

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

**AIR FORCE MANUAL 11-2E-11
VOLUME 3**



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Flying Operations

E-11 OPERATIONS PROCEDURES

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This manual implements Air Force Policy Directive (AFPD) 11-2, *Aircrew Operations*. It establishes effective and safe operations of the E-11 Battlefield Airborne Communications Node (BACN). This publication applies to military and civilian members of the Regular Air Force. This publication does not apply to the Air Force Reserve, Air National Guard, or the United States Space Force (USSF). Ensure all records generated as a result of processes prescribed in this publication adhere to Air Force Instruction (AFI) 33-322, *Records Management and Information Governance Program*, and are disposed in accordance with (IAW) the Air Force Records Disposition Schedule, which is located in the Air Force Records Information Management System. Refer recommended changes and questions about this publication to the office of primary responsibility (OPR), listed above, using the Department of the Air Force (DAF) Form 847, *Recommendation for Change of Publication*; route DAF Forms 847 from the field through the appropriate chain of command to Air Combat Command (ACC)/Airborne Command and Control (C2) Systems Branch (ACC/A3CA). This publication may be supplemented at any level, but all supplements must be routed to the OPR of this publication for coordination prior to certification and approval. Keep supplements current by complying with Department of the Air Force Instruction (DAFI) 90-161 *Publications and Forms Management*. The authorities to waive wing/unit level requirements in this publication are identified with a tier (“T-0, T-1, T-2, T-3”) number following the compliance statement. See Department of the Air Force Manual (DAFMAN) 90-161, *Publishing Processes and Procedures*, for a description of the authorities associated with the tier numbers. Submit requests for waivers through the chain of command to the appropriate tier waiver approval authority, or alternately, to the publication OPR for non-tiered compliance items. The use of the name or mark of any specific manufacturer, commercial product, commodity,

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Chapter 1

GENERAL INFORMATION

1.1. Purpose. This manual prescribes procedures applicable to the operation of E-11 aircraft under most circumstances. It is not a substitute for sound judgment. Procedures not specifically addressed may be accomplished if they enhance safety and improve mission accomplishment. This AFMAN is directive in nature; however, if more restrictive guidance is published, then that guidance will be applied. CCs and supervisors will ensure compliance with this AFMAN.

1.2. Deviations. Deviations from these procedures require specific approval of Major Command (MAJCOM)/Director of Operations (A3) unless the waiver approval authority is already stated or an urgent requirement or an aircraft emergency dictates otherwise. In that case, the Pilot in Command (PIC) will take appropriate action to meet the requirement or safely recover the aircraft and notify the appropriate C2 agency, time and conditions permitting. Do not deviate from policies in this manual except to protect life, preserve safety of flight, or when an in-flight emergency requires immediate action.

1.3. Key Definitions:

1.3.1. “Will” indicates 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., which are considered essential to emphasize.

1.4. Waivers. Tier waiver authorities (T-0, T-1, T-2, T-3) have been added to all mandated unit compliance items (wing level and below) as prescribed by DAFMAN 90-161 and AFMAN 11-202V3, *Flight Operations*. Forward waiver requests through appropriate channels to the ACC/Director of Operations (ACC/A3) for approval. All approvals will include an expiration date. (T-1) ACC/Standardization and Evaluation Branch (ACC/A3TV) and ACC/A3CA are the offices of coordinating responsibility for all waiver requests to this manual.

1.5. Aircraft Assignment. The E-11 is to be considered a Command & Control, Communication, and Battle Management Support aircraft.

1.6. Commercial Publications. Pilots will use the Bombardier Aircraft Flight Publications, Federal Aviation Administration (FAA) publications, restrictions/special Instructions (RSIs), and Airplane Flight Manual (AFM) supplements applicable to the E-11A. Electronic flight bags (EFBs) are authorized. (T-2)

1.7. Distribution. Issue this manual to all E-11 aircrew members IAW local procedures.

1.8. Roles and Responsibilities.

1.8.1. MAJCOM. MAJCOMs will provide guidance and approve waivers (as required), where specified throughout this manual.

1.8.2. Pilot in Command (PIC). Squadron Commander (SQ/CC), Squadron Director of Operations (SQ/DO), or Ops Sup will designate an Aircraft Commander (AC), Instructor Pilot (IP), or Evaluator Pilot (EP) as the PIC for all flights on the flight authorization form. Guidance

on PIC is provided in DAFMAN 11-401, *Aviation Management* and applicable MAJCOM supplements. PICs are:

