund (TWCF) funded missions (including 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 placed onboard, the loadmaster may obtain required snacks and beverages from the local in-flight kitchen.

13.6. En Route and Post-Flight Duties.

13.6.1. 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.

13.6.2. 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.). If unable to conduct a face to face briefing, leave written instructions with the cargo manifest or local C2.

13.6.3. Assist passengers in deplaning. If BLUE BARK, DVs, COIN ASSIST, or couriers are onboard, the loadmaster informs the traffic or protocol representative respectively. Refer to the General Planning (GP) Flight Information Publication (FLIP) for DV codes.

13.7. 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.

13.7.1. 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. Reference MAJCOM/theater OPORD for additional AOR specific guidance.

13.7.2. 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.

13.8. Weight and Balance. Accomplish weight and balance for this aircraft according to T.O.1-1B-50, *Weight and Balance*, and Addenda A of this AFI. The unit possessing the aircraft maintains the primary weight and balance handbook containing the current aircraft status and provides a supplemental weight and balance handbook for each aircraft. The supplemental handbook should be enclosed in a wear-resistant binder (preferably metal), stenciled "Weight and Balance" with the airplane model and complete serial number on the cover or a spine.

13.8.1. The supplemental handbook will include T.O. 1C-17A-5-2, *Weight and Balance Manual*, AFI 11-2C-17 V3 Addenda A, *C-17 Configuration/Mission Planning*, sufficient copies of DD Form 365-4, *Weight and Balance Clearance Form F—Transport/Tactical*, and a certified copy of the current DD Form 365-3, *Chart C, Basic Weight and Balance Record*. Chart C will include the aircraft's basic weight, basic moment, and center of gravity.

13.8.2. The loadmaster will file the original DD Form 365-4, *Weight and Balance Clearance Form F—Transport/Tactical*, at the departure airfield and maintain a physical or electronic copy for the duration of the flight.

13.8.3. The weight and balance section of the unit possessing the aircraft will provide the information required to maintain current and accurate documents to the appropriate agency.

13.8.3.1. Ensure a sufficient amount of printer paper is onboard to complete the mission.

13.9. Cargo Validation On/Offloading Procedures and Format. Use the following format when tasked to validate a new loading procedure or when encountering any cargo you feel requires special or specific on/offloading or tiedown procedures not currently listed in T.O. 1C-17A-9. After completion, send through standardization channels to HQ AMC/A3VX.

13.9.1. General Loading Data:

13.9.1.1. 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.

13.9.1.2. Dimensions (in inches). Length, width, and height. Rough drawing or picture of the unit pointing out critical dimensions, projections, overhangs, etc.

13.9.1.3. Weight (in pounds). Gross weight; individual axle weight; or data plate weight if possible.

13.9.2. Number of loading crew personnel and loadmasters required to on/offload cargo and their position to observe clearances, if required.

13.9.3. Equipment and Material Requirements. Special equipment and material required to on/offload cargo; i.e., cargo winch, prime mover, shoring requirements.

13.9.4. Aircraft Configuration Required.

13.9.5. Preparation of Cargo for Loading. Components that must be removed or reconfigured to on/ offload cargo (i.e., helicopter struts, exhaust stacks, cabs, etc.).

13.9.6. On/offloading Procedures.

13.9.7. Location of Tiedown Points.

13.9.8. Comments.

13.10. Emergency Airlift of Personnel. (See Chapter 17).

13.11. Rucksacks. The following procedures apply to loading of rucksacks.

13.11.1. In all cases, rucksacks will be loaded on the same aircraft as the individual.

13.11.2. 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.

13.11.3. 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.

13.11.4. 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.

13.11.4.1. When a flight is planned for a short duration, the following procedures apply:

13.11.4.1.1. The troops may wear the rucksacks in the seat provided the seats are placed in the paratroop configuration.

13.11.4.1.2. All troops must have quick release straps on their rucksacks.

13.11.4.1.3. Troops will be briefed to leave their rucksacks on the seat if an emergency evacuation is necessary.

13.11.4.2. The following procedures apply to transporting hazardous materials in rucksacks.

13.11.4.2.1. 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.

13.11.4.2.2. 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.

13.11.4.2.3. The troop commander or load team chief will brief the loadmaster concerning the individual issue of hazardous materials. The loadmaster will brief the PIC.

13.11.4.2.4. Hazardous materials identified for sustainment must be prepared and certified according to AFMAN 24-204.

13.12. Not Used.

13.13. Cargo and Material Handling Equipment (MHE) Issues.

13.13.1. ATOC will coordinate with the shipper or maintenance to connect/disconnect cargo venting systems.

13.13.2. Loadmasters are not authorized to connect/disconnect cargo venting systems.

13.14. Procedures for Loading Hazardous Cargo.

13.14.1. Hazardous materials/cargo not properly packaged and documented in accordance with AFMAN 24-204 will be rejected for air shipment.

13.14.2. 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:

13.14.2.1. Ventilate the aircraft.

13.14.2.2. Placard the aircraft.

13.14.2.3. Fire extinguishers must be available.

13.14.2.4. Thoroughly inspect the cargo.

13.14.2.5. Stow cargo away from heater outlets.

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

13.14.2.7. Use protective clothing and equipment

13.14.3. Hazardous materials shipped in a freight container (***EXAMPLE:*** ISU-90, conex etc.).

13.14.3.1. Load plans must allow in-flight access in event of an emergency, or hazardous materials will be removed from the container. Some containers have built-in “HAZMAT” access panels; however, when these containers are utilized, any hazardous materials must be positioned to permit access through the panel. Hazardous materials in the upper compartment of the container are inaccessible unless the adjacent pallet

position is left empty to facilitate opening the doors. If the person responsible for the container is not on board, the key or combination for locks on containers must be on the container adjacent to the lock or in the cargo manifest. ***EXCEPTION:*** See AMCH 11-214 or AFMAN 24-204 for hazardous cargo not required to be accessible in-flight.

13.14.4. Lithium Batteries and Pyrotechnic Material (Class/Division 1.3G). Aircraft halon fire extinguishers are ineffective in fighting fires involving primary (non-rechargeable) lithium batteries and pyrotechnic material. Primary lithium batteries shipped as cargo or installed/contained in equipment and pyrotechnic material will not be accepted as cargo without the shipper providing a suitable fire extinguisher(s). For non-rechargeable lithium batteries this may be C02, Class D, or a specialized fire extinguisher (e.g., LITH-X). Dry chemical agent is preferred extinguisher for pyrotechnic material. These extinguishers will only help reduce the intensity of the fire until the lithium and pyrotechnic material expends itself. Aircraft halon fire extinguishers are suitable when transporting only rechargeable (lithium ion) batteries. Fire extinguisher requirements for non-rechargeable lithium batteries and pyrotechnic material do not apply to items being hand carried by troops during Chapter 3 operations. ***NOTE:*** Aircraft potable water will not be used as a fire suppression system for lithium batteries or pyrotechnic material. Water presents a hazard to electronic equipment and, in less than a large quantity, is ineffective.

13.15. Silver Bullet Command And Control Module (CCM).

13.15.1. The airstream Silver Bullet CCM and Communications Module may be occupied during any phase of flight except for takeoff and landing.

13.15.2. The aircraft commander retains overall authority to remove personnel from the CCM and Communications Module when passenger safety may be jeopardized (in-flight emergency, combat threat environments etc.).

13.15.3. Aircraft commanders will be responsible to ensure that the user of the Silver Bullet is briefed prior to the mission on the takeoff and landing occupancy restrictions as well as the potential for removal from the bullet should flight conditions warrant.

13.16. Senior Leader In-Transit Conference Capsule (SLICC) and Senior Leader In-Transit Pallet (SLIP).

13.16.1. Only qualified SLICC maintenance personnel will install/remove the SLICC vestibule and connect/disconnect SLICC electrical power.

13.16.1.1. ADS palletized seats will not be loaded forward of the SLICC.

13.16.2. A maximum of four operational SLIPS may be airlifted on a single aircraft.

13.16.2.1. When multiple occupied SLIPS are used on the same aircraft, all SLIPS should be loaded into the same side of the logistics rails to simplify the inter-SLIP electrical connections.

13.16.3. The SLIP may be transported as cargo in either the ADS or logistics rail system.

13.16.3.1. When transported as cargo the SLIP will not be occupied at any time and will not be electrically powered.

13.16.4. Palletized cargo positioned directly aft of the SLIP and secured with nets or straps requires a 30 inch spacing or buffer boards secured with chains.

13.16.5. Conference capsule divan (sofa) seats will not be occupied during takeoff or landing.

13.16.6. If passenger restraint is required during turbulence, passengers are limited in number to five in the conference capsule due to availability of seat belts.

13.16.7. The SLICC berthing capsule shall not be occupied during critical phases of flight (takeoff, landing, and aerial refueling).

13.16.8. Passengers may occupy all seats on the SLIP during all phases of flight.

13.16.8.1. Seats must be facing forward or aft for takeoff and landing.

13.16.8.2. Seat belts will be worn for takeoff, landing, and when the personnel advisory seat belt light is illuminated.

13.16.8.3. Carry on items must be properly secured for takeoff and landing.

13.16.8.4. Each seat will be equipped with an EPOS and a life vest (when required).

13.16.8.5. Passengers will be briefed on location of emergency equipment and use of emergency equipment.

13.16.9. SLICC conference and berthing modules power can be shut off immediately in the event of an emergency by pressing the red emergency shutdown switch on either the external power distribution panel or internal operator control panel of each module. Aircrews will familiarize themselves with the location of these emergency shutdown switches prior to transporting passengers in the SLICC modules.

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

13.17. Deficient CGU-1/B 5000 pound capacity tiedown straps.

13.17.1. These straps appear similar to current authorized tiedown straps but do not contain any capacity stenciled on the strap. HQ AMC/A4 and item managers from the Defense Logistics Agency (DLA) have determined that this strap does not comply with the required military specifications and that the restraint capacity cannot be properly determined.

13.17.2. The deficient devices can be identified by the following characteristics: ratchet device stamped PECK&HALE, LLC; CGU-1/B 5000 LBS CAP; and 94658 6MRW/1465B

13.17.3. Do not use the affected tiedown straps for restraint. Remove any deficient devices found on the aircraft and turn them in to aerial port personnel for final disposition.

13.18. (Added-452AMW) Winch Operations. All personnel, including aircrew members NOT involved with the winching operation, will clear the cargo compartment. Additionally, personnel will not cross the winch cable during winching (while tension is on the cable) unless required by Section VI, Specific Procedures. If practical, consider closing the crew entrance door during winching operations to reduce uncontrolled access of personnel entering the cargo compartment.

Chapter 14

FUEL PLANNING AND CONSERVATION

14.1. General. This chapter provides fuel planning procedures for all C-17 missions including flight managed and local missions. Missions should be planned at altitudes, routes, and airspeeds to minimize fuel usage.

14.1.1. For all flight managed missions, the PIC, in consultation with the Flight Manager (FM) will ensure sufficient fuel is available on board the aircraft to comply with AFI 11-202V3. The FM will calculate a Required Ramp Fuel Load (RRFL) derived from the Advanced Computer Flight Plan (ACFP) that accounts for fuel required to the destination, alternate (if required), required reserves, and contingency fuel (unless on a local training mission). RRFL is annotated on the ACFP Block 10 Reqd Ramp (Ramp Fuel in the mission summary block on AAR flight plans). The PIC will verify the FM generated RRFL with aircraft Mission Computer (MC) performance prior to departure. The PIC is the final authority in determining final RRFL.

14.1.2. Any mission where an ACFP is not available, the MC is the primary fuel planning reference.

14.1.3. Additional fuel planning considerations can be found in TO 1-C-17-1-1 Performance Manual, TO 1C-17A-1-2 Mission Computer, and AFTTP 3-3.C-17, ch 6.

14.2. Fuel Requirements. This section augments AFI 11-202V3 fuel requirements.

14.2.1. Alternate Selection.

14.2.1.1. Plan fuel to an alternate only when AFI 11-202V3 or **Chapter 6** of this regulation requires the filing of an alternate.

14.2.1.2. Use the closest suitable airfield(s) meeting mission requirements (such as special requirements for hazmat or patients) and AFI 11-202V3 weather criteria. If two alternates are required, fuel plan to the more distant of the two.

14.2.1.3. Alternate Selection Priority:

14.2.1.3.1. Closest suitable military airfields within 75nms of destination

14.2.1.3.2. Closest suitable civilian airfield within 75nms of destination

14.2.1.3.3. Closest suitable airfield (military or civilian)

14.2.1.4. For flight managed missions, FMs will provide a route of flight to the primary alternate if greater than 75 miles from the planned destination. This route of flight is only for providing an accurate fuel plan and is not part of the route of flight filed with ATC.

14.2.1.5. The practice of selecting an alternate solely because it is in another weather system or selecting an alternate based on maintenance capability will not be used.

14.2.2. Fuel Reserves.

14.2.2.1. Plan a 45-minute fuel reserve at destination or alternate (when an alternate is required).

14.2.2.2. For all missions, calculate 15 minutes of contingency fuel, using destination gross weights. Contingency fuel is not considered reserve fuel. Contingency fuel may be consumed at any point during the sortie. Contingency fuel will be included in the initial RRFL calculation. ***EXCEPTION:*** Local training missions are not required to carry contingency fuel. If contingency fuel is carried on local training missions, it will not exceed 15 minutes.

14.2.2.3. For remote destinations, holding in lieu of an alternate airport is authorized. In such situations, use 2+00 hrs reserve fuel (1+15 holding in lieu of an alternate and 0+45 reserve).

14.2.2.4. ACFPs will calculate reserves and contingency fuel as holding fuel. ACFPs will have 1+00 holding when combining 0+45 reserve and 0+15 contingency fuel (for remote destinations ACFP will have 2+15 holding, combining 2+00 reserve and 0+15 minutes contingency fuel).

14.2.2.5. Reserve and contingency fuel will be computed using consumption rates providing maximum endurance at 10,000 feet MSL at destination gross weight. If an alternate is required, compute using weight at the alternate destination.

14.2.2.6. For remote destinations, reserve and contingency fuel, will be computed using the MC to calculate maximum endurance at FL200.

14.2.2.7. CAT 1 fuel reserve is no longer required and will not be calculated.

14.2.2.8. **Table 14 1** shows Identified Extra fuel additions for mission planning.

Table 14.1. Identified Extra Fuel.

THUNDERSTORMS **Corrections are not cumulative** **Use only the highest applicable correction**	**Isolated – 1300 lbs** **Few – 2500 lbs** **Scattered or Numerous – 5000 lbs**
ICING **Corrections are cumulative** **Add fuel for forecast or actual conditions**	**Departure or Landing -1100 lbs (min)/2200 lbs (max)** **Enroute – 1100 lbs**
HOLD DOWN FUEL (1) **Applicable for departures from airfields on the Hold Down/Early Descent Airfields List maintained on the AMC/A3V website.**	**4500 lbs**
EARLY DESCENT FUEL (2) **Applicable for arrivals into airfields on the Hold Down/Early Descent Airfields List maintained on the AMC/A3V website.**	**4500 lbs**
ENVIRONMENTAL HI FLOW	**100 lbs/hr**
GROUND OPERATIONS/ERO	**100 lbs/minute**

KNOWN HOLDING DELAYS	200 lbs/minute of expected delay
NOTES: (1) Hold down fuel is added as a departure bias and will be calculated as if it is burned upon reaching the top of climb. Hold down fuel will be annotated on the ACFP as "Fuel D" at the beginning of the ACFP and accounted for in the top of climb fuel block on the ACFP. (2) Early descent fuel is added as an arrival bias and will be calculated as if it is burned on the last leg of the flight plan. Early descent fuel will be annotated on the ACFP as "Fuel A" at the beginning of the ACFP and accounted for in the last leg fuel block on the ACFP.	

14.2.2.9. 2200 lbs of fuel will be calculated by ACFP and included in the Identified Extra block for Fuel Totalizer bias.

14.2.2.10. FMs will calculate the ACFP with a fuel burn bias, specific to aircraft tail number. This bias will be annotated on the ACFP as "DGDP". This bias is based on historical fuel burn data. Verify the fuel bias listed on the ACFP is correct and enter the value into the MC as a Fuel Factor (FF LSK 6L on the Performance Factors Page)

14.2.2.11. Tankering fuel for convenience is prohibited. If FM planned tankered fuel is deemed operationally necessary, it will be included in the RRFL and included on the ACFP in the Identified Extra block.

14.2.2.12. When filing an alternate located in Alaska or at latitudes greater than 59 degrees (north or south) use standard holding fuel calculations.

14.2.2.13. Local supplements will not dictate IAF or Top of Descent fuel.

14.3. Fuel Planning Procedures.

14.3.1. Prior to departure, the minimum planned landing fuel at the primary destination is the greater of:

14.3.1.1. 16,000 lbs or

14.3.1.2. Required fuel reserve, fuel required to transit to alternate (if required), contingency fuel, and any authorized identified extra fuel.

14.3.2. Fuel Calculations. PICs will verify the RRFL in the MC by ensuring all required planning data is input into the MC.

14.3.2.1. If the MC calculates a destination fuel less than 16,000 lbs, generates an INSUFFICIENT FUEL message, or in the PIC's judgment, the RRFL is insufficient to complete the mission, the PIC will:

14.3.2.2. Ensure the MC is properly programmed including any applicable drag indexes/factors into the performance factors page.

14.3.2.3. Call the FM to identify and resolve discrepancies in fuel planning calculations. (PICs will not add any additional fuel without first consulting with a FM).

14.3.3. When Actual Fuel Load (AFL) exceeds the RRFL by more than 5,000 lbs, defuel the aircraft to the RRFL.

14.3.3.1. When there is a conflict between an on-time departure and defueling, the 618 AOC (TACC) Deputy Director of Operations (DDO) or MAJCOM C2 equivalent will determine which takes precedence (OG/CC for training sorties).

14.3.4. Equal Time Point (ETP) Calculation. Crews will determine if additional fuel must be added to the RRFL in the event of a depressurization/decompression at the ETP. Plan to transit to a recovery location at optimal cruise speed for the depressurization transit altitude. Plan to land at the recovery location with 0+30 minutes reserve fuel calculated IAW 14.2.2.5.

14.3.4.1. ETP calculations are required on portions of routes when the total time between the Last Suitable Airfield (LSAF) and First Suitable Airfield (FSAF) is 3-hours or more. LSAF and FSAF selected for ETP calculations in ACFP are authorized for use in-flight.

14.3.4.2. FSAF/LSAF are airports closest to the coast out and coast in route of flight that meet applicable destination alternate requirements except weather. Forecast weather conditions for LSAF/FSAF (ETA +/- 1 Hour) will meet or exceed minimums for the lowest compatible approach or 500/1, whichever is greater. If the LSAF/FSAF is not on the flight plan course, ACFP will use a point 90 degrees perpendicular from the LSAF and/or FSAF to the flight plan course to determine the total distance between LSAF and FSAF. ***Note:*** The closer the LSAF and FSAF are to the flight plan course the more accurate the ETP solution provided by ACFP.