1.8.2.1. In command of all persons aboard the aircraft. **(T-3)**

1.8.2.2. Vested with authority to accomplish the assigned mission. The PIC will only fly events authorized in the mission tasking unless, in the PIC's judgment, an emergency condition demands otherwise. **(T-1)**

1.8.3. The final mission execution authority. **(T-3)**

1.8.4. The final authority for requesting or accepting aircrew or mission waivers. **(T-3)**

1.8.5. Responsible for passing mission progress reports to C2 agencies. **(T-3)**

1.8.6. Responsible for interaction between aircrew and mission support personnel. **(T-3)**

1.8.7. Responsible for the welfare of all persons on the aircraft during launch and recovery operations. **(T-3)**

1.9. Major Command (MAJCOM) Coordination. The limited number of E-11 aircraft in service and continuous contractor presence are the primary contributors to the crucial operational expertise that resides almost exclusively at the forward operating locations. There are times when the System Program Office (SPO) and/or contractor entities may need to directly coordinate with the operating unit to coordinate on specific concerns related to the entire fleet. It is important that any authoritative decisions related to the modification of the E-11 fleet are coordinated through the using MAJCOM to the lead MAJCOM (specifically ACC/A3CA). ACC/A3CA, in conjunction with the Weapons System Team, function as the liaison for MAJCOM oversight of the BACN program.

Chapter 2

MISSION PLANNING

2.1. Roles and Responsibilities. The responsibility of mission planning and execution rests with the PIC. Preparation for the mission tasking and subsequent execution support for operational or deployed sorties is the coordinated responsibility of the aircrew, liaison officers, BACN Mission Coordinator (BMC), and other external agencies as necessary. Operations functions of the unit support both efforts. For training missions, aircrew and payload operators will ensure appropriate coordination with maintenance, communications security (COMSEC), Operations Supervisor (Ops Sup) or Supervisor of Flying (SOF), scheduling, and other external agencies as required. **(T-3)**

2.2. Mission Clearance Decision. The final decision to delay a mission will be made either by AC when, in their opinion, conditions are not safe, or mission equipment is inoperative to start or continue a mission. Final responsibility for the safe conduct of the mission rests with the PIC. If the PIC refuses a mission, it will not depart until the conditions have been corrected or improved so that the mission can operate safely. **(T-3)** Another PIC and aircrew will not be alerted to take the same mission under the same conditions. **(T-3)**

2.3. Mission Planning Requirements.

2.3.1. Briefings.

2.3.1.1. If possible, the crew will brief with the BMC for operational and training missions to ensure safe, effective mission accomplishment. **(T-2)** At a minimum, the tasked missions supported, planned orbit locations, planned takeoff and land times, and any mission requirements that would impact operations will be briefed. **(T-3)** All crew and mission players will attend briefings unless excused by AC or BMC. **(T-3)**

2.3.1.2. Scheduling. Non-operational sorties on the flying schedule will focus on accomplishment of AFMAN 11-2E-11V1, *E-11 Aircrew Training* requirements, currency, Ready Aircrew Program (RAP) requirements, Continuation Training (CT) and AFMAN 11-2E-11V2, *E-11 Aircrew Evaluation Criteria*. **(T-3)**

2.3.2. Mission planning, Briefing and Debriefing. Local mission planning, briefing, and debriefing will be defined using briefing guides found in the locally created E-11 In-Flight Guide (IFG). Deployed CCs may elect to use locally developed procedures or modify the briefing guide as needed for operational use. **(T-3)**

2.3.3. Aircrew and Aircraft status. Aircrew status will be verified by Aviation Resource Management System (ARMS) personnel and the flight orders signing authority prior to flight. **(T-3)** Aircraft status will be obtained prior to the crew stepping to fly, to include open discrepancies detailed in aircraft maintenance binders. **(T-3)**

2.3.4. Aircraft maintenance documentation provided to the flight crew by the maintenance contractor is maintained IAW FAA standards and differs from Air Force Technical Order (AFTO) Forms 781, *ARMS Aircrew/Mission Flight Data Document*. The contractor's quality assurance representative may only authorize dispatch release.

2.3.5. Orbit Planning. The AC coordinates with the BMC to determine orbit limitations, based on tasking, and verifies coordinates/dimensions of any new orbits not previously depicted in

the mission binder. **(T-3)** For training sorties, the AC will ensure the same coordination and consider payload training requirements, airspace availability, weather, notice to airman (NOTAMs), and other factors as required.