14.3.4.3. ACFP uses the following formula for calculating ETP:

$$\text{TIME in hours (ETP-FSAF)} = \frac{\text{DISTANCE (LSAF to FSAF)}}{(WF2 - WF1) + 2(TAS)}$$

14.3.4.4. Transit from ETP to the recovery airfield should:

14.3.4.4.1. Be planned at 25,000 feet MSL when passenger supplemental oxygen is available.

14.3.4.4.2. Be planned at 10,000 feet MSL when passenger supplemental oxygen is not available. Crews must coordinate with Flight Managers when required supplemental oxygen is not available.

14.3.4.4.3. If ACFP calculates additional fuel is required from the ETP, it will automatically be included into block 10.

14.3.4.4.4. Plan on burning all other fuel.

14.3.5. Not used.

14.3.6. Once airborne: Change each destination and RZ alternate holding fuel (LSK 4L) to 0+45 or 2+00 (if using holding in lieu of), and remove all ID extra except 2.2k (fuel totalizer bias) and authorized tankered fuel to reflect the aircrew's ability to use all, some or none of the contingency fuel.

14.3.6.1. Inflight, if the MC generates an INSUFFICIENT FUEL message, recheck flight plan/performance factors for accuracy. If the MC is accurate consider divert options and contact a FM.

14.4. Fuel Conservation. It is Air Force policy to conserve aviation fuel when it does not adversely affect training, flight safety, or operational readiness. Aircrew and mission planners

will manage aviation fuel as a limited commodity and precious resource. Fuel optimization will be considered throughout all phases of mission planning and execution. Comply with the following whenever consistent with tech order guidance and safety:

14.4.1. Fuel Loads. Excessive ramp and recovery fuel adds to aircraft gross weight and increases fuel consumption. Do not ferry extra fuel beyond optimum requirements for safe mission accomplishment and training objectives.

14.4.2. Flight Planning. Aircrew and mission planners will optimize flight plans and flight routing for fuel efficiency.

14.4.3. APU Use. Minimize APU use to the maximum extent possible. Early coordination may be required to ensure external power carts are available.

14.4.4. Center-of-Gravity (CG). Load and maintain aircraft at an optimum CG, whenever practical, consistent with mission requirements and Flight Manual restrictions. See 1C-17A-1 Chapter 5 for optimum aircraft performance CGs for varying zero fuel weights.

14.4.5. Taxi.

14.4.5.1. Minimize the number of unnecessary stops on taxiways. Breakaway taxi thrust increases fuel consumption.

14.4.5.2. Pushback/Tow Operations are fuel-preferred to Reverse Taxi.

14.4.5.3. Consider engine out taxi when permitted by Flight Manual.

14.4.6. Departure Planning. Consider use of opposite direction runway to reduce taxi and/or expedite departure routing if TOLD allows.

14.4.7. Takeoff.

14.4.7.1. Consider a rolling takeoff as well as DRT power when able. This saves fuel and engine wear.

14.4.7.2. Clean up on schedule and do not delay gear and flap retraction.

14.4.7.3. DRT takeoffs will be used unless dictated by performance, tactics, etc.

14.4.8. Climb/Descent. In-flight procedures such as climb/descent profiles and power settings should also be considered for efficient fuel usage.

14.4.9. Descent. The optimum descent is executed at idle power. Avoid early descents whenever possible.

14.4.10. Weather Deviations. Attempt to coordinate for off-course deviation early so gross maneuvering is not required.

14.4.11. Cruise techniques. Fly fuel efficient speeds and altitudes to the maximum extent possible. See paragraph **14.5** for specific procedures.

14.4.11.1. ACFPs are optimized for fuel based upon wind, altitude, etc. Accepting a “direct to” ATC clearance is not necessarily fuel or time advantageous. Crews will analyze all factors prior to accepting a “direct to” clearance off the ACFP route. Fuel savings may be further optimized by using Mission Index Flying profiles.

14.4.12. Approach. Fly most direct routing to arrival approach consistent with mission requirements.

14.4.13. Holding. If holding is required, hold clean at the most fuel efficient altitude and request a large holding pattern. Hold at endurance or performance manual recommended holding speeds, conditions permitting.

14.4.14. Parking. Consider using shortest taxi route and avoid double blocking when able.

14.5. Inflight Optimization.

14.5.1. Cruise Altitude.

14.5.1.1. After takeoff, aircrews should determine and request to cruise at their optimum altitude. Optimum altitude can be calculated with the Pilot's Performance Advisory System (PPAS) or IAW AMC approved checklist insert OPTIMUM CRUISE ALTITUDES if PPAS is not available.

14.5.2. Cruise Speed.

14.5.2.1. Aircrews will fly Maximum Range Cruise (MRC), adjusted for winds, as their normal cruise mach. 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 calculated with the Pilot's Performance Advisory System (PPAS) or IAW AMC approved checklist insert CRUISE MACH SELECTION if PPAS is not available. It is unnecessary to cruise at less than .70 Mach unless necessary to avoid fuel starvation.

14.5.2.2. Extenuating circumstances, such as fixed TOT's, ARCT's, PIFR slot times, etc., may require deviation from this guidance. The PIC retains authority regarding cruise mach and altitude selection.

14.5.2.3. Optimize fuel savings by using Mission Index Flying (MIF) profiles to the maximum extent possible without sacrificing aircraft control, communications, or situational awareness. If additional crewmembers are onboard the aircraft, aircrews will use these crewmembers to access the PPAS program and to coordinate with the Pilot Flying as to optimized airspeeds and altitudes to request (if able according to ATC).

14.6. Computer Flight Plan. Reference **https://afkm.wpafb.af.mil/community/views/home.aspx?Filter=24920** for current ACFP examples and descriptions.

14.7. Tactical Fuel Planning.

14.7.1. For tactical missions, ensure low level time and ground operations are accounted for. Select low level on the CFG/OPER page if applicable.

14.7.2. For formation flights, wingmen select formation on the CFG/OPER page.

14.8. AAR Fuel Planning.

14.8.1. Preflight Fuel Planning. Enter MC information IAW T.O. 1C-17A-1-2. Ensure that UNID EXTRA and STORED fuel for any RZ is greater than 0.0.

14.8.2. In-flight Fuel Planning. For single and multiple AAR, PICs will compute recovery fuel requirements, and required on-load requirements. Reference AFTTP 3-3.C-17, chapter 6 for AAR techniques.

Chapter 15

AIR REFUELING

15.1. General. This chapter establishes air refueling procedures and policy applicable to C-17 aircraft and aircrews and is in addition to those prescribed by the flight manual and other applicable directives.

15.2. AAR Limitations.

15.2.1. Tanker Autopilot. Tanker pilots will notify receiver pilots when any axis of the autopilot is not used. If a tanker pilot or receiver pilot is required to fly autopilot-off for training, the pilot flying the opposing aircraft will be qualified (N/A for FTU or Upgrade Training). Verbal notification and acknowledgement will take place between the tanker and receiver prior to conducting autopilot-off refueling.

15.2.2. AAR Without Tanker Disconnect Capability. Without tanker disconnect capability means the boom operator cannot trigger an immediate disconnect. AAR 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 support missions under normal conditions when the refueling is essential for home base recovery, or for any real-world mission when authorized. ***NOTE:*** When conducting AR without tanker disconnect capability, limit contacts to the minimum number necessary to complete mission requirements. Do not accomplish any training, boom limit demonstrations, or practice emergency separations.

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. C-17s are not authorized to conduct MBL training. ***NOTE:*** The boom operator and receiver pilot will coordinate all actions as required by applicable directives and checklists when making AAR contacts using emergency boom latching procedures.

15.2.4. Reverse AAR procedures will be accomplished for operational necessity IAW TO 1-C-17A-1.

15.2.5. Breakaways. Follow procedures in IAW TO 1-C-17A-1 and ATP-56(B). After the tanker terminates the procedure, coordinate clearance back to astern if additional contacts are required for mission accomplishment.

15.2.6. Practice Emergency Separations:

15.2.6.1. Follow “Breakaways” guidance in para 15.2.5.

15.2.6.2. 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. Pilots will verify the AR system is not in override. Tanker disconnect capability must be verified by a boom operator initiated disconnect prior to accomplishing the separation. Tanker disconnect capability will not be verified on the

same contact as the Practice Emergency Separation. ***NOTE:*** Practice emergency separations will terminate no lower than 500' below tanker altitude.

15.2.7. Receiver AAR Training for Unqualified Receiver Pilots. (This includes flight pilots, 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 of crew qualifications and anticipated training.

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 the astern position until back to at least 100 feet in trail of the tanker.

15.2.8. If a change of pilot control is made, the receiver aircraft will move back to at least the astern position except for immediate assumption of control by the instructor pilot.

15.2.9. If a tanker or 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. Tanker disconnect capability will be demonstrated by a boom operator initiated disconnect before conducting a limit demonstration. Tanker disconnect capability will not be verified on the same contact as the limit demonstration.

15.2.11. Weather Limitations.

15.2.11.1. Turbulence. Do not plan AAR 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. AAR alternate airfields must meet the criteria of AFI 11-202V3 and **Chapter 14** of this instruction for alternate airports.

15.2.12. NVG Use During AAR. 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 AAR shall continue flight in accordance with the following procedures:

15.3.1. Receiver pilot may continue AAR using tanker visual signals.

15.3.2. Squawk code 7600 for at least 2 minutes before exiting the track or anchor.

15.3.3. 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. As required by mission directive.

15.5. MARSA Applicability for Aerial Refueling. MARSA begins between the tanker and receiver when the tanker advises ATC that it is accepting MARSA. MARSA 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 MARSA has not been accepted by the tanker before the receiver reaches the air refueling initial point (RVIP), the receiver may be required to hold at the RVIP.

15.5.2. Once the rendezvous is completed, headings and altitude assignments may be made with the tanker concurrence with MARSA remaining in effect.

15.5.3. Upon completion of the rendezvous, receiver aircraft will remain within 3 miles of the tanker until MARSA is terminated.

15.5.4. MARSA ends when normal separation standards are established, ATC accepts control at end of refueling and ATC advises MARSA is terminated.

15.6. Altitude Reservations. Refer to ATP-56B Part 1 Chapter 2.

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 AAR frequency by ATC.

15.7.3. Receiver pilots will not rely on the tanker to obtain and read back 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. Consider obtaining clearance and providing read-back prior to rendezvous and air refueling.

15.7.4. Pilots will always ensure they obtain a stable, astern position (no closure or drifting back) prior to closing to the contact position. The astern position is approximately 50 feet aft and slightly below the tanker boom nozzle.

15.7.5. Will ensure planned air refueling altitude is within aircraft formatting capability.

15.7.6. PICs must receive permission from controlling authority (i.e., OG/CC, 618 AOC (TACC)) prior to accomplishing opportune AAR.

15.8. Tanker Aircraft Commander Responsibilities. Tanker PICs 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 (AAR and MARSA 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 ATC and tanker. To the extent practical, receivers shall establish communications with the tanker prior to or when departing the RVIP on the specified AAR 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 tankers 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 aircraft responsibility.

15.8.5.4. Tanker aircrews will not read back 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 MARSA, 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. AAR operations are normally conducted on tracks or anchor areas published in DOD FLIP. Operational considerations may require AAR 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 will reference AFTTP 3-3.C-17 for additional mission planning guidance.

16.1.1. Pilots will be given one full day of planning for any missions employing low-level operations.

16.2. Assault Landing Zones (ALZ). Landing zone size, lighting patterns, and composition criteria are contained in AFI 13-217.

16.2.1. Plan approaches to the ALZ IAW AFTTP 3-3.C-17 and the airfield identification procedures published in the OPORD or SPINS. Brief any deviations from approaches described in AFTTP 3-3.C-17. 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.

16.3. Route Planning. To the maximum extent possible, crews should follow guidance listed in AFTTP 3-3.C-17.

16.4. Low Level En Route Altitude Restrictions. The following altitudes are the minimum established for C-17 operations. FLIP/ICAO procedures, training considerations, terrain, or operational directives may dictate higher altitudes.

16.4.1. Day VMC is 300 feet AGL, modified contour.

16.4.1.1. Fly modified contour by using radar altimeter, HUD, and visual references.

16.4.2. Night VMC is an indicated altitude of 500 feet above the highest obstruction to flight, or 400 feet plus one chart contour interval above the highest depicted terrain contour, whichever is higher, within 3 NMs of planned route centerline. See **Figure 16.2**

16.4.2.1. 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.

16.4.2.2. Legs may be segmented to allow flight closer to the ground. Once the obstruction is visually identified and the aircraft can maintain well clear, laterally and/or longitudinally, the crew may descend to the next segmented altitude, if lower.

16.4.3. NVG altitude is 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 of planned route centerline.

16.4.3.1. NLT 3NM prior to any charted man-made obstacle within 3NM of centerline, the aircrew must visually identify the obstacle. If the obstacle is not identified by 3 NM, climb to 500’ above the obstacle until the aircrew confirms the aircraft is past the obstacle, or until the crew can identify the obstacle and maintain well clear, laterally and/or longitudinally.

16.4.3.2. 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.

16.4.3.3. 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. ANP 1.0 (MC FOM of 5) or less is required in order to fly lower than MSA at night.
2. Route centerline includes the aircraft turn radius over each turn point.
3. Obstruction to flight is defined as man-made obstacle, terrain feature, or spot elevation.
4. 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.
5. DTED information may be referenced in determining low level altitudes.

16.4.3.3.1. **(Added-452AMW)** Pilots should consider entering RNP value of 1.0 on Block 17+ jets for this night low-level scenario.

16.4.4. Minimum Safe Altitude (MSA) is 1000 feet above the highest obstruction within 5 NMs of planned route centerline.

16.4.4.1. MSA is an initial VFR altitude that provides additional terrain clearance.

16.4.4.2. MSA will be computed for each leg or route segment or entire low level route.

16.4.5. Minimum IFR En Route Altitude is 1000 feet above the highest obstruction within 5 NMs of planned route centerline (2000 feet in mountainous terrain)

16.4.5.1. This altitude should be rounded off to the next higher 100-foot increment.

16.4.5.2. 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.

16.4.5.3. 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.

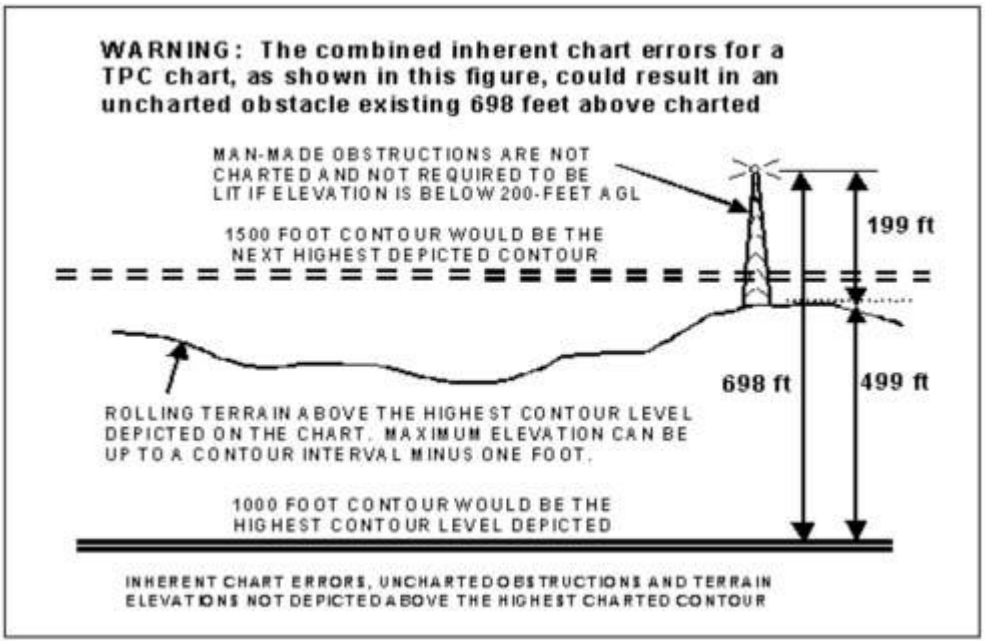
16.4.5.3.1. **(Added-452AMW)** 452 AMW crews will employ this exception only under VMC conditions.

16.4.6. Emergency Safe Altitude (ESA). ESA is 1,000 feet (2,000 feet in mountainous terrain) above the highest obstruction to flight within 22 NMs of planned route centerline.

16.4.6.1. 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.

16.4.6.2. Climbing to ESA may put the aircraft or formation in a controlled (i.e., IFR) altitude structure and require coordination with Air Traffic Control agencies. ***NOTE:*** Mountainous terrain as defined in AFI 11-202V3.

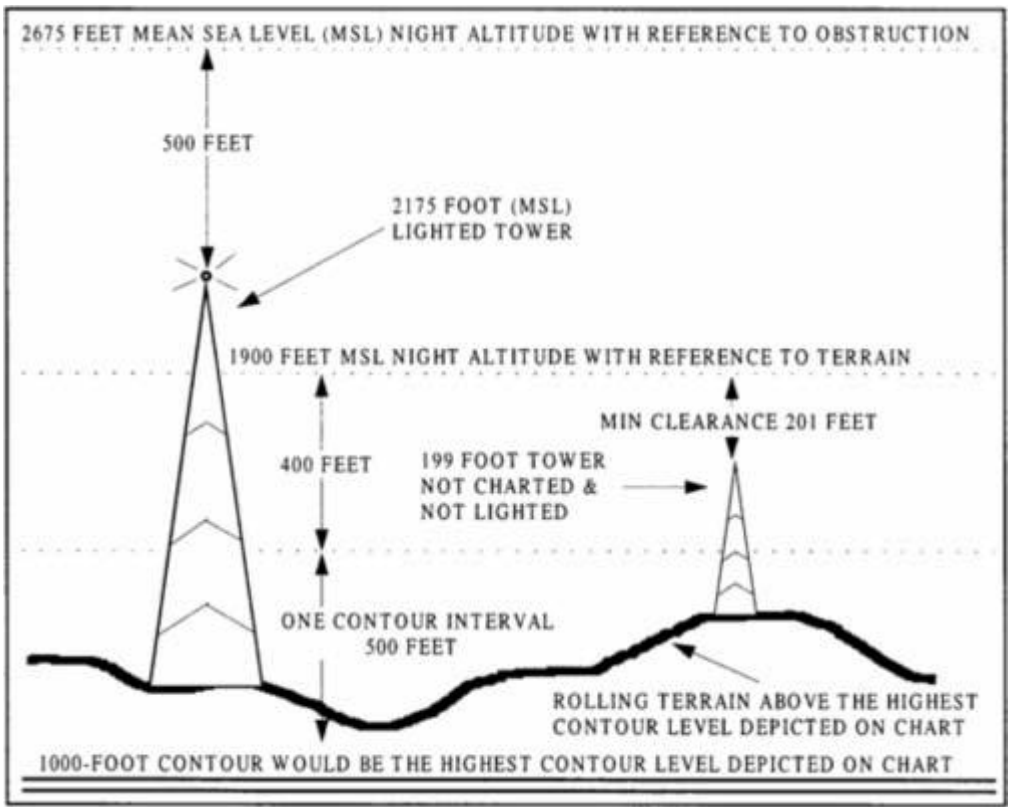
Figure 16.1. Inherent Chart Errors.



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.

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 16.2. Night VMC En Route Altitude.



16.4.7. **Temperature Correction.** For all low level operations, temperature corrections will be applied to the minimum IFR and Night enroute altitudes. Apply corrections IAW the temperature correction chart provided in the FIH to ensure adequate obstacle clearance. Add the values derived from the FIH temperature correction chart to the IMC and Night minimum enroute altitudes whenever the outside air temperature is 32°F/0°C or below.

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 without clearance.

16.5.5. 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 in addition to the restrictions in AFI 11-202V3 chapter 5.

16.5.6. Over or through active live fire or impact areas that may not be specifically designated as prohibited or restricted areas.

16.5.7. Below 500 feet AGL unless:

16.5.7.1. Host nation rules specifically allow such VFR operations.

16.5.7.2. 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.

16.5.8. **(Added-452AMW)** Low Altitude Training Restrictions. All 452 AMW C-17 low level training is restricted to published military training routes (MTRs) and the March ARB Low Altitude Tactical Navigation Area known as LATN GROMMET. Low level training applicability is here defined as any flight planned to be contour flown below 1,000' AGL. MTRs should be utilized and scheduled IAW applicable AFIs and as published in AP-1B. Additionally, all low altitude tactical arrival and departure training is restricted to locally authorized transition bases. Low altitude tactical arrival and departure training is restricted to a 5 NM radius of these airfields. Exceptions to this policy are participation in pre-approved aerial events, planned exercises (i.e., Red Flag), NVG low levels flown around Victorville SCLA, flights within SUAS or as coordinated and approved by the 729 AS/DO.

16.6. Navigation Chart Preparation. Low-level navigation charts will be updated and annotated with the most recent CHUM or supplement. In no case will CHUM coverage be less than 22 NMs either side of the entire planned route centerline. Crews may trim charts to no less than 10 NMs of the planned route centerline after establishing the ESA. ***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 will have, as a minimum, turn points, IP, objective area, course line, navigation information, CHUM data and date, ESA and chart series/date. Reference AFTTP 3-3.C-17 for standard chart preparations.

16.7. Route Study. Crew route study is mandatory before accomplishing flight in the low level environment. The route study will include, at a minimum:

16.7.1. Route overview.

16.7.2. Obstacles/obstructions along the planned route.

16.7.3. Leg information (e.g. course, altitudes, and controlling obstacles).

16.7.4. Low level hazards and mitigation.

16.7.5. Terrain features.

16.7.6. Individual crew member responsibilities/duties.

16.7.7. Discussion of any airspace restrictions.

16.7.8. ESA controlling obstacle and location.

16.8. Airlift Support Forces Coordination. Ensure coordination is complete with airlift and supporting forces.

16.9. Briefings. The PIC will ensure all applicable briefings and de-briefings are completed for each mission. 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.

Chapter 17

MISSION EMPLOYMENT/TACTICAL PROCEDURES

17.1. General.

17.1.1. Refer to AFTTP 3-1.C-17 and AFTTP 3-3.C-17 for mission employment and tactical procedures.

17.2. Tactical Checklists. Initiate the Combat Entry Checklist so it will be completed prior to entering the combat area. Execute the Combat Exit Checklist after vacating the combat area. These checklists will be executed for all airdrop and tactical airland missions.

17.2.1. As a minimum, the PF, PM and primary LM will remain on interphone from initiation of the Combat Entry Checklist until completion of the Combat Exit Checklist, unless crew duties require otherwise.

17.2.2. Personnel performing duties requiring them 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.

17.2.3. During accomplishment of tactical checklists, do not change IFF or CALLSIGN X until appropriate FIR boundaries have been transited or as directed by ATC.

17.3. Tactical Descents, Arrivals and Departures.

17.3.1. Formation tactical descents are limited to VMC, 3-ship formations and a minimum of 6,000' spacing between aircraft.

17.3.2. Unless operational necessity dictates, limit tactical descents to comply with all required airspace speed restrictions except as directed by T.O. 1-1C-17A-1 (i.e. 250KIAS below 10,000 ft).

17.4. Ground Operations.

17.4.1. NVG Lighting During Ground Operations without Combat Lighting. Operating landing lights with IR lens covers for more than 5 minutes on the ground will cause damage to the lights/covers.

17.4.2. 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.

17.4.3. 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. Troop 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. ***WARNING:*** When EROs are accomplished through the cargo ramp and door, engines will be placed in reverse idle prior to the pilot giving clearance for off/onload operations. If a thrust reverser

will not extend, consideration should be given to shutting down the affected engine. ***NOTE:*** With exception of small arms ammunition (hazardous division 1.4) do not ERO explosive cargo unless authorized by mission directive.

17.4.3.1. Vehicle parking brakes will not be released until all restraint is removed and cleared by the loadmaster.

17.4.3.2. Personnel to be offloaded will be briefed to secure baggage aboard vehicles (if applicable).

17.4.3.3. 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.

17.4.3.4. 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 crewmember, 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.

17.4.3.5. 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:

17.4.3.6. 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.

17.4.3.7. 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.

17.4.3.8. 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.

17.4.3.9. **(Added-452AMW)** Engine Running Onload/Offload. If reverse idle causes vortex ingestion, terminate ERO procedures and position the throttles to forward idle after all ground personnel are clear of the aft area. Based on ground and wind conditions, engine shutdown may be required.

17.4.4. 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. Small arms ammunition (Hazard Class/Division 1.4) and explosives and munitions rigged for airdrop do not need additional approval; however, any other explosives and munitions shall not be combat offloaded without additional approval of MAJCOM/A3/DO. ***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.

17.4.4.1. Ensure the crew rest window to the cargo compartment is clear of obstructions for combat offload operations.

17.4.4.2. 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.

17.4.4.3. 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.

17.4.4.4. 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.

17.4.4.5. **(Added-452AMW)** Local Combat Offload Procedures:

17.4.4.5.1. **(Added-452AMW)** March ARB combat offloads are accomplished on taxiway Charlie and ALWAYS performed to the West. When entering from the ramp side, hold short of Runway 30 until given clearance to cross. The northernmost white painted line will be used as the combat offload reference guide. Aircrews performing combat offloads at March ARB should review procedures within MARBI 13-207.

17.4.4.5.2. **(Added-452AMW)** If an 8-foot platform will be used, then it should be loaded in the ADS rail system.

17.5. 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:

17.5.1. All Rails and roller conveyors will be stowed. Four ramp toes installed in the high position.

17.5.2. When available, mattresses or other cushioning material may be used for seating.

17.5.3. Troops, passengers, and ambulatory patients will be seated facing forward on the cargo floor or ramp.

17.5.3.1. 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 too tight to restrict blood circulation in the legs of passengers.

17.5.4. The standard weight of 315 lbs per passenger should be used. (includes individual, equipment worn, carry-on bags and floor loaded bags).

17.5.4.1. 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.

17.5.5. The maximum altitude for emergency airlift will not exceed FL250.

17.5.6. Consideration must be given for additional aircrew flight equipment if passenger count exceeds aircraft configuration.

17.5.7. For airlift of patients, see Chapter 20 of this instruction.

Chapter 18

AIRCRAFT FORMATION

18.1. General. Formation procedures will be conducted IAW this chapter and TO1C-17A-1. Aircrews will follow formation standards described in AFTTP 3-3.C17 Chapter 8 *Formation Operations*, unless otherwise briefed. Consider safety, aircrew capability, proficiency, survivability and user requirements when planning any formation. ***WARNING:*** Vortices generated during departure, airdrop, and recovery can be significant in size, duration, and velocity. Due to the potential hazards, aircrews will be aware of their existence and attempt to avoid them. ***NOTE:*** Aircraft may alter position slightly to avoid vortices from preceding aircraft.

18.2. Specified Times. The mission commander determines the sequence of events and mission times based on ATO, FRAG, planning, staff input, fuel requirements, passenger/jumper comfort, taxi distances, briefing requirements, etc.

18.3. Weather Minimums.

18.3.1. Takeoff. Takeoff minimums are no lower than 200 foot ceiling and one-half mile visibility (RVR 2400). If the departure ceiling or visibility is below published approach minimums, the formation may takeoff if the requirements for a departure alternate (IAW **Chapter 6** of this instruction) are met.

18.3.2. Landing. Landing minimums are the published minimums for the airport navigation aid used, but no lower than 200 foot ceiling and one half-mile visibility. ***NOTE:*** Formation NVG landing minimums are in accordance with **Chapter 6**.

18.4. Ground Operations. The minimum taxi interval is one aircraft length. Lead may increase the taxi interval if circumstances dictate.

18.5. Takeoff. For takeoff, aircraft feed onto the runway individually. The takeoff EPR rating (i.e., DRT or MAX) will be briefed and all aircraft should takeoff with the same EPR rating.

18.5.1. The minimum takeoff interval is 30 seconds. It is possible at high power settings to cause a FOD hazard to following aircraft, so plan departure spacing accordingly. Begin timing for takeoff interval when the preceding aircraft starts its takeoff roll.

18.5.2. For aborts during takeoff, a briefed crew member (normally a loadmaster) immediately transmits position number aborting three times on interplane frequency (i.e., "Thug 70, number two aborting, number two aborting, number two aborting."). The PM transmits the same abort call on runway controlling frequency (after completing emergency procedures requiring immediate action). The aborting aircraft clears the runway as safety allows. Succeeding aircraft, if not on takeoff roll, hold until the runway is clear and a new takeoff clearance is obtained. Any aircraft on takeoff roll will abort their takeoff. ***NOTE:*** Use of secure interplane may inhibit reception of an abort call. Consider using unsecure communications for takeoff in case an abort call is necessary.

18.6. Altimeter Setting. Formation leaders will pass altimeter changes throughout the mission.

18.7. Bank Angles, Airspeeds, and Rates of Ascent/Descent. Standard airspeeds and rates of ascent/descent are depicted in AFTTP 3-3.C-17 Formation Operations Chapter. These standards

will be followed unless otherwise briefed. Lead is limited to MIN/20 degrees of bank when using SKE/FFS. Element leads will select NORM/20 for turn rate and bank angle on the AFCS panel when flying SKE/FFS.

18.8. Radio Discipline. Limit transmissions to those required for safety or control of the formation. ***NOTE:*** HAVE QUICK and secure communications should be used when available.

18.9. Airborne Aborts (Departure, Enroute and Element Lead Abort). Any aircraft that cannot maintain formation position will notify lead of the nature of the emergency and intentions. If the emergency does not permit maintaining position until an individual clearance is obtained, establish a safe heading away from the formation and maintain visual or SKE contact. If unable to maintain visual or use SKE, the use of A/A TACAN, TCAS, or radar skin paint may aid in maintaining separation from the formation. After departing the formation, the aborting aircraft will climb or descend out of the formation altitude prior to maneuvering across the flight path of the formation.

18.9.1. Departure. 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 of the formation until a landing can be made without interfering with the remainder of the departing formation.

18.9.2. En Route**.** Aircraft that abort after assembly will turn away from the formation and, with mission commander's concurrence, may proceed to a suitable recovery airfield or rejoin at the end of the formation.

18.9.3. Element Lead. If an element lead aborts the formation, the second aircraft of that element moves to the element lead position. If a formation is flying a three-ship element, aircraft within the element may move up to maintain a two-ship element.

18.9.3.1. For SKE formations, the appropriate follower aircraft select the new lead, positively identify the new leader on the SKE MFD, reset cross-track and range as required, and request an FCI check (as time allows) from the new element leader. If necessary, accomplish MASTER change (SKE w/o FFS) prior to departing the formation. Normally, slot numbers and call signs do not change due to an aircraft abort.

18.10. Visual Procedures. Visual formation geometry will be driven by the tactical situation, which is determined by the threat environment, terrain, mission requirements and other factors. For a complete description of visual geometries reference AFTTP 3-3.C-17. Choose the geometry that gives the best tactical advantage. Different formation geometries may be required through the course of the mission. Flight leadership is critical to the success of these tactics.

18.10.1. Departure and Assembly. After crossing the field boundary, wingmen adhere to air traffic control requirements and close to en route position. Lead maintains assembly airspeed, until briefed acceleration time/point.

18.10.2. Acceleration. Commence timing for acceleration when lead starts his takeoff roll. At acceleration time/point, lead accelerates to attain climb/enroute airspeed.

18.10.3. Late Take Off. Aircraft joining a formation en route will contact lead and rejoin as briefed/directed. The rejoining aircraft will remain at least 500 feet above or below the formation until the formation is in sight and cleared to rejoin.

18.10.4. En Route Procedures:

18.10.4.1. Spacing. Plan a minimum of 2000 feet spacing within each element and 12,000 feet between elements.

18.10.4.2. Minimum Altitude.

18.10.4.2.1. Day VMC. Formation lead flies modified contour by using radar altimeter, HUD, and visual references. Element leads/wingmen use a combination of the above and reference to other aircraft.

18.10.4.2.2. Night VMC. Formation lead maintains altitude by reference to the barometric altimeter. Element leads/wingmen use a combination of barometric altimeter and reference to other aircraft.

18.10.4.3. Airspeed. Leads will announce unplanned airspeed changes greater than 10 knots.

18.10.4.4. Inadvertent Weather Penetration (IWP). Formation leads will make necessary actions to not take a VFR formation into the IMC conditions. If clouds and/or areas of poor visibility are inadvertently entered by a formation operating under VFR, the primary concern of the formation lead is to provide safe aircraft separation and terrain clearance. Wingmen will immediately notify lead of deteriorating visual conditions if they occur. Terminate these procedures if the entire formation attains VMC, terrain clearance, and positive separation from other formation aircraft. ***WARNING:*** It may be necessary to modify these procedures due to formation geometries other than visual in-trail, terrain, airspace restrictions, etc. Inadvertent weather penetration in mountainous terrain using these procedures may be hazardous. Mission planners should brief procedures that best suit the situation. ***NOTE:*** The following 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 is a violation subject to appropriate action by USAF and FAA. Formation lead will take all practical measures to avoid entering controlled airspace without clearance. Attempt to avoid leveling at IFR altitudes to minimize the possible conflict with IFR traffic.

18.10.4.4.1. Inadvertent weather penetration with SKE. Immediately upon penetrating the weather, formation lead will announce, "XXXX flight, execute inadvertent weather penetration with SKE now, base altitude XXXX, base heading XXXX, base airspeed XXXX. Acknowledge." The formation then climbs to a base altitude at or above the ESA for the route. Climb at cruise speed and 1,000 feet per minute. After the element wingmen establish a 1,000 feet per minute climb, set AFCS mode select to SKE, set cross-track to 1,000 feet left or right as appropriate while maintaining current separation. When level at the base altitude, lead will announce "assume SKE interval now." At this command, followers will reduce airspeed 20 knots and drift back to establish appropriate SKE in-trail intervals. Once at appropriate SKE in-trail intervals, followers will reset the appropriate cross-track distance. If visual conditions cannot be promptly reestablished, lead will contact ATC for IFR clearance; declare an emergency if necessary. ***NOTE:*** This procedure will only be used if SKE was tested, all formation aircraft have SKE in XMIT, SKE is operable, and no SKE cautions and warnings.

18.10.4.4.2. Inadvertent weather penetration without SKE. Immediately upon penetrating the weather, formation lead will announce, "XXXX flight, execute inadvertent weather penetration without SKE now, base altitude XXXX, base heading XXXX, base airspeed XXXX. Acknowledge." The formation climbs to a base altitude at or above the ESA for the route. Climb at cruise speed and 1,000 feet per minute. After the element wingmen establish a 1,000 feet per minute climb, #2 will turn right using 30 degrees of bank to a heading 30 degrees from the base heading, #3 will turn left using 30 degrees of bank to a heading 30 degrees from the base heading. They will maintain these divergent headings (once rolled out) for 30 seconds before resuming base heading. The use of air-to-air TACAN, TCAS, or radar skin paint may aid in maintaining separation from other members of the formation. The last element in the formation will occupy the base altitude. All other elements will stack 1000 feet higher than the following element, with the first element occupying the highest altitude. Do not change base heading while in IMC unless required for terrain clearance or to avoid controlled airspace. If visual conditions cannot be promptly reestablished, lead will contact ATC for IFR clearance; declare an emergency if necessary.

18.10.5. Recovery. If aircraft weights differ significantly, the heaviest aircraft will dictate the speeds flown. Aircraft will not descend below preceding aircraft during the recovery.

18.10.6. Formation Landings. All aircraft land on runway centerline with the same flap detent setting. ***EXCEPTION \:*** Last aircraft in formation may use a higher flap setting. Continue to runway exit point without stopping in any position that would prevent succeeding aircraft from clearing the runway. The minimum landing interval is 45 seconds (60 seconds desired). Extend the interval as necessary for icy runway conditions, short/narrow runways, or other adverse conditions.

18.10.6.1. Aircraft will not perform touch and go landings out of formation recoveries.

18.10.6.2. Aircraft may perform GOATs for training provided it is pre-briefed, will not negatively affect the formation recovery, and all preceding formation aircraft are clear of the runway.

18.10.7. Lead Changes. To accomplish a visual lead change, the leader will signal or command the lead change (if it does not occur at a briefed point) and should give base heading. The aborting leader will maneuver in the safest direction to assume the new position.

18.11. SKE Procedures. ***NOTE:*** When in actual IMC, aircrews should use an alternate method of identifying other aircraft in the formation (i.e., A/A TACAN, TCAS, and radar skin paint) in case of a SKE malfunction.

18.11.1. Due to limitations of the SKE (w/o FFS) system, all formation aircraft should be within 9.67 NM of the master for the SKE to function properly and be within 4 NM of the selected leader for the flight director to function properly. NOTE: C-17 slots consist of two C-130 slot numbers. Mixed C-17/C-130 formations will require slot number selections IAW TO 1C-17A-1-2 slot pairings.

18.11.2. Prior to each formation turn, appropriate FCI messages will be transmitted by element leaders. If element leaders turn without passing FCI data, followers will still receive flight director turn guidance; however, accuracy and performance will not be as precise.

18.11.3. SKE/TCAS Overlay

18.11.3.1. Upon annunciation of a proximity warning in IMC or VMC conditions, wingmen will immediately maneuver the aircraft in a safe direction away from the formation. ***NOTE:*** Maintaining situational awareness is paramount while operating in IMC. Dependent on phase of flight, the safest direction may be in the vertical and/or horizontal plane.

18.11.3.2. During flight in IMC, lead and element leads will announce all preparatory and execution speed changes during critical phases of flight including rejoins, airdrop slowdowns, and escapes via interplane in conjunction with applicable FCI's. Wingmen will verbally acknowledge all preparatory speed change announcements from their respective leader.

18.11.3.3. Formations will ensure an extra airdrop qualified pilot is positioned on each aircraft to monitor the SKE-PPI page for range divergences while in IMC during critical phases of flight. The extra pilot will not have any additional duties (i.e. PADS operator) precluding them from monitoring the SKE-PPI page. Without the extra airdrop qualified pilot, the formation is limited to no less than 12,000' spacing between aircraft while in IMC.