2.4. Airborne Command and Control (C2). On operational missions, crews are to maintain communications with the BMC to the maximum extent possible and coordinate plans to mitigate the negative effects of lost or degraded communications with the BMC. **(T-3)**

2.5. Law Enforcement Support. It is the policy of the Department of Defense (DoD) to be prepared to support civilian law enforcement agencies consistent with the needs of military preparedness of the US, while recognizing and conforming to the legal limitations on direct DoD involvement in civilian law enforcement activities. AFI 10-801, *Defense Support of Civil Authorities*, provides 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. **(T-2)**

Chapter 3

AIRCREW COMPLEMENT/MANAGEMENT

3.1. General. This chapter provides guiding principles for CCs at all levels to establish and manage crew complements, as well as develop work/rest schedules to optimize efficiency of forces engaged in worldwide operations.

3.2. Aircrew Complement. SQ/CCs will develop aircrew composition based on mission directives, crew duty time requirements, Flight Duty Period (FDP) requirements, aircrew qualifications, training requirements and other constraints to safely accomplish the mission tasking. **(T-3)**

3.2.1. Minimum crew complement is two pilots. **(T-2)**

3.2.2. For operational missions, two Mission-qualified Pilots (MPs) are required. **(T-2)** First Pilots (FPs) may fly on operational missions but must fly under direct supervision of an Instructor Pilot (IP) during critical phases of flight. **(T-3)**

3.2.3. For training sorties, minimum crew complement can consist of an unqualified or non-current pilot with an IP. It can also consist of an MP without an AC certification and an MP with an AC certification. An FP cannot fly with an MP as a minimum crew complement.

3.2.4. Crew Augmentation. In addition to the normal operational crew, minimum crew augmentation consists of an additional MP. Of the three pilots on board, at least two must possess an AC certification. **(T-3)**

3.3. Crew Qualifications. Primary crewmembers must be Combat Mission Ready (CMR), Basic Mission Capable (BMC), or in training to occupy a crew position. **(T-2)**

3.4. Unqualified Crewmembers. An IP must directly supervise non-current or unqualified pilots from a primary set of controls during takeoffs, landings, and emergency procedures. **(T-2)**

3.5. Crew Rest/Flight Duty Period (FDP)/Crew Augmentation. Comply with AFMAN 11-202V3 direction and applicable MAJCOM supplements along with the following guidance:

3.5.1. If any axis of the autopilot is inoperative, limit basic FDP to 12 hours and augmented FDP to 16 hours. **(T-2)**

3.5.2. Unless otherwise directed, aircrew will automatically enter crew rest no later than (NLT) 12 hours prior to the start of their next scheduled FDP. **(T-2)** The unit will notify crews of mission timeline changes prior to entry into crew rest whenever possible. **(T-2)** The Ops Sup should show with appropriate crew rest to replace a crewmember (if necessary).

3.6. Aircrew Member Support. Crew rest is required for aircrew members supporting aircraft generation (e.g., pre-flight, engine start). Follow crew rest guidance IAW AFMAN 11-202V3. The duty day begins when the member reports for official duties or 30 minutes prior to brief time. **(T-3)**

3.7. Pre-Mission Duties. The AC, in coordination with the SQ/CC or SQ/DO, may adjust crew report time to meet mission requirements. Crew report times will allow sufficient time to accomplish all preflight activities and will be coordinated before members enter crew rest. **(T-3)**

3.8. Transportation of Passengers. Transport of Space-A passengers is not authorized. **(T-2)**

3.9. Mission Essential Personnel (MEP).

3.9.1. The AC is responsible for safe transportation and briefing of Passengers (PAX) using the Passenger Briefing Guide ([Attachment 2](#)). Additional guidance on transportation of PAC is provided in AFMAN 11-202V3, DAFMAN 11-401, and MAJCOM supplements. The AC can delegate the PAX and MEP briefing to any qualified crewmember. Guidance on transportation of distinguished visitors and orientation flights is provided in Department of Defense Instruction (DoDI) 4515.13, *Air Transportation Eligibility*; DAFMAN 11-401; and DAFMAN 11-401_ACCSUP.

3.9.2. MEP will not be listed on the AFTO Form 781, will not log time, and do not accrue Operation Flying Duty Accumulator credit. Guidance provided in DAFMAN 11-401. **Note:** Current/qualified aircrew may perform primary duties after traveling in MEP status if they do not exceed a basic FDP.