18.11.3.4. SKE/TCAS formations are limited to a maximum of 3 aircraft in IMC.

18.11.3.5. In VMC conditions, up to 6 SKE TCAS overlay aircraft may fly in formation. EXCEPTION: MAJCOM approved formations, or up to 15 SKE TCAS overlay aircraft in the vicinity of Pope AFB, NC due to FAA agreement.

18.11.4. SKE FFS. Not Used

18.11.5. Flight Command Indicators (FCI). Priority of signals is altitude, heading, and airspeed.

18.11.6. Departure and Assembly. After takeoff each aircraft will fly an independent departure, (i.e. climb out instructions or SID), while maintaining formation integrity using the PPI until all aircraft attain formation position or the departure is accomplished, whichever occurs first. At this point, begin SKE formation turns.

18.11.7. En Route Procedures. Wingmen maintain position with SKE selected for thrust and roll flight director guidance. Wingmen will periodically crosscheck deviation indicators and the PPI SKE format. The primary altitude reference will be the aircraft barometric altimeter.

18.11.7.1. Climb and Descent. Use the vertical deviation indicator (VDI) to monitor the selected leader's altitude during climb or descent. Followers will report significant altitude deviations to lead. ***CAUTION:*** SKE (w/o FFS) in-track indicates slant-range distance (i.e., if 4000 feet directly above the leader, the in-track will indicate 4000 feet in-track.

18.11.7.2. Airspeed Changes. Lead will signal/announce all changes of 10 knots or greater from the established base airspeed.

18.11.7.3. Domestic Reduced Vertical Separation Minimum (DRVSM). RVSM separation standards may be applied to formation flights consisting of all RVSM-compliant aircraft operating in DRVSM airspace. NOTE: DRVSM airspace includes the airspace of the lower 48 states of the United States, Alaska, Atlantic and Gulf of Mexico high offshore airspace, and the San Juan FIR between flight level (FL) 290-410 (inclusive).

18.11.7.3.1. RVSM formation flights may file for a single altitude if all formation aircraft fly the assigned altitude, either offset laterally from each other or in trail.

18.11.7.3.2. RVSM formation flights requiring multiple altitudes should request an altitude block. Air traffic control may then apply RVSM separation standards between this altitude block and other RVSM aircraft (e.g. an RVSM formation flight is assigned flight level (FL) 320-330; ATC assigns other RVSM aircraft at FL310 and FL340).

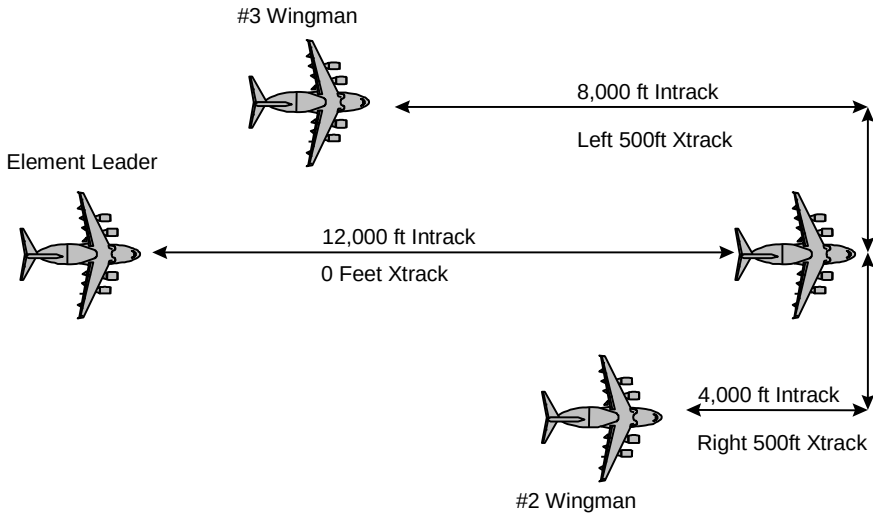
18.11.7.3.3. RVSM formation aircraft must use their automatic altitude control system to maintain the assigned altitude. Aircraft maneuvering within an altitude block must ensure they do not exceed the vertical boundaries of the block by utilizing the aircraft altitude alerting system, altitude capture function (if installed) and automatic altitude control system. If unable to maintain autopilot in vertical axis notify ATC of non-compliance with RVSM.

18.11.7.3.4. Formation flights which do not consist of all RVSM aircraft will continue to be considered non-RVSM compliant and will have 2,000-ft vertical separation standards applied in DRVSM airspace. In addition, aircraft formations conducting aerial refueling will continue to be considered non-RVSM compliant; regardless of the participating aircraft's single-ship status.

18.11.8. En Route Spacing.

18.11.8.1. Wingman. The second and third aircraft of each element maintain a minimum of 4,000 and 8,000 feet spacing, respectively, from their element lead. Maintain spacing with reference to the element lead to reduce telescoping effects. The minimum offset distance is 500 feet right for the number 2 aircraft, and 500 feet left for the number 3 aircraft.

Figure 18.1. Standard SKE Enroute Formation.



18.11.8.2. Element lead. Each element lead maintains a minimum of 12,000 feet separation from the preceding element lead, stacks up 100 ft, and maintains "00" cross-track separation.

18.11.8.3. Long Missions. During long missions, mission commanders may extend en route spacing and/or cross track to reduce fatigue, as required.

18.11.8.4. Position errors. Formation aircraft detecting a significant position error will immediately notify the offending aircraft to determine if the error is known. The subject aircraft will immediately confirm or establish position by other available means.

18.11.9. Loss of SKE.

18.11.9.1. Single aircraft. Any aircraft that loses SKE will notify lead immediately. If IMC, establish a safe heading away from the formation. If last aircraft in the formation loses SKE, an airspeed reduction may be used to obtain immediate separation. Lead will coordinate a separate IFR clearance for the malfunctioning aircraft as needed.

18.11.9.2. Entire formation. If the entire formation loses SKE, attempt to correct the malfunction by changing the master or accomplishing a frequency change provided an alternate means of maintaining formation position is being used (A/A TACAN, weather radar skin paint, radar beacon, TCAS). If the entire formation loses SKE and is unable to correct the malfunction or transition to a visual formation, execute inadvertent weather penetration without SKE procedures.

18.11.10. Lead Change. The aborting leader commands the lead change and the new leader acknowledges receipt of this command. If briefed, the change may be accomplished silently at a planned point or time. Do not accomplish lead changes in turns or descents.

18.11.10.1. In IMC, the aborting leader turns 30 degrees away from base heading in the safest and most logical direction until at least 1 NM from the formation. Reset appropriate crosstrack, range, and leader number. Drift back to rejoin at the end of the

formation. If VMC, the aborting leader may join at a coordinated position within the formation.

18.11.10.2. The follower aircraft will select the new lead and reset crosstrack and range as required.

18.11.10.3. New leader will complete an FCI check (unless already accomplished).

18.11.11. Recoveries. If recovering a large SKE formation and the planned approach is not a straight-in, obtain a minimum of five minutes separation between sections of six or less aircraft prior to reaching the recovery base. Ensure the airspace will be available for each section of six or less to hold upon arrival at the recovery base if immediate landing is not possible. The aircraft acting as master (w/o FFS) for the formation will not turn the SKE/master off until all aircraft in the formation have landed. If aircraft weights differ significantly, the heaviest aircraft will dictate the speeds flown. The formation may proceed visually to the field for a visual recovery, maintain SKE spacing and assume SKE in-line formation procedures, fly ATC locally approved SKE approach, or break up for individual approaches.

18.11.11.1. Instrument approaches.

18.11.11.1.1. Do not fly 45/180 ground tracks.

18.11.11.1.2. Holding Pattern, Holding Pattern in Lieu of Procedure Turn, or Procedure Turn pattern entry will be within 70 degrees of the published inbound course on the non-maneuvering side or within 20 degrees on the maneuvering side and a minimum of 1,000 feet above procedure turn or GCA pickup altitude. Do not enter from the quadrant requiring a turn to the non-maneuvering side.

18.11.11.1.2.1. Request 2-minute holding legs with more than 3 aircraft in formation. ***CAUTION:*** In a non-radar environment or uncontrolled airspace, lead should consider increasing the formation's minimum altitude to ensure terrain/obstacle avoidance.

18.11.11.1.3. Lead signals the turn outbound over the IAF with the FCI at station passage. All follower aircraft delay the turn outbound based on SKE timing, maintain formation interval, and complete the approach in accordance with AFMAN 11-217V1. Formation lead will ensure all aircraft will stay in the “remain within” distance for the approach or coordinate with ATC for additional airspace.

18.11.12. Landing. Minimum landing interval is 10,000 feet (12,000 feet desired).

18.11.13. Missed Approach. Aircraft executing a missed approach fly the published or directed procedure. If weather at the airfield is reported below minimums after the approach is started, the formation executes a missed approach, maintaining 160 KCAS (or minimum flap retract, whichever is higher) and approach separation. Formation lead requests individual approaches, if possible. Coordinate for holding if required. In a radar environment, give the controlling agency the order in which aircraft are to depart the flight. If individual approaches cannot be obtained or approach control is not available, the formation will proceed to an alternate airfield. ***NOTE:*** Use caution as loss of SKE may occur when the master departs the formation.

18.12. Formation Air Refueling Procedures. The procedures contained in this section cover only the most common receiver/tanker formations and do not cover all possible situations. The procedures contained in this section do not relieve the mission commander and section leader of the responsibility to thoroughly plan and brief these procedures and cover all possible combinations. All AAR operations will be accomplished IAW T.O. 1-C-17A-1 Chp 8 and ATP 56(B). ***NOTE:*** The lead tanker is responsible for navigation of the entire formation (both tanker and receiver aircraft) from rendezvous through the end of air refueling operations.

18.12.1. Briefing. The lead receiver aircraft commander briefs all aircraft commanders within the receiver cell. This briefing will be in sufficient detail to cover all phases of cell operations.

18.12.2. Aircraft will have operable SKE for formation air refueling flights. If WX radar is inoperative, TCAS must be operational. The mission commander will decide based on operational necessity the need to continue formation AAR with inoperable SKE or WX radar.

18.12.3. During refueling, receivers will address themselves as “Receiver 1” (R1), “Receiver 2” (R2), and “Receiver 3” (R3). Address the individual tankers as “Tanker 1” (T1), “Tanker 2” (T2), etc.

18.12.4. Rendezvous Procedures: R1 will keep heading and airspeed changes to a minimum during transitions to or from AR echelon.

18.12.5. Refueling Operations: SKE will be left on throughout refueling.

18.12.6. Emergency Actions: Upon losing all contact with the tanker lead or the respective tanker, or if unable to maintain formation due to disorientation, the wingman will simultaneously execute the applicable lost wingman procedure while transitioning to instruments.

18.12.6.1.1. Loss of VMC after rendezvous. In the event any aircraft momentarily and inadvertently enters into IMC, loses sight of other receivers or their respective tanker in the formation, the affected receiver will inform T1 immediately. If continuous radar skin paint off of the respective tanker and SKE position off of all other receivers can be maintained, all aircraft will maintain their current position (awaiting AR, astern, post AR, etc.) until the formation reenters VMC. If visual conditions do not return sufficiently to safely complete the formation AR procedures, T1, in coordination with the R1, will take action to ensure both altitude and lateral separation from all receivers and tankers. Subsequent receiver rendezvous may be coordinated with ATC after obtaining proper separation from the tanker formation (i.e. minimum of 2 NM and 1000 feet between the lowest tanker and highest receiver).

18.12.6.1.2. Loss of SKE or WX radar in IMC. The loss of SKE or radar in IMC conditions after beginning the transition to AR echelon until completion of formation AR procedures will require immediate action by R1 and T1. R1, with the approval of T1, will direct the appropriate action for the affected receiver to ensure both lateral and vertical separation from all other receivers and tankers.

18.12.6.1.3. All other receiver aircraft with station keeping ability will maintain their current position (awaiting AR, post AR, etc.) until reentering VMC and subsequently cleared by R1 and T1.

18.12.6.2. Lost Wingman Procedures During Receiver AR. Immediately contact T1 and establish visual, A/A TACAN, radar, SKE, or radio contact with any co-altitude aircraft. If visual, A/A TACAN, radar, SKE, or radio contact cannot be established or maintained, descend to an altitude that will provide positive separation from other aircraft and decrease airspeed to ensure separation.

Chapter 19

AIRDROP

19.1. General. This chapter prescribes C-17 employment procedures for all airdrop operations. For additional guidance and information, refer to T.O. 1C-17A-1-4 and AFTTP 3-3.C-17. NAS training operations are required to comply with FAR 105 restrictions.

19.2. Radio Discipline. Unless used in conjunction with airdrop execution, avoid use of the words GREEN/NO DROP after the Slowdown Checklist and until completion of the Post Drop checklist. "GREEN LIGHT" will be seen or heard by the loadmaster for all drops.

19.3. NVG Airdrop. 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.

19.3.1. Pilots are authorized to perform all airdrop methods while utilizing NVGs.

19.3.2. Loadmasters are authorized to perform all equipment type airdrops while utilizing NVGs. Loadmasters are prohibited from conducting personnel airdrop operations while utilizing NVGs.

19.3.3. Cargo compartment lighting will be set to the lowest possible setting to accomplish the mission. Blacked out (no-light) operations in the cargo compartment are not authorized.

19.4. Airdrop Equipment.

19.4.1. Airdrop Rigging Material. The loadmaster is responsible to obtain a sufficient amount of rigging material to satisfy load or mission requirements. These items include, but are not limited to: cloth-backed pressure sensitive tape, 1/2-inch tubular nylon cord, type III nylon cord, # 5 cord, and 1/4 inch cotton webbing.

19.5. Safety Equipment.

19.5.1. Personnel performing duties required to be mobile in the cargo compartment during air-drop, 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. Loadmasters will lower their helmet visor before opening the troop doors and keep them lowered until the troop doors are closed. ***EXCEPTION:*** Helmet visor is not required while wearing NVG's.

19.5.2. 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 cargo door/ramp is open and the aircraft is below 800 feet AGL or above 25,000 feet MSL, occupant(s) will wear a restraint harness. 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.

19.5.2.1. The restraint harness will be adjusted to allow mobility to perform duties but not to a length that would allow the wearer to fall out of the aircraft. The restraint harness will be fitted and adjusted prior to flight. The lifeline is 18 feet 6 inches long.

With the cargo ramp and door open the restraint harness may be connected to any tie down ring at or forward of FS 1188. With the paratroop doors open the restraint harness may be connected to any tie down ring. ***EXCEPTION:*** Loadmasters requiring mobility in the cargo compartment while using a restraint harness can be unattached as long as they remain forward of FS 1188 with the cargo door and ramp open or FS 1027 with the paratroop door(s) open. ***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.

19.5.2.2. Aircrew Flight Equipment on Personnel Airdrops. EPOS and Life Preservers not properly secured in storage pouch will be stowed immediately prior to the airdrop. Life preservers may be stowed earlier on non over water flights.

19.5.2.2.1. 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.

19.6. Airdrop Load Information.

19.6.1. 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 in-flight 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. ***NOTE:*** Rigging for Dual Row 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.

19.6.1.1. A separate AF Form 1748 is required for each heavy equipment/dual row platform or CDS gate used.

19.6.1.2. Planners and aircrew will verify chute types planned with the user during mission planning. Aircrews will be made aware of chute types on planning documents. At a minimum, chute type and planned drop altitude will be annotated on the Mission Data Card.

19.6.1.3. Joint Airdrop Inspectors (JAIs) will annotate actual chute type in the remarks section of the AF Form 1748.

19.6.1.4. During execution, aircrews will verify actual chute type loaded on the aircraft by referencing the remarks section on the AF Form 1748. Crews will verify the correct drop altitude, chute type and number are entered in the MC.

19.6.2. Load verification and marking. A pilot will verify with the loadmaster that the actual number and type of parachutes, load weights, sequence of extraction, and position of loads in the aircraft agree with entered mission computer data. For training missions (e.g. unilateral,

exercise, or JA/ATT) the pilots will ensure all equipment, drogues, CDS containers, and standard airdrop training bundles are marked with, at a minimum, the aircraft call sign and date. If more than one load is dropped on the same pass, mark loads with order of exit from aircraft. Markings will be placed on the load, extraction chute line, and drogue line. ***EXCEPTION:*** If more than one CDS bundle is dropped on the same pass, mark only the first container out.

19.6.3. Combination Airdrops. Any combination of Heavy Equipment, Dual Row or CDS airdrops will not be conducted on the same aircraft sortie. Airdrops on subsequent sorties, that utilize a different aerial delivery method than the previous sortie, may be conducted provided a Joint Airdrop Inspection (JAI) is completed prior to takeoff for the subsequent sortie. Personnel airdrops may be accomplished in association with any type airdrop.

19.6.4. 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	
ANCHOR CABLE HEIGHT FROM AIRCRAFT FLOOR	81 INCHES AT MIDSPAN WHEN INSTALLED
DISTANCE BETWEEN ANCHOR CABLES (a) CDS OR DUAL ROW (b) PERSONNEL (1) FORWARD BULKHEAD INTERMEDIATE SUPPORTS	182 INCHES 122 INCHES INBOARD, 182 INCHES OUTBOARD 155 INCHES INBOARD, 182 INCHES OUTBOARD
AIRLAND CARGO HEIGHT	CANNOT INTERFERE WITH INSTALLED ANCHOR CABLES, OR AIRDROP RIGGING EQUIPMENT
AIRLAND CARGO WIDTH ON HEAVY EQUIPMENT/DUAL ROW/CDS AIRDROPS	CANNOT OBSTRUCT VIEW OR HINDER ACCESS TO IN CASE OF EMERGENCY
CDS/DUAL ROW AIRDROPS (WHEN DROPPING ONE SIDE ONLY) (a) MAXIMUM WIDTH OF AIRLAND CARGO (b) POSITION OF AIRLAND CARGO	 110 INCHES AFT END OF AIRLAND CARGO FORWARD OF FS 1280
AIRLAND CARGO WIDTH ON PERSONNEL AIRDROPS	144 INCHES OR LESS WITH BOTH TROOP DOORS CONFIGURED. MAY BE INCREASED TO 178 INCHES OR LESS IF ONLY ONE TROOP DOOR IS CONFIGURED
PERSONNEL DISTANCE FROM AIRDROP RIGGING EQUIPMENT (2)	30 INCHES MINIMUM

NOTES:

1. Personnel airdrops may be performed with only one troop door configured for airdrop.
2. Floor-loaded rucksacks will be secured.

19.6.5. Identification of Airdrop Items. Identify supplies or equipment by the following class numbering system:

19.6.5.1. Class I - Subsistence.

19.6.5.2. Class II - Individual equipment.

19.6.5.3. Class III - POL.

19.6.5.4. Class IV - Construction materials.

19.6.5.5. Class V - Ammunition (include the type).

19.6.5.6. Class VI - Personal demand items.

19.6.5.7. Class VII - Major end items. (Vehicles, Howitzers, etc.)

19.6.5.8. Class VIII - Medical supplies.

19.6.5.9. Class IX - Repair parts.

19.6.5.10. Class X - Non-military programs. (i.e. agricultural supplies).

19.6.5.11. Red - ammunition and weapons.

19.6.5.12. Blue - fuel and lubricants.

19.6.5.13. Green - rations and water.

19.6.5.14. Yellow - communications equipment.

19.6.5.15. White (or red cross on white background)- medical supplies.

19.6.5.16. Black and white stripes - mail.

19.7. Required Figures of Merit (FOM)/Required Navigation Performance (RNP).

19.7.1. IMC Airdrop.

19.7.1.1. W/o RNP. Lead requires a MC FOM of 3 or less to descend from minimum IFR en route altitude to IMC drop altitude. IMC airdrop requires a MC FOM of 3 or less to drop using MC guidance. For SKE airdrops, wingmen may descend to IMC drop altitude and drop off the SKE timer regardless of MC FOM.

19.7.1.2. RNP. Lead requires no UNABLE RNP message to descend from minimum IFR en route altitudes to IMC drop altitude. IMC airdrop requires no UNABLE RNP message when using MC guidance. For SKE airdrops, wingmen may descend to IMC drop altitude and drop off the SKE timer regardless of MC ANP status.

19.7.2. JPADS/ICDS.

19.7.2.1. W/o RNP. Aircraft require a MC FOM of 3 or less to drop.

19.7.2.2. RNP. Aircraft cannot drop with an UNABLE RNP message.

19.8. Notice To Airmen (NOTAM) Requirements.

19.8.1. Airdrop Notice to Airmen. For IFR airdrop in uncontrolled airspace a Letter of Agreement between local ATC and the military is required. Also, provide a NOTAM to the FAA Flight Service Station nearest the objective area at least 6 hours in advance of the

intended activity, regardless of actual or forecast weather. NOTAM information will include:

19.8.1.1. The name of the city or town nearest the route segment and the state.

19.8.1.2. The date and time period of planned activity.

19.8.1.3. The number and type of aircraft expected on the route.

19.8.1.4. The ingress and egress points of the route segment expressed in fix/radial/distance from a very high frequency omnidirectional range.

19.8.1.5. The altitude at which the aircraft will be flown.

19.9. Minimum Drop Altitudes.

19.9.1. Day VMC is the minimum drop altitude as specified in AFI 11-231 but no lower than 300 feet AGL.

19.9.1.1. During training, flight below 500 feet AGL is only authorized on approved routes per para. 16.5.7.2.

19.9.2. Night VMC is an indicated altitude of 500 feet above the highest obstruction to flight, or 400 feet plus one chart contour interval above the highest depicted terrain contour, whichever is higher, within 3 NM of run-in centerline from IP thru ESC.

19.9.2.1. Altitudes on DZ run-in may be segmented to allow descent to minimum drop altitude as specified in AFI 11-231, but no lower than 500 feet AGL. Once the limiting obstruction is visually identified and the aircraft can maintain well clear, laterally and/or longitudinally, the crew may descend to the next segment altitude. Consider the complexity introduced if the obstruction is not identified, and the altitude for which the drop is computed cannot be reached.

19.9.3. NVG is 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 of run-in centerline from IP thru ESC.

19.9.3.1. Altitudes on DZ run-in may be segmented to allow descent to minimum drop altitude as specified in AFI 11-231, but no lower than 500 feet AGL. Once the limiting obstruction is visually identified and the aircraft is can maintain well clear, laterally and/or longitudinally, the crew may descend to the next segment altitude. Consider the complexity introduced if the obstruction is not identified, and the altitude for which the drop is computed cannot be reached.

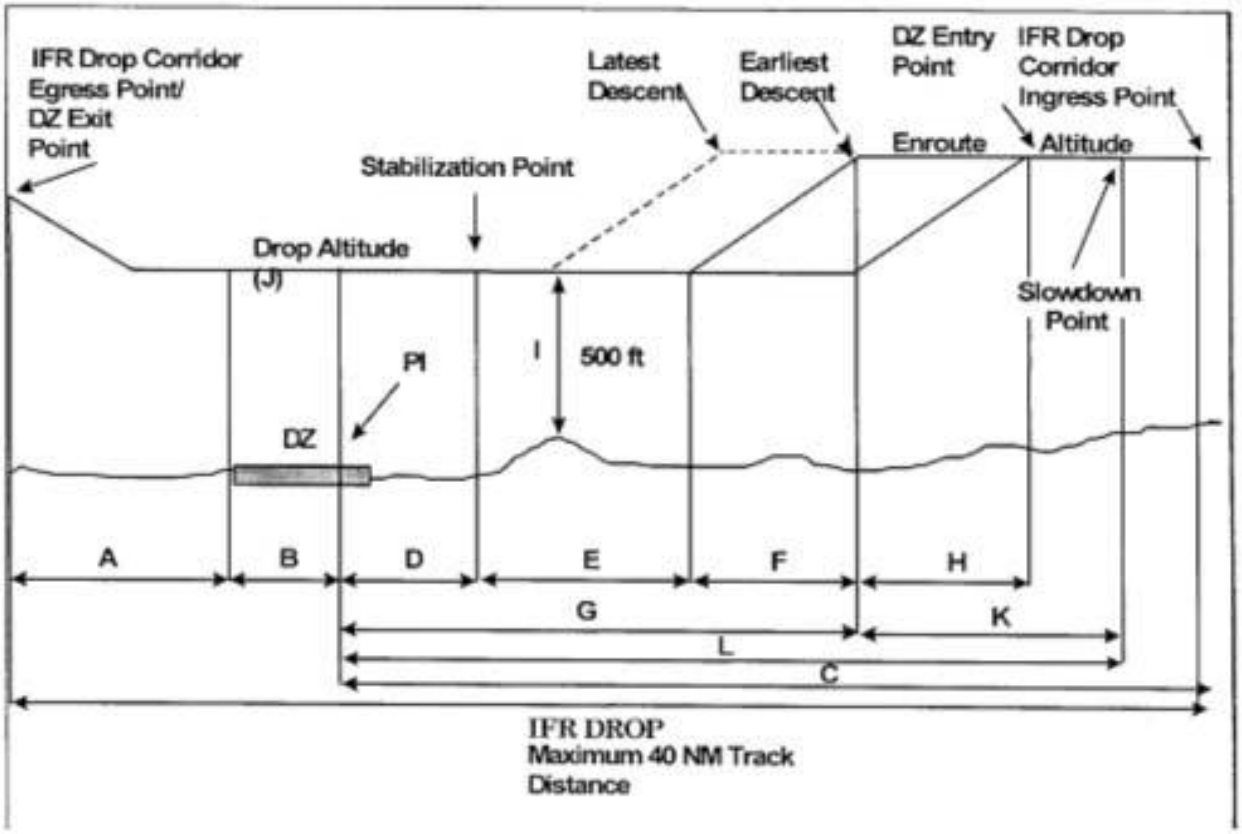
19.9.3.2. NLT 3 NM prior to any charted man-made obstacle within the run-in corridor, the aircrew must visually identify the obstacle. If the obstacle is not identified by 3NM, climb to 500 feet above the obstacle until the aircrew confirms the aircraft is past the obstacle.

19.9.4. IMC drop altitude is 500 feet above the highest obstruction to flight, or 400 feet plus one chart contour interval above the highest depicted terrain contour, whichever is higher, within 3 NM of run-in centerline from DZ entry point to DZ exit point. ***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:***

AFI 11-231 minimum chute altitudes may require the aircraft to drop at a higher altitude than those listed above.

19.10. IFR Drop Profile.

Figure 19.1. IFR Airdrop Profile.



19.10.1. IFR Drop Corridor. 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.

19.10.1.1. Drops conducted through or originating from IMC are only authorized from within or above an active restricted area or military operations in uncontrolled airspace.

19.10.1.2. In addition to required RNP/FOM, do not initiate descent from the minimum IFR en route altitude to IMC drop altitude unless all aircraft in the element are inside the DZ entry point, on course, with element lead's position positively known. ***NOTE:*** The 40NM IFR Drop Corridor is an agreement with the FAA in designated FAA airspace. When conducting IFR airdrops outside FAA airspace, reference these IFR drop corridor procedures for planning purposes, however, the 40NM restriction does not apply

19.10.2. IFR 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.

19.10.3. 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.

19.10.4. 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).

19.10.5. 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.

19.10.6. IFR 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.

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. Example: (160 KCAS/60 min/hr)+(160 KCAS/60 min/hr x 500ft/1000 VVI) = 2.7 + (2.7 x .5) = 4.1 NM	Write Here
B	**DZ Length** (Total DZ Length-Leading edge to PI Distance/2025 yd/NM) Example: (1688-550)/2025 = .6 NM	
C	**IFR Drop Corridor Entry Point**. Computed by subtracting distances A and B above from 40 NM. Example: (40 NM - A - B) 40 - 4.1 - .6 = 35.3 NM	
D	**IMC Stabilization Point**. Recommended at least 6 NM from the PI, the mission commander may extend this distance. Example: 6 NM	
E	**Slowdown from 160 KCAS to Drop Speed.** Example 160 to 145 KCAS = .7 NM (See attached slowdown distance table)	
F	**Descent from IFR en route to IFR drop altitude.** Example Descent from 2000' to 1000' MSL = 2.7 NM (@ 160 GS and 1000 FPM see attached distance table)	
G	**Formation Length** (3-ship elements, no ghosts) 2-ship .7 NM 3-ship 1.3 NM 4-ship 2.0 NM 5-ship 2.6 NM 6-ship 3.3 NM Example: 3-ship 1.3 NM	
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. Example (D+E+F+G) 6 + .7 +2.7 +1.3= 10.7 NM Verify the result is not greater than the IFR Drop Corridor Entry Point.	
I	**Minimum IFR Drop Altitude**. Example: 716 +500 = 1216'	
J	**Planned Drop Altitude.** Highest point on DZ plus AGL drop altitude. Will not be less than IFR Drop Altitude. Example: 289 + 800 = 1089' (use higher of min IFR and planned drop alt) = 1216' (Min IFR) (Not Shown)	
K	**Initial Slowdown Distance.** Distance needed to slow from en route airspeed to 160 KCAS* (see attached table) Example 240 KCAS to 160 KCAS = 4.7	
L	**Slowdown Distance**. Total distance from initial slowdown to PI. Item K + Item F + Item E + Item D Example (from 240 KCAS to drop airspeed, 2000' to 1216') 4.7 + 2.7 +.7 + 6 = 14.1 NM	

Table 19.3. Slowdown Distance (part 1 of 3).

ENDING GROUNDSPEED										
		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 2 of 3).

GROUNDSPEED										
D	**1000 FPM**	200	190	180	170	160	150	140	130	120
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	**1500 FPM**	200	190	180	170	160	150	140	130	120
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	**2000 FPM**	200	190	180	170	160	150	140	130	120
	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 GROUNDSPEED									
			100	110	120	130	140	145	150	160	170	180
	G	190	3.8	3.5	3.2	2.8	2.4	2.2	2.0	1.5	1.0	0.5
S	R	180	3.3	3.0	2.6	2.3	1.9	1.7	1.4	1.0	0.5	0.0
T	O	170	2.8	2.4	2.1	1.7	1.4	1.1	0.9	0.5	0.0	
A	U	160	2.3	2.0	1.6	1.3	0.9	0.7	0.5	0.0		
R	N	150	1.8	1.5	1.2	0.8	0.4	0.2	0.0			
T	D	140	1.4	1.1	0.8	0.4	0.0					
I	S	130	1.0	0.7	0.4	0.0						
N	P	120	0.6	0.3	0.0							
G	E	110	0.3	0.0								
	E	100	0.0									
	D		TABLE C (SLOWDOWN DISTANCES)									

19.11. VFR Drop Profile.

19.11.1. VFR DZ Entry Point. A fixed point in the Drop Corridor where the aircraft or formation transitions from VFR en route procedures to VFR airdrop procedures (normally the planned slowdown point).

19.11.2. VFR DZ Exit Point. A fixed point on the DZ escape flight path centerline where each aircraft will be at minimum VFR en route altitude. Calculate the exit point based upon three-engine performance at airdrop gross weight.

19.12. Dual Row.

19.12.1. Minimum dual row drop altitude is:

19.12.1.1. G-11D: 1200 feet AGL

19.12.1.2. G-12 D/E: 1000 feet AGL

19.12.2. Formation Dual Row. Formation airdrop of dual row platforms is authorized from any position in the element.

19.12.2.1. Increase minimum drop zone width by 400 yds (200 yds each side) in addition to AFI 13-217 minimum drop zone calculations.

19.12.3. Crews will not use autopilot/autothrottles during the airdrop sequence; the autopilot/autothrottles will not maintain correct deck angle.

19.13. High Altitude Airdrop Operations.

19.13.1. For communications and signals, interphone and hand signals are the primary methods of communications. Written messages may be necessary in some instances to communicate with individuals not connected to the aircraft interphone. Loadmasters will

carry a suitable writing utensil and medium to write out messages that cannot be dealt with by using hand signals. When dropping parachutists, the jumpmaster may monitor interphone. The loadmaster will coordinate all hand signals with the jumpmaster.

19.13.2. Crewmembers will wear parachutes or restraint harnesses in the cargo compartment any time the doors are open during high altitude airdrop operations. Safety harnesses shall be worn on airdrops conducted above 25,000 feet MSL. (LPUs must be worn with parachutes for operations over bodies of water with the doors open).

19.13.3. Maintain interphone contact between the cockpit and the cargo compartment. The loadmaster must be on interphone from completion of pre-slowdown checks until execution of the completion of drop checklist and the cabin altitude is below 10,000 feet. The jumpmaster may also monitor interphone during high altitude personnel airdrops.

19.14. High Altitude Airdrop Oxygen Requirements.

19.14.1. A continuous supply of 100 percent oxygen will be used by all personnel during unpressurized operations above 10,000 feet MSL. Crewmembers will follow established MAJCOM oxygen mask requirements.

19.14.1.1. ***EXCEPTIONS:***

19.14.1.1.1. Students of the Military Free Fall School, Parachutist Course (MFFPC) and Military Free Fall Jumpmaster Course (MFFJM), may perform unpressurized operations between the altitudes of 10,000 feet MSL and 13,000 feet MSL without supplemental oxygen, for a period not to exceed 2 hours, with the following safety measures in place:

19.14.1.1.2. For MFFPC Students: A suitably qualified USAF Physiology Technician (PT) will be onboard and positioned in the aft portion of the cargo compartment when aircraft is between 10,000-13,000 feet MSL for longer than 30 minutes. Unpressurized flights between these altitudes will not exceed 2 hours. The USAF PT will remain on 100% oxygen (or an appropriate air mix) throughout the unpressurized portion of the flight above 10,000 feet MSL. Under circumstances where a USAF PT is unavailable, a US Army 18 Delta Medic or USAF Pararescue trained and certified by HQ ACC/SGOP may be used. The role of the PT will be to monitor parachutists for signs of impairment resulting from hypoxia. If hypoxic impairment is suspected, the parachutist will be returned to the forward portion of the cargo compartment and administered 100% oxygen. Once symptoms and signs of hypoxia have been resolved, the parachutist may continue training. Instructors and jumpmasters will have 100% oxygen available (provided by the user) and will breathe from this supply whenever practicable.

19.14.1.1.3. For MFFJM Students: There is no requirement for a USAF PT to be onboard for unpressurized operations between 10,000 and 13,000 feet MSL. However, the parachutists will breathe 100% oxygen for a period of at least 3 minutes, immediately prior to jumping if their time between 10,000 and 13,000 feet MSL exceeds 30 minutes. Supplemental oxygen will be supplied by an oxygen console provided by the Military Free Fall School.

19.14.2. All other parachutists may operate without supplemental oxygen during unpressurized flights up to 13,000 feet MSL provided the time above 10,000 feet MSL does not exceed 30 minutes each sortie. Jumpmasters may operate without supplemental oxygen for an additional 60 minutes within the 10,000-13,000 foot MSL envelope provided their duties do not include jumping. For unpressurized flight above 13,000 feet MSL, or exceeding the 30-minute envelope between 10,000 and 13,000 feet MSL, the use of an individual mask and regulator is required for all jumpers. The user is responsible for all supplemental oxygen requirements.

19.14.3. When dropping from 20,000 feet MSL or higher, use pre-breathing procedures. When the aircraft oxygen system does not provide sufficient oxygen regulators for all personnel, approved portable oxygen console(s) will be pre-flighted and installed in the aircraft. The console(s) will provide enough oxygen regulators for all parachutists and crewmembers not accommodated by the normal aircraft system.

19.14.3.1. All airdrops above 25,000 feet MSL require a waiver to AFI 11-202V3 for unpressurized flight, from AF Flt Stds Agency (AFFSA) Oklahoma City, OK through MAJCOM/Stan/Eval. MA-1 portable oxygen units (with serviceable web carrying straps) equipped with A-21 regulators will be provided for each person aboard the aircraft except parachutists. ***WARNING:*** No personnel will be exposed to unpressurized flight at or above 30,000 feet MSL more than three times each 7 days; in addition, they must have a minimum of 24 hours between exposures.

19.14.4. Pre-breathing requirements for Missions at or Above FL 200. All personnel will prebreathe 100 percent oxygen below 16,000 feet MSL pressure altitude or cabin altitude on any mission scheduled for an exposure at or above FL 200 for times shown in **Table 19.6** Operational considerations dictate that pre-breathing must be completed before the cabin altitude exceeds 16,000 feet MSL. The aircraft commander, with recommendations from the PT, will determine the course of action for a break in pre-breathing. All personnel on board the aircraft will remain on 100 percent oxygen until cabin altitude is below FL 100. Pre-breathing will be conducted with a personally-fitted oxygen mask attached to an approved helmet and personal oxygen system. **NOTE:** Portable oxygen bottles may **not** be used for pre-breathing; the quick-don/smoke mask is emergency equipment and is **not** approved for pre-breathing or operations conducted at or above FL 200. The purpose of pre-breathing (denitrogenation) is to reduce the amount of nitrogen in the body and therefore reduce the risk of altitude-induced decompression sickness (DCS). Pre-breathing times are based on scientific research that outlines acceptable DCS risks. Major factors that enhance the effectiveness of denitrogenation are good hydration and good circulation.

Table 19.6. Prebreathing Requirements and Exposure Limits for High Altitude Operations.

Altitude	Oxygen Requirement	Pre-breathe Time	Maximum Exposure Time Per Sortie*
10,000 to 12,999 ft MSL	Aircrew: 100% O_2 Jumpers: See para 19.14.1.-19.14.2	N/A	Aircrew: Unlimited Jumpers: See para 19.14.1.-19.14.2
13,000 ft MSL to FL199	100% O_2	N/A	Unlimited
From FL 200 to FL 249	100% O_2	30 Min	110 Min
From FL250 to FL 299	100% O_2	30 Min	60 Min
From FL 300 to FL 349	100% O_2	45 Min	30 Min

NOTE: Maximum exposure time per sortie is when cabin altitude reaches maximum planned altitude; extended or delayed ascent times expose everyone onboard to greater DCS risk; missions that require staggered altitude drops will use accumulative times per sortie information for mission planning. Mission planned drops at FL350, FL299, and FL249; 30 minutes upon reaching FL350, descend to FL299, spend only 30 minutes (60 accumulative), descend to FL249, spend only 30 minutes (90 minutes accumulative). No more than 3 Pre-breather sorties in a 24-hour period unless otherwise restricted.

NOTE: Maximum Exposure Time Per Sortie is considered to be any time cabin altitude exceeds 10,000 feet MSL. Personnel will conduct no more than two oxygen jumps per 24-hour period that do not require pre-breathing (from 13,000 feet MSL up to FL200) one of which, in the same 24 hour period, that requires pre-breathing (FL200 MSL or above). Example: Scenario 1: 2x 17,500 feet MSL or Scenario 2: 1 x 24,999 feet MSL and 1 x 17,500 feet MSL).

19.14.5. The jumpmaster may dictate the use of supplemental oxygen by any or all jumpers at altitudes less than those listed. Parachutists transfer from the aircraft oxygen system or portable oxygen console to a personal oxygen system at approximately one minute before green light.

19.14.6. Pressurization Scheduling. 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. Depressurization will not exceed 3,000 feet per minute. Slower rates are recommended if time allows. Ensure zero pressure differential before opening doors.

19.15. High Altitude Operational Requirements for Physiology Technicians. PTs will support high altitude airdrop missions IAW AFI 11-409. A minimum of 2 PTs will be on all airdrops conducted at 20,000 feet MSL or above. When crew and jumper total exceeds 32 an additional USAF PT is required for each 16 personnel on board the aircraft for all unpressurized

high altitude missions conducted at or above 20,000 feet MSL. PT support for high altitude missions below FL200 is by request to further mitigate risks and is highly recommended. All CONUS requests for PT support must be made to the USAF HAAMS current operations desk (DSN 731-7389). PACAF requests must be made to Kadena AB, JA (DSN 315-634-1967). NOTE: The USAF High Altitude Airdrop Mission Support Program Manager, 203 West Losey Street, Building 1700, Suite 1600, Scott AFB IL 62225 may authorize variations to the PT-to-personnel ratio.

19.16. High Altitude Airdrop PT Duties.

19.16.1. PTs will fly as crewmembers as stated on aeronautical orders. When missions require a PT, the PT will be on interphone at all times. PT flight duty stations will be as required to monitor crewmembers, jumpers, and oxygen equipment. PTs will:

19.16.1.1. Preflight aircraft supplemental oxygen equipment.

19.16.1.2. Advise and aid loadmasters in positioning and securing oxygen equipment.

19.16.1.3. Brief crew and jumpers prior to the first mission on physiological problems that may be encountered, the importance of proper pre-breathing, and any special requirements.

19.16.1.4. Advise the PIC, crew, jumpers, and other personnel on use of oxygen equipment and on the depressurization schedule.

19.16.1.5. Monitor personnel, aircraft and supplemental oxygen equipment, and aircrew flight equipment.

19.17. High Altitude Personnel Airdrop Procedures. ***CAUTION:*** Ensure any paratroopers remaining on-board de-arm their parachutes before cabin altitude descends below set parachute activation altitude.

19.17.1. Air deflectors must be operational if paratroop doors are used. If an air deflector does not extend, do not open the affected troop door.

19.17.2. The ramp and door or paratroop door may remain open during racetracks if required, provided racetrack altitude is at or above a safe drop altitude and paratroopers are rigged for high altitude airdrops.

19.17.3. For jumpmaster-directed HALO drops, the green light may be turned on one minute prior to the release point. The pilot will provide a standard "green light" call at the jointly agreed upon release point. User assumes responsibility for drop accuracy.

19.17.4. Normally, the jumpers will exit the aircraft at their own discretion; however, their exit must occur during the green light time.

19.18. Personnel Airdrop.

19.18.1. Drop parameters. Aircraft will no-drop if not within the following tolerances at green light.

19.18.1.1. Element leads must maintain a minimum of 32,000 feet to preceding element lead.

19.18.1.2. Wingman Spacing Within Elements (For up to 12 Degrees of Drift). The second aircraft in each element will be positioned 3,000 feet aft and 650 feet right for a right echelon, 650 feet left for a left echelon. The third aircraft in each element will be positioned 6,000 feet aft and 1,500 feet right for a right echelon, 1,500 feet left for a left echelon. For drifts greater than 12 degrees, use appropriate spacing in Table 19.7. Lead will signal the direction of echelon and expected drift prior to the pre-IP. Wingmen will reset longtrack on lead's command and automatically echelon in the descent to drop altitude (or on lead's command in case of level slowdown or pop-up). Compression to 3,000-/6,000-foot spacing should be initiated not later than the slowdown point. Element wingmen will be established in echelon geometry by 1 minute prior to the drop. All elements fly the same drop altitude.

Table 19.7. Personnel Formation Drift.

PERSONNEL FORMATION DRIFT		
Drift	#2 Wing	#3 Wing
L/R	L/R	L/R
1 to 12	650	1500
13	700	1500
14	750	1500
15	800	1600
16	850	1750
17	950	1850
18	1000	1950
19	1050	2050
20	1100	2200

19.18.1.3. Wingmen restrictions are ±500 feet fore/aft, ±200 feet left/right of position. ***WARNING:*** If the second aircraft is not within these tolerances, a no drop will be called for both Number Two and Number Three aircraft by Number Two. ***NOTE:*** To prevent course correction at mission computer red light, consider using split axis or heading hold.

19.19. Slowdown Planning. For equipment or CDS AUTO drops, the aircraft should be at drop altitude and drop airspeed by 10 seconds prior to the computed air release point. During personnel drops, the aircraft should be at or above drop altitude and stable not later than 1 minute to go (2 minutes for jumpmaster-directed drops) to allow the jumpmasters access to the paratroop doors.

19.20. Navigation to the CARP. The primary method for navigating to the CARP is using a MC-calculated release solution updated with GPS. Alternate methods (using radar beacon (w/o APS 150), SKE, GRADS, VIRS, pilot-directed visual releases) are available, provided ground forces are willing to accept less airdrop accuracy.

19.20.1. 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 PM is responsible for ensuring a countdown to green light, the green light call, and the red light calls are given.

19.20.2. Element Lead. After slowdown, each element lead will fly an independent run-in to the CARP.

19.21. GPS Airdrop. A preflight drop box will be computed and updated prior to initiation of the release point checklist. If the aircrew determines that the aircraft will be outside the drop box at green light, a no drop will be called.

19.21.1. During the Slowdown Checklist, the following items must be confirmed if planning to drop in IMC:

19.21.1.1. At least one GPS receiver will be updating with no "RAIM ALERT" messages present.

19.21.1.2. No "DEGRADED NAV ACC" or “UNABLE RNP” messages will be present.

19.21.1.3. 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.

19.21.2. Crews should load GPS crypto for all airdrop operations to enhance GPS accuracy.

19.22. JPADS/ICDS Airdrop.

19.22.1. JPADS certified POs are authorized to use the JPADS mission planner and software to calculate release points for JPADS/I-CDS airdrop operations

19.22.2. The PO or mission planner is required to provide JPADS-MP derived CARP(S) for each airdrop pass and a completed Collateral Damage Assessment (CDA) prior to an airdrop mission. Both pilots will review preflight CARP(S)/CDA for each respective airdrop.

19.22.3. Collateral Damage Assessment (CDA). Units must perform a full CDA prior to JPADS/ I-CDS airdrops. The CDA must be coordinated and approved by the area controlling agency. Coordinate with the owning agency of the restricted airspace or controlled airspace and landowners with property surrounding the DZ for all JPADS/I-CDS operations. Examine the area in the vicinity of the DZ for potential damage or hazards in the course of normal operations or during extraordinary system failure events. If the CDA demonstrates potential damage or hazards restrict airdrop release launch acceptability region (LAR), lower the drop altitude, change the run-in, change parachute type or cancel operations. Inform the controlling unit of the risk to their operations; the controlling unit, and the Joint Force Controller (JFC) designated agency are approving authorities for risk to the area surrounding the DZ. Intelligence personnel are responsible for providing the JFC-designated agency close-up and overview imagery to facilitate CDA. See AFI 13-217 for further information. The CDA must include, at a minimum, a review of the airspace and ground space with respect to:

19.22.3.1. CARP and LAR location.

19.22.3.2. 63% 1-sigma I-CDS success ellipse.

19.22.3.3. Chute failure footprint.

19.22.3.4. Guidance failure footprint.

19.22.4. IMC/VMC day/night airdrops are authorized for contingency operations. CONUS training operations are required to comply with FAR 105 restrictions.

19.22.4.1. Drops conducted through or originating from IMC are only authorized from within or above an active restricted area or military operations in uncontrolled airspace.

19.22.4.2. JPADS parachutes will not be dropped through severe turbulence or severe icing.

19.22.5. Wind Limits. Wind limitations are unrestricted for dropsonde operations, 18 knots for Firefly, Screamer, and Dragonfly, and as published in AFI 13-217 for all other parachutes.

19.22.6. Drop zone Size. Drop zone size criteria for JPADS and I-CDS drops during contingency operations is at the discretion of the user. AFI 13-217 drop zone size restrictions apply during training.

19.22.7. JPADS Guided and Dropsonde Footprint Locations. During normal training operations, a JPADS and Dropsonde DZ, CARP, chute failure footprint and guidance failure footprint will be located within a restricted airspace. If winds force the CARP outside of restricted airspace additional coordination with ATC is required prior to airdrop operations. This includes coordination with the ATC agency, filing a Notices to Airmen (NOTAM), and ensuring airspace is clear for the entire guided system‘s flight profile from the drop altitude to the ground.

19.22.8. During training operations, the entire 1-sigma (63%) I-CDS success footprint will be located within the surveyed DZ boundaries. The chute failure footprint must fall within:

19.22.8.1. Restricted airspace if conducting operations in a restricted airspace

19.22.8.2. The surveyed DZ, if not conducting operations in a restricted airspace.

19.22.9. Jettison of JPADS AGU with Military GPS (MILGPS). Instances of jettison, unauthorized access, tampering, theft, or loss of the JPADS MILGPS enclosure must be reported to the GPS Controlling Authority (CA). Each such report shall include the JPADS MILGPS serial number and Selective Availability/Anti-Spoofing Module (SAASM) GPS serial number of the missing item and must state whether the system was keyed or unkeyed. Product Manager Force Sustainment Systems (PM FSS) will relay such jettison to the GPS CA. ***NOTE:*** Time permitting; the LM with concurrence from the PO will remove the MILGPS enclosure from the AGU prior to load jettison.

19.22.10. JPADS AGU MILGPS Procedure. For training missions with Air Force JPADS AGUs, aircrews will check out the MILGPS from the unit tactics office. Upon mission completion and prior to removing the MILGPS enclosure, power up the AGU and accomplish the Recovery Mission Duration Zeroization function (if desired). Zeroize prior to removal by pushing, for three seconds, the zeroize button located on the front panel of the MILGPS enclosure. ***NOTE:*** Keying and unkeying requires the MILGPS to be installed in a powered ON AGU. The AGU LCD screen should update within 20 seconds and should read MILGPS Keyed or Unkeyed. Once complete power OFF the AGU. The PO will remove and return the enclosure to the Unit‘s Tactics Office.

Chapter 20

AEROMEDICAL EVACUATION

20.1. Mission.

20.1.1. This chapter applies to Air Force C-17 Aircrews, AE Aircrews and all management levels concerned with operations of the C-17 aircraft. All operators involved in AE 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 11-2AE-V3 series and 41-307, in conjunction with this publication, to accomplish the AE mission.

20.2. Operational Control and Reporting of Aeromedical Evacuation Forces.

20.2.1. HQ AMC is lead command for AE. HQ AMC Directorate of Operations (AMC/A3) is the executive agent for operational AE missions.

20.2.2. Command and control of AE missions is the same as other airlift missions.

20.2.3. The PIC is a qualified pilot responsible for command and control of all persons aboard the aircraft during an AE mission. In matters of flight safety, crew duty waivers, or operational considerations, his/her decisions are final. In matters of patient care, decisions of the Medical Crew Director (MCD) are final.

20.2.4. Medical Crew Director. The MCD is a qualified flight nurse responsible for the overall supervision of patient care and management of AECMs assigned to AE missions. He/she advises the PIC on patients' conditions and the use of medical equipment that may affect aircraft operations. The MCD is directly responsible for the safety and medical well-being of patients on the aircraft and coordinates enplaning and deplaning procedures with supporting agencies. In matters of patient care, the decisions of the MCD are final.

20.3. Alerting Procedures.

20.3.1. At all locations AMC C2 agency will alert the PIC/MCD. The MCD will alert the medical crew. The goal is to link the primary PIC, 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, showtime, 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 communications 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). Identify armed crewmembers (as required).

20.4.3. The PIC will fully integrate front-end and Aeromedical Evacuation Crew Members (AECM) into single crew throughout mission including enroute transportation, dining, billeting, etc.

20.4.4. Coordinate with MCD and C2 agencies for cabin altitude/flight restrictions based on patient requirements. When the sortie is being flight managed, coordinate flight restrictions with the FM if the FM provided plan needs to be modified.

20.4.5. For missions with combined cargo and patients, coordinate with the MCD for loading, positioning, and egress considerations.

20.4.6. Comply with hazardous cargo/passenger restrictions in AFI 24-101.

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.

20.5.7. The CMT is responsible for medical vehicle movement/positioning around the aircraft. Coordinate vehicle movement/enplaning/deplaning/ERO requirements with the Charge Medical Technician (CMT).

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. The MCD or designated AECM should monitor interphone (headset) during flight. The MCD will be on headset with the PIC during critical phases of flight and during in-flight emergencies.

20.6.5. The CMT is responsible for all ground operations involved with patients. The CMT, in coordination with the loadmaster, is responsible for vehicle movement/positioning around the aircraft.

20.7. Ground Operations.

20.7.1. Engines should be shut down during enplaning and deplaning of patients. ***EXCEPTION:*** ERO procedures as outlined in 20.14.

20.8. Aircraft Refueling.

20.8.1. Refueling normally begins after deplaning patients are off the aircraft and prior to enplaning that station's patients.

20.8.1.1. Simultaneous fuel and oxygen servicing is not authorized.

20.8.2. Concurrent Ground Operations. Concurrent servicing (CS) is the simultaneous servicing of fuel or oxygen with or without patients on board while cargo loading/unloading or maintenance operations are being performed.

20.8.2.1. The PIC and Chief 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. The CSS will coordinate with all personnel involved prior to beginning concurrent operations.

20.8.2.2. Prior to starting concurrent servicing, the total number of patients, passengers, and crew on board the aircraft will be given to the fire department.

20.8.2.3. A current and qualified crewmember for the type of aircraft being serviced will be appointed as a Passenger Compartment Monitor (PCM) and shall continuously monitor patients/passengers during CS. PCMs will not perform other duties during servicing. ***EXCEPTION:*** see MDS guidance below. AECMs and passenger service representatives will not serve as PCMs.

20.8.2.4. The PCM will brief patients on emergency egress, exit prohibitions, and hazards. Ambulatory patients will remain seated but will not wear seatbelts during CS. When possible, the PCM should conduct the briefing prior to servicing.

20.8.2.5. Loading ramps/stairs are in place for immediate use and exits (excluding the overhead escape hatches) are opened for egress.

20.8.2.6. At least two qualified AECMs (one must be a FN) will remain onboard to observe patients and assist patients in the event of an egress.

20.8.2.7. The PIC, designated aircrew representative, or CSS will advise PCMs and AECMs when to evacuate patients.

20.8.2.8. Patients 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. Individuals must properly ground themselves before boarding the aircraft.

20.8.2.9. If cabin lights, electrical power to operate medical equipment and aircraft interphone are operating prior to refueling, use may be continued during servicing operations provided it does not radiate energy. (Do not turn electronic equipment on or off during refueling.) ***EXCEPTION:*** Only those systems, switches or electrical circuits needed to operate equipment to sustain life, may be turned on and used during refueling.

20.8.2.10. 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.

20.8.2.11. The PCM will set the interior lighting as bright as possible to suit the combat environment.

20.8.2.12. Do not use the on board toilet facilities during servicing.

20.9. Aircraft Configuration.

20.9.1. On designated ARM and operational AE missions, configure the aircraft during preflight per TO 1C-17A-9 and AFI 11-2AE V3 Addenda A.

20.9.2. Litter Support Provisions.

20.9.2.1. Roller conveyors will be stowed from all aisle way, walkway, and AE litter patient positions.

20.9.2.2. On the ramp, roller conveyors will be stowed unless the baggage pallet or LSAS are in position. Before enplaning/deplaning procedures, the LSAS will be secured in the Aerial Delivery System (ADS) Rails in position 10. All rollers in position 11 will be stowed.

20.9.3. Available litter spaces and ambulatory seating will depend on the aircraft cabin's mission configuration.

20.9.4. AECMs will have portable oxygen available. AECMs normally use an MA-1 portable oxygen bottle. If MA-1 bottles are not available, PBE's may be used as portable oxygen.

20.9.5. Do not secure aircraft or medical equipment adjacent to an emergency exit in a manner that will prevent or impede egress.

20.9.6. 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. Refer to AFMAN 24-204, Preparing Hazardous Materials for Air Shipments for hazardous product special provisions rating. P4 and P5 rated hazardous material have no AE restrictions. Conflicts will be referred to the respective tasking AE command element for decision. Litter patients 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. Patient Therapeutic Liquid Oxygen (PT LOX) may be transported for positioning and de-positioning AE Crews. A maximum of 25 PTLOX serviced units may be transported simultaneously without Hazmat certification. Processing through aerial port is not required. If shipping more than six PTLOX containers as cargo, do not cover with plastic. This will prevent potential high concentration of oxygen levels. ***WARNING:*** Ensure the cargo floor is free from any oil or petroleum products.

20.10.6. AE Movement of Contaminated/Contagious Personnel. It is United States Transportation Command (USTRANSCOM) policy that patients personnel, or casualties with known or suspected contamination from chemical, biological, or nuclear warfare agents will not be transported within the aeromedical patient movement system. Decontamination must be performed prior to transport to prevent the potential spread of contamination. In rare cases, transport may be essential to preserve life or continue critical missions. If such transport is deemed essential, all efforts must be made to prevent the spread of contamination. In these cases, prior approval must be given by the involved geographic combatant commanders, Commander USTRANSCOM, and the Secretary of Defense (SECDEF) in consultation with Department of Defense medical authorities.

20.10.6.1. Patients with known or suspected or highly contagious disease will not be transported within the patient movement system. These include infections with any agent that may pose a potential threat to national security, require special public health actions, and/or have the potential to cause public panic and social disruption. Patients known or suspected to be infected with a highly contagious disease should be treated “in place” or with minimal transportation to medical authorities. In extreme circumstances there may be a requirement to move index cases (approximately two) for evaluation or critical medical care. If patient movement is required, prior approval must be given by the involved geographic combatant commanders, Commander USTRANSCOM, and SECDEF in consultation with medical authorities.

20.10.6.2. AMC will train and equip AE crews and stage required equipment at key hubs to carry out these limited missions for movement of contaminated and contagious patients. ***NOTE:*** If AECMs are utilizing the MCU-2A ground chemical mask, a FL below 10,000 feet is recommended due to reported valve failure during rapid decompression.

20.11. Crash/Fire/Rescue.

20.11.1. Aircraft carrying patient(s) will be provided CFR protection per TO 00-25-172. When concurrent fuel servicing with patients/passengers on board a major aircraft rescue and fire vehicle will be available to respond within three minutes or as determined by the base Fire Chief. (***NOTE:*** When servicing with JP-4 or Jet B Fuel, a major aircraft rescue and fire vehicle will be positioned at the aircraft).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. AIR EVAC Priority. If a medical emergency occurs during flight, and is determined by the MCD to be an urgent situation, a request for AIR EVAC Priority will be requested. The PIC may request "AIR EVAC priority" for preferential ATC handling if a delay will affect a patient's well being. AIR EVAC priority will only be used for that portion of the flight requiring expedited handling. Do not request priority for routine air evacuations to avoid ATC delays or inconveniences. It is the PIC's responsibility to use this option only for bona fide medical situations that demand priority handling. Use this status judiciously.

20.13. Load Message.

20.13.1. The MCD will complete an AF Form 3858, C-130/C-141 Aeromedical Evacuation Mission Offload Message and coordinate for transmission of patient information to C2 a minimum of 30 minutes prior to estimated time of arrival.

20.14. ERO Procedures.

20.14.1. ERO procedures are outlined in AFI 11-2AE 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, static trainers, joint training operations, exercises, etc. EROs will not be used in a non-contingency environment unless mission essential. For the C-17, eye protection is not necessary, except when operating in parking areas where flying debris could be picked up from engine exhaust.

20.14.2. AECM's may exit the aircraft to conduct ground duties if not contradicted by Intel/SPINS (Special Instructions).

20.14.3. The loadmaster will be positioned on the left side, at the foot of the ramp and on headset during actual on-load procedures.

20.14.4. Baggage will be loaded on the aircraft ramp and will not impede emergency egress.

20.14.5. If duties permit, loadmasters will assist AECMs with securing baggage.

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 (ARMs), joint training operations, exercises, etc. The cargo/ramp floor will be configured with all rollers stowed (cargo permitting). Maximum altitude for floor loaded patients is FL 350. Patients will have an EPOS pre-positioned on their litter when floor loaded.

20.15.1.1. Ambulatory Patients. If available, any cushioning material may be used for seating, to prevent the patient from having to sit on the cargo floor. Seat patients facing forward in the aircraft. Attach a cargo tie-down strap for each row of patients, in a manner that it will provide forward restraint and body stability.

20.15.1.2. Litter Patients. Refer to AFI 11-2AE V3 Addenda A for litter

Chapter 21

EMERGENCY NUCLEAR AIRLIFT OPERATIONS (ENAO)

Section 21A—Mission Preparation

21.1. General. The objective is to move nuclear weapons safely. You may be tasked at any time to airlift nuclear weapons. The amount of preparation time and degree of assistance you receive will depend on the length of time the MAJCOM has to move the weapons.

21.2. Conduct of Operations. Crews should be briefed and receive detailed instructions from a specific OPLAN or mission directive. If there is a conflict between this instruction and the requirements in an OPLAN or mission directive, use the OPLAN or mission directive.

21.3. Emergency Nuclear Airlift Standards. Crews are expected to use sound judgment and common sense in what may be a turbulent or tense environment. Pay particular attention to the following areas:

21.3.1. Nuclear weapons must be handled safely. The most immediate hazard is the high explosive that can be set off by shock or heat in most nuclear weapons. Keep loading operations controlled and orderly at all times. Load or handle only one item or pallet at a time. Shipper and receiver personnel are highly trained in nuclear cargo movements and should be used to assist in cargo loading operations and tiedown. The overall aircraft loading responsibility still belongs to the aircrew.

21.3.2. Use standard TO 1C-17-9 loading procedures.

21.3.2.1. For mixed loads (more than one type of weapon), base the load plan on how many weapons can be properly restrained using T.O 1C-17A-9criteria. Do not allow weapons to rub or touch each other when tied down.

21.3.3. The T.O 1C-17A-16-1- is an excellent guide to use when planning the maximum density logistic movement of a single weapon type. The tiedown patterns will aid crews in floor planning a maximum tested load. The T.O 1C-17A-16-1is also a useful guide for positioning approach, rolling, parking, and step-up shoring. Step-by-step use of the T.O 1C-17A-16-1is not necessary.

21.3.4. The route of flight must not violate restrictions in the classified United States Air Force Special Weapons Over-flight Guide (SWOG). Over-flight of a foreign country with nuclear weapons is an extremely sensitive issue. Comply with SWOG instructions at all times. Crews without access to the SWOG, will request a route of flight that complies with the SWOG through command and control center (C2 agency) channels, 618 AOC (TACC/XOCG), DSN 779-0323. The C2 agency must ensure the route of flight is provided 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 en route ATC facility or country to obtain a specific clearance.

21.4. Aircrew Selection. All active duty aircrews may be used for ENAO. 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 (LM) and pilots so as to have one or the other on each aircraft.

21.4.2. Place PNAF pilot and LM teams at the onload bases to assist with the loads and flight plans.

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.

21.5.2. The crew will be armed (courier and two additional crewmembers).

21.5.3. Crewmembers tasked for a mission that has a higher security classification than their personnel security clearance 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. A controlling agency or delegated representative will conduct a predeparture or enroute briefing for aircrew members prior to executing an active leg of ENAO. The controlling agency can pass classified mission information to the crew through the Shipping Agency. The aircraft commander will brief anyone who joins the mission enroute. Aircrews 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 controlling agency or the shipper prior to loading. TO 11N-20-11 is a classified technical order that assigns an unclassified line number to each nuclear weapon.

21.6.1.4.1. Restrictions on transporting additional general cargo or passengers.

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 and air refueling restrictions.

21.6.1.9. Airborne intercept (SWOG).

21.6.1.10. Jettisoning (SWOG).

21.6.1.11. Command Disable System (CDS) procedures.

21.7. Nuclear Airlift Publications.

21.7.1. To the maximum extent possible, the consolidated trip kit should include the following nuclear publications:

21.7.1.1. TO 1C-17-16-1, Loading and Air Transport of Nuclear Weapon Cargo (Non-palletized).

21.7.1.2. TO 1C-17-16-2, Loading and Air Transport of Nuclear Weapon Cargo (Palletized).

21.7.2. AFI 11-299, Nuclear Airlift Operations". HQ AMC/A3NA (DSN 779-0074) is the OPR.

21.7.3. AFI 91-115, Safety Rules for Nuclear Logistics Transport by the Prime Nuclear Airlift Force.

Section 21B—En Route Procedures

21.8. General. Use these procedures in addition to the normal operating procedures in the rest of this regulation.

21.8.1. Flight Plans. Enter "hazardous cargo" and the mission number in the "other information" section of the flight plan. Crews carrying inert weapons, trainers, or other items that could be mistaken for real weapons by crash or rescue personnel in an emergency will enter "inert devices."

21.8.2. Radio Calls:

21.8.2.1. Departure (onload) base. Before starting 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.

21.8.2.2. En route or offload base. At least 30 minutes prior to landing, contact one of the following: base operations, command post, 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:

21.8.2.2.1. Aircraft call sign, type, and mission number.

21.8.2.2.2. Estimated time of arrival (ETA).

21.8.2.2.3. Department of Transportation (DOT) explosives hazard class or division (normally 1.1).

21.8.2.2.4. Net explosive weight (NEW).

21.8.2.2.5. Line numbers from TO 11N-20-11 if requested. Obtain line numbers from the base fire department prior to starting the load at the onload location.

21.8.2.2.6. A request for isolated parking and security forces to meet the aircraft.

21.9. Custody of Nuclear Cargo. The courier must be a commissioned 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. Under certain conditions, the shipper may furnish United States military couriers who will retain custody of the weapons in flight.

21.9.1. Prior to accepting and loading nuclear cargo, the shipper will brief the courier officer on the nature and hazards of the cargo. The courier will brief all crewmembers who didn't receive the shipper's briefing prior to flight. Ask the shipper to point out any specifics crews may need to handle the weapon, i.e. tiedown points, forklift stirrups, command disable system (CDS) procedures, etc.

21.9.2. Time permitting, the courier and LM will inspect the cargo before accepting custody. The courier should have the shipper verify the integrity of a weapons 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 Receip**t, prior to signing for the weapon.

21.9.2.1. Loadmasters will inspect weapons to ensure they are secured to carriers, conditions of tiedown rings, and condition of wheel casters etc.

21.9.3. 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.

21.9.4. 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.

21.9.5. Time permitting, refer any questions through the 618 AOC (TACC/XOCG), DSN 779-0323 for resolution.

21.10. 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 must load and depart quickly, use judgment and dispense with the formalities. Prior to takeoff, the AC will ensure security support at all stations being transited that day through the 618 AOC (TACC).

21.10.1. Home Station. 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.

21.10.2. Onload Base. The host base should set up a restricted area, normally with ropes and stanchions, around the aircraft.

21.10.2.1. 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.

21.10.2.2. “No lone zone.” Do not allow anyone to be alone in the restricted area or aircraft when nuclear weapons are present (inside either the area or the 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). Maintain the two-person concept throughout the flight. Do not allow anyone to be alone in the cargo compartment, crew rest area and/or cockpit.

21.10.3. Arrival or En Route Base. If security forces do not meet the aircraft, the aircraft commander must be prepared for an immediate departure until security is established. Immediately upon block-in, the courier and security team will deplane. The aircrew will keep the aircraft engines running, all aircraft doors closed and delay preparation for nuclear cargo transfer until the courier verifies appropriate security is in place. CDS codes (if issued) must remain onboard the aircraft (normally with the copilot) until custody is transferred to the receiving authority. Once security 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 time.

21.11. Emergency Procedures.

21.11.1. Security Emergencies. Crews may use deadly force to protect nuclear cargo and 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. Should hostages be used to gain access to, as cover for removal, or to thwart recovery of a nuclear weapon; the welfare and safety of the hostages should be considered in determining actions to be taken. However, the presence of hostages shall not deter the taking of decisive, prompt, and effective action that includes the use of deadly force to recover a nuclear weapon and to prevent unauthorized access to or removal of a nuclear weapon. If crews are attacked, take the following actions:

21.11.1.1. Make an immediate takeoff, with the cargo if possible.

21.11.1.2. If the attack occurs during onloading or offloading, load the weapons as fast and as safely as possible. Ensure sufficient cargo restraint and takeoff immediately.

21.11.1.3. Some weapons are equipped with 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.

21.11.1.4. Aircrews will not use emergency destruct procedures on nuclear weapons. Emergency destruction (ED) 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 ED orders. When two properly identified shipper or receiver personnel concurrently request custody of the cargo for ED purposes, release the cargo using appropriate custody transfer procedures.

21.11.2. Jettisoning Nuclear Cargo. The LM will identify which cargo is jettisonable IAW the T.O 1C-17A-1. The aircraft commander 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.

21.11.3. 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 US military aircraft in the DOD Foreign Clearance Guide (FCG), which states: US military aircraft are sovereign instrumentalities. US military aircraft cleared to overfly or land in a foreign territory are entitled to the privileges and immunities customarily accorded to 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.

21.12. Maintenance and Servicing on Aircraft Loaded with Nuclear Cargo.

21.12.1. Maintenance on an aircraft loaded with nuclear weapons must not violate safety rules normally used with aircraft loaded with conventional explosives. As much as possible, have maintenance and servicing completed before loading nuclear weapons on the aircraft. Do not allow maintenance, such as the following, that could increase the possibility of a fire:

21.12.1.1. Using flame or uncontrolled heat-producing items.

21.12.1.2. 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.

21.12.2. Aircraft will not be jacked. The temporary lifting of one set of landing gear "integral jacking" for minor maintenance (tire change, brake change, bogie maintenance, etc.) is not considered aircraft jacking.

21.12.3. Have a fire truck standing by at the aircraft during refueling, defueling, or oxygen servicing. Do not refuel, defuel, integral jack, or service oxygen while loading or offloading nuclear weapons.

21.12.4. An aircrew member will monitor all maintenance on the aircraft while nuclear cargo is on board.

Section 21C—Emergency Nuclear Airlift Operations Guide

21.13. General. This guide describes recommended actions for courier and crew during emergency nuclear airlift operations. It is designed for those missions diverted en route to an onload site where the crew does not have the opportunity to receive a formal Contingency Response Element (CRE)., home station, or command post briefing. However, even if a formal briefing is given, this guide may be used as a refresher. Security, time, and ground support may not be sufficient to allow using this guide during emergency operations. In such cases, the courier and crew must discuss all factors and use their judgment on the best course of action to accomplish the mission. Safety and security is paramount in all decisions affecting transportation of nuclear cargo.

21.14. Prior to Onload (either at home station or enroute to the onload site).

21.14.1. Review crew responsibilities and the procedures to be used during onload (loading method, security setup, cargo receipt, two-person concept). Do not discuss classified information over inter-phone.

21.14.2. If time permits, review the applicable section of the T.O 1C-17A-16-1. Use of the T.O 1C-17A-16-1 is not mandatory, but it may provide useful loading information for the cargo, such as parking and rolling shoring requirements and tiedown patterns.

21.14.3. En route and 30 minutes prior to landing, contact the onload site and notify them of estimated time of arrival (ETA). Make support requirements known (fuel, materials handling equipment (MHE), transportation, security, etc.) at this time.

21.14.4. If time permits and the equipment is readily available, install the Combat Track II system.

21.15. Arrival and Onload.

21.15.1. Contact the senior security official and comply with the following: If crews have nuclear cargo on board, establish a restricted area and keep everyone off the aircraft. Provide armed security until the host security forces assume responsibility.

21.15.1.1. A restricted area will be established around the aircraft. Ropes and stanchions are normally used to denote the restricted area. However, depending on the situation, crews may see additional guards, security vehicles, etc., rather than ropes. Be flexible. The key is whether the host base is furnishing enough security to protect the nuclear cargo.

21.15.1.2. A single entry control point will be established.

21.15.2. The entry controller must allow only those individuals into the restricted area who have been cleared by the courier. Tell the entry controller which individuals are authorized into the area and, time permitting, use crew orders as an entry authorization lists (EAL) and prepared shipper lists.

21.15.3. After security is established, verify shipper identification and accomplish the following with the shipper: (NOTE: Accomplish the shipper briefing and cargo inspection if time and the security environment permit.)

21.15.3.1. Shipper briefing to include the following:

21.15.3.1.1. Nature, hazard, and safety regarding shipment of nuclear weapons cargo, including line numbers from TO 11N-20-11, DOD class explosive hazard class or division, and net explosive weight (NEW).

21.15.3.1.2. Courier escort requirements.

21.15.3.1.3. Items requiring the two-person concept.

21.15.3.1.4. Items that are command disable system (CDS) equipped and if the CDS has been activated (weapon not operational).

21.15.3.1.5. Items exposed to an abnormal environment or not operational.

21.15.3.1.6. Special handling or unique requirements particular to the cargo.

21.15.3.1.7. Individuals required to assist during onload or offload. Pass the information to the entry controller.

21.15.3.1.8. Authorized recipients at offload station. Get this information in writing.

21.15.3.2. Cargo inspection:

21.15.3.2.1. The primary LM, courier, and shipper will inspect the cargo for broken seals, exterior damage, security to carrier, wheel and casters, tiedown points, etc. Have the shipper annotate any discovered damage or discrepancies on the DD Form 1911, Materiel Courier Receipt. ***NOTE:*** Ensure the aircraft is ready for onload prior to accepting custody of nuclear cargo.

21.15.3.2.2. After the inspection and all cargo is uploaded, accept custody of the cargo by signing the DD Form 1911. CDS codes (if issued) must remain onboard the aircraft (normally with copilot) until custody is transferred to the receiving authority.

21.15.4. During onload or offload monitor the operation, assist as necessary, and ensure personnel comply with the two-person concept.

21.15.5. After cargo onload is complete and the crew is ready for engine start, the armed courier will deplane and tell the host base security to break down security and maintain surveillance until aircraft departure. The courier and other armed crewmembers will monitor access to the aircraft and crew entrance door during engine start.

21.16. En Route to Offload.

21.16.1. Maintain the two-person concept.

21.16.2. Notify the 618 AOC (TACC) of departure time and ETA at the offload station. Be prepared to encode this information.

21.16.3. If time permits, review the security and handling procedures to be used at the offload station. Do not discuss classified information over the interphone.

21.16.4. Contact the agency specified in flight information publications (command post, base operations, or tower) 30 minutes prior to landing; ask if they have hazardous cargo information. If they don't, pass the following information:

21.16.4.1. Call sign, type aircraft, and mission number.

21.16.4.2. ETA.

21.16.4.3. Line numbers from TO 11N-20-11 or DD Form 1911.

21.16.4.4. If line numbers were not provided, pass on the following information:

21.16.4.4.1. DOD explosive hazard class or division (normally 1.1).

21.16.4.4.2. NEW.

21.16.4.5. A request for isolated parking and for their security forces to meet the aircraft.

21.16.4.6. Inert devices, if applicable.

21.17. Offload.

21.17.1. If security forces do not meet the aircraft, the aircraft commander must be prepared for an immediate departure until security is established. Immediately upon block-in, the courier and security team will deplane. The aircrew will keep the aircraft engines running, all aircraft doors closed and delay preparation for nuclear cargo transfer until the courier verifies appropriate security is in place.

21.17.2. Maintain the two-person concept.

21.17.3. Brief the receiver on the cargo, and transfer custody.

21.17.4. Briefing includes:

21.17.4.1. Nature, hazard, and safety regarding shipment of the nuclear weapon cargo, including line numbers from TO 11N-20-11, DOT explosive hazard class or division, DOT class, and NEW.

21.17.4.2. Courier escort requirements.

21.17.4.3. Items requiring the two-person concept.

21.17.4.4. Items that are CDS-equipped and if the CDS has been activated (weapon not operational).

21.17.4.5. Items exposed to an abnormal environment or not operational.

21.17.4.6. Special handling or unique requirements applicable to the cargo.

21.17.4.7. Individuals required to assist during the offload. Pass this information to the entry controller.

21.17.5. The receiver and courier will conduct an inspection of the cargo for broken seals, exterior damage, etc. If discrepancies are found and they have not been previously noted, the courier will annotate them on the DD Form 1911.

21.17.6. Transfer custody of cargo. (Receiver signs DD Form 1911).

21.17.7. Complete offload of cargo.

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ATTACHMENT 1

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AF IMT 457, *USAF Hazard Report, 1 Sep 73*

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AMC IMT 54, *Aircraft Commander's Report on Services/Facilities, 1 Nov 93*

AMC IMT 97, *AMC In-Flight Emergency and Unusual Occurrence Worksheet*, 1 May 03

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(452AMW) Adopted Forms

(Added-452AMW) AF Form 673, *Air Force Publication/Form Action Request*

(Added-452AMW) AF Form 847, *Recommendation for Change of Publication*

Prescribed Forms

AF Form 4114, *C-17A Nuclear Floor Plan Worksheet, 1 Jun 99*

Abbreviations and Acronyms

ACDE—Aircrew Chemical Operations and Procedures

ACF—Acceptance Check Flight

ACO—Airspace Control Order

AECM—Aeromedical Evacuation Aircrew Members

AEOO—Aeromedical Evacuation Operations Officer

AGE—Aircraft Ground Equipment

AFRC—Air Force Reserve Command

(Added-452AMW) ALZ—Assault Landing Zone

AMD—Air Mobility Division

AME—Air Mobility Element

AMT—Air Movement Table

ANG—Air National Guard

AOC—Air and Space Operations Center

AOR—Area of Responsibility

APU—Auxiliary Power Unit

APCC—Aerial Port Control Center

AAR—Air Refueling

ARCT—Air Refueling Control Time

ASRR—Airfield Suitability and Restriction Report

ATC—Air Traffic Control

ATO—Air Tasking Order

ATOC—Air Terminal Operations Center

ATOCONF—Air Tasking Order/Confirmation

BRNAV—Basic Area Navigation Airspace

C2—Command and Control

CARF—Central Altitude Reservation Function

CARU—Canadian Altitude Reservation Unit, Combined Center/Approach Control

CDT—Crew Duty Time

CG—Center of Gravity

CRE/CRGs—Contingency Response Elements/Groups

CW—Chemical Warfare

CCA—Contamination Control Area

CECR—Crew Enhancement Crew Rest

CFP—Computer Flight Plan

COE—Certification of Equivalency

COMAFFOR—Commander Air Force Forces

CSS—Chief Servicing Supervisor

CVR—Cockpit Voice Recorder

DCS—Defense Courier Service

DIRMOBFOR-AIR—Director of Mobility Forces-Air

DH—Decision Height

EAL—Entry Access List

EAR—End Air Refueling

EBL—Emergency Boom Latching

ED—Engineering Disposition

EMCON—Emission Option

EPA—Evasion Plan of Action

ETA—Estimated Time of Arrival

ETE—Estimated Time En route

ETIC—Estimated Time in Commission

ETP—Equal Time Point

EUCARF—European Central Altitude Reservation Facility

FCB—Flight Crew Bulletin

FAF—Final Approach Fix

FCF—Functional Check Flight

FCG—Foreign Clearance Guide

FCIF—Flight Crew Information File

FDP—Flight Duty Period

FIR—Flight Information Region

FMC—Fully Mission Capable

FMS—Flight Management System

FOD—Foreign Object Damage

FOL—Forward Operating Location

FRAG—Fragmentary Order

FSO—Flying Safety Officer

GPS—Global Positioning System

HATR—Hazardous Air Traffic Report

ICS—Infant Car Seat

IFF—Identification Friend or Foe

IFM—Integrated Flight Management

(Added-452AMW) IFR—Instrument Flight Rules

INS—Inertial Navigation System

JA/ATT—Joint Airborne/Air Transportability Training

LRC—Long Range Cruise

LPU—Life Preserver Unit

MAF—Mobility Air Forces

MARSA—Military Assumes Responsibility for Separation of Aircraft

MBL—Manual Boom Latching

MC—Mission Capable

MCD—Medical Crew Director

MDS—Mission Design Series (e.g., KC-135)

ME—Mission Essential

MEL—Minimum Equipment List

MOB—Main Operating Base

MPF—Mission Planning Folder

MNPS—Minimum Navigation Performance Specifications

MSL—Mean Sea Level

NDB—Non Directional Beacon

NEW—Net Explosives Weight

NGB—National Guard Bureau

NM—Nautical Mile

NOTAM—Notice to Airmen

OBLE—On Board Loose Equipment

OCF—Operational Check Flight

(Added-452AMW) OG/OGV—Group-level Standardization and Evaluations

OIS—Obstacle Identification Surface

OPORD—Operations Order

PACMARF—Pacific Military Altitude Reservation Facility

(Added-452AMW) PAX—Passenger

PDO—Publication Distribution Office

PIC—Pilot In Command

PM—Pilot Monitoring

PM—Pilot Monitoring

PMCR—Post Mission Crew Rest

PPAS—Pilot's Performance Advisory System

PPR—Prior Permission Required

PMSV—Pilot to Meteorologist Service

PSN—Proper Shipping Name

PSP—Patient Support Pallet

RNP—Required Navigation Performance

ROE—Rules of Engagement

RRFL—Required Ramp Fuel Load

RVSM—Reduced Vertical Separation Minimum

SAAM—Special Assignment Airlift Mission

SID—Standard Instrument Departure

SIGMET—Significant Meteorological Information

(Added-452AMW) SOCAL—Southern California

(Added-452AMW) SOV—Shutoff Valve

SPR—Single Point Refueling

SPINS—Special Instructions

STM—Supplemental Training Mission

SWOG—Special Weapons Over-flight Guide

TOLD—Take off and Landing Data

(Added-452AMW) USCIS—United States Citizenship and Immigration Services

(Added-452AMW) UTA—Unit Training Assembly

(Added-452AMW) VFR—Visual Flight Rules

Terms—The following is a list of common mobility terms and associated abbreviation. Additional terms common to the aviation community may also be found in FAR, Part 1 and DoD FLIP General Flight Planning, Chapter 2.

Advanced Computer Flight Plan (ACFP)—An Air Force level system which is the follow on replacement for the Optimized AMC Flight Plan (formerly Jeppesen). The system brings an improved user interface to the customer, runs in Microsoft Windows, and communicates with a mainframe located at Scott AFB IL. Once the optimized flight plans are produced on the mainframe, they are transmitted back to the Window's PC.

Advanced Echelon (ADVON)—In advance of the main force, the initial group prepares for the reception of aircraft and personnel; also a small group that serves as liaison between the command and the supported command.

Aeromedical Evacuation (AE)—Movement of patients under medical supervision between medical treatment facilities (MTFs) by air transportation.

Aeromedical Evacuation Coordination Center (AECC)—A coordination center, within the Joint Air Operations Center, which monitors all activities related to aeromedical evacuation (AE) operations execution. It manages the medical aspects of the AE mission and serves as the net control station for AE communications. It coordinates medical requirements with airlift capability, assigns medical missions to the appropriate AE elements, and monitors patient movement activities.

Aeromedical Evacuation Crew member (AECM)—Qualified Flight Nurse (FN) and Aeromedical Evacuation Technician (AET) 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.

Aeromedical Readiness Mission (ARM)—Training missions using simulated patients to prepare for the wartime/contingency movement of patients.

Air Force Mission Support System (AFMSS)—Provides the Air Force with common interoperable automated flight mission planning hardware and software. Consists of a ground and portable (laptop) system. Interfaces with theater, MAJCOM, and joint data bases from fixed or deployed locations worldwide. Automates previously manually accomplished tasks. Passes Air Tasking order through C2IPS or CTAPS. Threats are provided via the Combat Intel System. AFMSS is multimedia capable with modem provided on ground and portable systems. The portable system has a 1553B interface bus for uploading data to the aircraft. AFMSS displays and prints full color charts, NITF imagery, perspective views, mission rehearsals, 3-D fly through, flight planning forms and logs, and Digital Aeronautical Flight Information File information. Uses industry standardized databases and complies with open-system architecture and multilevel security requirements. Built with Commercial Off-The-Shelf (COTS) hardware, and implements nonproprietary software.

Air Force Satellite Communication (AFSATCOM)—Satellite communications system capable of 75 bits per second (BPS) record message traffic.

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.

Airlift—Aircraft is considered to be performing airlift when manifested passengers or cargo is carried.

Air Mobility Control Center (AMCC)—Provides global coordination of tanker and airlift for AMC and operationally reports to the 618 AOC (TACC). Functions as the AMC agency that manages and directs ground support activities and controls aircraft and aircrews operating AMC strategic missions through overseas locations.

Air Mobility Operations Control Center (AMOCC)—Operations center which controls movement of theater assigned air mobility assets.

Air Mobility Element (AME)—Command and control center deployed in theater where detailed planning, coordinating, and tasking for theater tanker and airlift operations are accomplished. The AME receives direction from the director, mobility forces (DIRMOBFOR). The AME is the focal point for communications and the source of control and direction for theater tanker and airlift forces.

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 (AR 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 (ARC)—Refers to Air National Guard (ANG) and Air Force Reserve Command (AFRC) forces, both Associate and Unit-Equipped.

Air Route Traffic Control Center (ARTCC)—A facility that provides Air Traffic Control (ATC) services to aircraft operating on IFR flight plans within controlled airspace, principally during the en route phase of flight.

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.

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.

AMC History System (AHS)—Database that compiles and stores tanker activity input by line units.

Assembly Staging Base—The base where tanker aircraft composing the task force assembles.

Augmented Crew—Basic aircrew supplemented by additional qualified aircrew members to permit in-flight rest periods.

Aviation Into-Plane Reimbursement (AIR) Card—A credit card that can be used to purchase aviation fuels, related fuel supplies and ground services at commercial airports where no DoD or Canadian Into-Plane contract exists.

Bird Aircraft Strike Hazard (BASH)—An Air Force program designed to reduce the risk of bird strikes.

Bird Watch Condition (BWC) 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. However, a single bird in a critical location may elevate the BWC to moderate or severe.

Bird Watch Condition (BWC) 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. However, could be caused by only a single bird in a critical location.

Bird Watch Condition (BWC) 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. However, could be caused by only a single bird in a critical location.

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 (DoD), and the dependents of both categories who travel in connection with the death of an immediate family member. It also applies to escorts for dependents of military members traveling under competent orders.

Border Clearance—Those clearances and inspections required to comply with federal, state, and local agricultural, customs, immigration, and immunizations requirements.

Category I (CAT 1) Route—Any route segment on which the position of the aircraft cannot be accurately determined by the overhead crossing of a radio aid at least once each hour with positive course guidance between such radio aids. This is designated on the ACFP by the plus (+) or ampersand (&) symbol.

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.

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)—see **Special Tactics Team (STT)**.

Command and Control (C2)—Exercise of direction and authority over assigned forces by a properly designated command echelon in the accomplishment of the mission.

Command and Control (C2) Center—Each C2 center provides supervision, guidance, and control within its assigned area of responsibility. For the purpose of this AFI, C2 centers include operations centers, local AMC C2s, air mobility elements, contingency response elements/groups (CRE/CRGs), air mobility control centers, unit command posts, 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), AME fixed units, and TALCE. Interfaces to and automatically updates the Global Decision Support System (GDSS).

CONFERENCE SKYHOOK—Communication conference available to help aircrews solve in-flight problems that require additional expertise.

Contingency Response Elements/Groups (CRE/CRGs)—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. CRE/CRGs support and control contingency operations on both a planned and no-notice basis.

Contingency Fuel—An additional 15 minutes of fuel to compensate for unforeseen circumstances during any phase of flight (i.e. unforecasted weather, launch delay, etc). Contingency fuel will not be considered reserve fuel since crews may burn some or all of their contingency fuel at any time during the mission. Identified extra to compensate for unforeseen circumstances during any phase of flight (i.e. unforecasted weather, launch delay, etc).

Contingency Mission—Mission operated in direct support of an OPORD, OPLAN, disaster, or emergency.

Critical Phase Of Flight—Takeoff, air refueling, airdrop, approach, or landing.

Department of Defense Activity Address Code (DoDAAC)—A six-position, alpha-numeric code assigned to identify the unit, activity, or organization within DoD that owns the aircraft.

Depressurization Fuel—Depressurization fuel will be calculated in ACFP at FL250/10,000' altitude (see **14.34**). If additional fuel is required from the ETP, then ACFP automatically adds the additional fuel into block 10.

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.

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.

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).

Director, Mobility Forces (DIRMOBFOR)—Individual responsible for theater mobility force management. The Air Force component commander exercises operational control of assigned or attached mobility forces through the DIRMOBFOR. The DIRMOBFOR monitors and manages assigned mobility forces operating in theater. The DIRMOBFOR provides direction to the Air Mobility Division in the AOR to execute the air mobility mission and will normally be a senior officer familiar with the AOR.

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).

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 aircrew's entry into crew rest will be delayed until postflight duties are complete.

Dual Role—Any mission where both air refueling and airlift are provided to the user. Primary mission role is normally air refueling. Missions where cargo movement is primary require a dedicated funded special assignment airlift mission (SAAM).

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 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, sec. 7.

Employment Base—Base or airfield normally in the forward area from which combat operations are flown; may be a main base (MB), limited base (LB), or standby base (SB).

Equal Time Point (ETP)—Point along a route at which an aircraft may either proceed to First Suitable Airfield (FSAF) or return to Last Suitable Airfield (LSAF) in the same amount of time based on all engines operating. FSAF/LSAF are airports closest to the coast out and coast in route of flight that meet applicable destination alternate requirements.

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 performs transition training. Each operations group commander will designate familiar fields within their local flying area.

Forced Rendezvous Point (FRP)—Navigational checkpoint over which formations of aircraft join and become part of the main force.

Fuel Reserve—Amount of usable fuel that must be carried beyond that required to complete the flight as planned.

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.

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.

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.

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 crewmembers and/or aircraft from AMC, AETC, ACC, PACAF, USAFE, and AMC-gained ANG and 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. AMC headquarters publishes JA/ATT tasking in AMC OPORD 17-76, annex C, appendix 1.

Loading Time—Specific time established jointly by the commanders concerned when aircraft loading will begin.

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 a FN is not onboard, the senior AET will function as MCD.

Mission—Movement of aircraft from a designated point of origin to a designated destination as defined by assigned mission identifier, mission nickname, or both in the schedule, mission directive, OPORD, OPLAN, or FRAG order.

Mission Advisory—Message dispatched by command and control agencies, liaison officers, or ACs advising all interested agencies of any changes in status affecting the mission.

Mission Clinical Coordinator (MCC)—A qualified MCD or CMT, in addition to the basic crew and instructors and flight examiners. Responsible for coordinating training activities on ARMS.

Mobility Air Force (MAF)—Forces assigned to mobility aircraft or MAJCOMs with operational or tactical control of mobility aircraft.

Mobility Readiness Spares Package (MRSP)—An air transportable package of aircraft spares to support various KC-135 operations.

Multipoint Refueling System (MPRS)—Refers to aircraft modified with TCTO 628, which allows offload of fuel in-flight from either of two wing tip mounted air refueling (AR) pods.

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)—Functions of command and control involving composition of subordinate forces, authority to approve allocation of assets to specific missions, assignment of tasks, designation of objectives, and authoritative direction necessary to accomplish the mission. This is a higher authority than the command that performs specific mission functions.

Operational Necessity—A mission associated with war or peacetime operations in which the consequences of an action justify the risk of loss of aircraft and crews.

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.

Operational Missions—Missions executed at or above 618 AOC (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 618 AOC (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.

Operations Order (OPORD)—Directive from a commander to subordinate commanders to announce the plan, state intentions, provide necessary information and instructions for a situation and assign specific tasks to subordinate commands.

Operations Plan (OPLAN)—A plan for a single or a series of connected operations to be carried out simultaneously or in succession, based on stated assumptions; a directive to permit subordinate commanders to prepare supporting plans and orders.

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.

Patient Movement Categories—

(Added-452AMW) QEN—(not an acronym) First three letters of a mission number which designates an AFRC tasking (e.g., local and off-station trainers)

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. PIC 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—Most distant point along the planned route from which an aircraft may safely return to its point of departure or alternate airport with approach and landing fuel.

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.

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.

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 center whose primary duty is the coordination of ground handling activities on the ramp during large-scale operations.

Readiness Spares Package (RSP)—An air deployable package of selected spares to support a specific mission, operation, or aircraft model design series (MDS).

Required Ramp Fuel Load (RRFL)—Minimum fuel required at engine start to complete tasked mission. Required ramp fuel load will consist of all fuel required for engine start, taxi, APU operation, takeoff, enroute, enroute reserve, contingency, air refueling, decompression (depressurization), descent, approach and landing, alternate, transition, holding/minimum landing.

Scheduled Return Date (SRD)—Scheduling tool used by 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 SRD 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. Scheduled

takeoff time may be adjusted to make good an ARCT. Notify controlling agency prior to takeoff to adjust the scheduled takeoff time.

Section—Subdivision of a formation. A section normally consists of 6 aircraft (2 elements).

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.

Stations Time (Air Force)—Normally, 30 minutes prior to takeoff time for the KC-10, KC-135, C-130, C-141, and OSA aircraft (45 minutes for C-5 and C-17). Aircrews will have completed their preflight. duties and be at their crew positions. Passengers will be seated and cargo will be secured.

618 Tanker Airlift Control Center (618 AOC (TACC))—Operations center that controls tanker and airlift forces worldwide through a network of computer systems. The 618 AOC (TACC) is organized into geographic cells consisting of East, West, and Emergency Action Cells. The 618 AOC (TACC) contains the following functions: Mobility Management, Global Channel Operations, Operations Management, Current Operations, Global Readiness, Weather, Logistics Readiness Center, Aerial Port Control Center, International Clearances, and Flight Plans.

Tactical Event—A flight event that, due to its complexity and/or increased risk due to fatigue, limits the period within a crew's duty day the event may be performed. Not all tactical maneuvers are considered a tactical event. C-17 tactical events are Airdrop, Low Level, Non-SKE Formation, SKE Formation Greater Than 2-Ship, Assault Landing/Takeoff, Tactical Approaches/Departures, and Landings to an AMP 3 configured airfields at night. Events not listed, such as penetration descents and standard traffic pattern altitude downwind and overhead approaches, are not tactical events.

Tanker Task Force (TTF)—Force of tanker aircraft assembled and tasked to perform a specific function.

Tankered Fuel—Additional fuel carried through a primary destination for use on a subsequent leg.

Theater Patient Movement Requirements Center (TPMRC)—The TPMRC is responsible for theater wide patient movement (e.g., medical regulating and AE scheduling), and coordinates with theater MTFs to allocate the proper treatment of assets required to support its role. The primary role of the TPMRC is to devise theater plans and schedules and then monitor their

execution in concert with the GPMRC. The TPMRC is responsible to the Combatant Commander through the Combatant Command Surgeon. The TPMRC is also responsible for all aspect of intratheater patient movement management. A TPMRC provides command and control for patient movement management operations in its theater of operations, as directed by its Combatant Commander's operational policy, and in coordination with USTRANSCOM, acting as a supporting combatant command, responsible for intertheater and CONUS patient movement.

Time Out—Common assertive statement used to voice crewmember concern when safety may be jeopardized.

Training Mission—Mission executed at the unit level for the sole purpose of aircrew training for upgrade or proficiency. 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 customers. Examples include TDY costs, site surveys of TALCE 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—A mission airlifting military passengers or troops who originate from the same unit and onload point, are under the control of a designated troop commander, and offload at the same destination.

Unit Type Code (UTC)—A 5-letter or -digit combination code used to identify standard deployment packages of personnel and equipment in a data automation environment.

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.