Chapter 4

AIRCRAFT OPERATING RESTRICTIONS

4.1. Guidance. This chapter provides guidance on how to operate with degraded equipment. If the AC elects to operate with degraded equipment or aircraft systems, coordinate mission requirements (e.g., revised departure times, fuel requirements, maintenance requirements), prior to flight with the mission control agency to ensure the decision does not adversely impact current or follow-on missions. **(T-3)**

4.2. Objectives. The final authority regarding equipment required for a mission rests with the AC. If one crew accepts an aircraft to operate a mission or mission segment without an item or system, this acceptance does not commit the crew, or a different crew, to accept subsequent operations with the same item or system inoperative. When the AC considers an item essential, the item will be repaired or replaced prior to departure. **(T-2)** During preflight, the AC will coordinate mission equipment degradations with the BMC to determine if the governing operational C2 (e.g., Combined Air Operation Center (CAOC)) will accept the degradation for the assigned mission. **(T-2)**

4.3. Minimum Equipment List (MEL) and Go/No-Go Requirements.

4.3.1. The FAA Master Minimum Equipment List (MMEL) for Bombardier Global BBD-700 aircraft will be utilized as the approved MEL for E-11 operations. **(T-2)** The MMEL is not intended for continued operations over an indefinite period with systems/subsystems inoperative. Crews will adhere to guidance in the Dispatch Deviation Guide (DDG) and repairs will be completed by the times established in the MMEL. **(T-2)**

4.3.2. All emergency equipment will be installed and operational unless specifically exempted by mission requirements/directives and will be coordinated with and approved by the AC. **(T-2)**

4.4. Dispatching with Inoperable Equipment. The AC, in coordination with BMC and aircraft maintenance personnel, will assess the impact of degraded equipment/systems. **(T-2)**

4.4.1. Determining Suitability for Dispatch. ACs will reference Quick Reference Handbook (QRH) 1, QRH 2, DDG, applicable RSIs, AFM BACN supplements, and the MMEL to determine aircraft suitability. **(T-2)** The Go/No-Go Section in QRH 2 does not supersede data outlined in the MMEL. A “GO” condition still requires MMEL consultation. **(T-3)**

4.4.2. If dispatched with an MMEL, DDG, Crew Alerting System deviation relief or manufacturer waiver for flight, the AC ensures required actions for the relief or waiver are accomplished and documented in the appropriate aircraft forms. **(T-3)**

4.5. One-Time Flight Authorizations. One-time ferry flight authorization to a repair facility may be approved by the Operations Group Commander (OG/CC) or O-6 equivalent, provided contract maintenance has received the appropriate Engineering Disposition Report (EDR). If an aircraft has a safety-of-flight condition beyond the immediate or final repair capability of an enroute facility, temporary repairs may be made to allow a one-time flight to a facility capable of final repair. **(T-3)**

4.6. Enhanced Ground Proximity Warning System (EGPWS). For operations in day Visual Meteorological Conditions (VMC) conditions, with terrain and obstacles clearly in sight, the Pilot

Flying (PF) will call runway and/or terrain in sight, state intentions, and visually clear terrain. (T-3)

4.7. Traffic Collision Avoidance System (TCAS) Procedures. See manufacturers guidance.

4.8. Adverse Weather. Avoid flight into areas of forecasted or reported adverse weather IAW AFMAN 11-202V3, applicable supplements, Air Force Handbook (AFH) 11-203 Volume 1, *Weather for Aircrews*; and AFM/Flight Crew Operating Manual (FCOM)/RSI limitations.

4.8.1. 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:

4.8.2. Aircrews will only use de-ice and anti-ice fluids listed in the AFM/FCOM or approved by the aircraft manufacturer. (T-2) Refer to FCOM 1 Chapter 7 for holdover data.

4.8.3. Type I and Type II de-icing fluids do not provide any anti-icing benefit, and therefore do not have holdover times. The holdover time begins when anti-icing fluid is first applied and is affected by intensity/type of precipitation, time, temperature, and type/dilution of mixture. AC will use this information to determine when holdover time is exceeded and re-apply fluid if required.

4.8.4. Turbulence Restrictions.

4.8.4.1. Do not fly in areas of forecast or reported severe turbulence. Every effort will be made to avoid areas of reported moderate turbulence. If moderate turbulence is forecast along planned route of flight, the AC should determine the best altitude to avoid the moderate turbulence. If moderate or severe turbulence is encountered, the AC will exit the conditions using the most expeditious method possible.

4.8.4.2. The AC is responsible for ensuring any additional personnel are seated, with seat belts fastened, when areas of moderate or greater turbulence are encountered or anticipated as serious injury may occur. (T-2)

4.8.5. Thunderstorm Avoidance. Pilots will neither file a flight plan route nor fly into an area of known or forecast thunderstorm activity when the weather radar is inoperative or unusable and thunderstorm activity cannot be visually circumnavigated. Guidance on thunderstorm avoidance criteria provided in AFMAN 11-202V3.

4.8.6. Runway Condition. Aircraft will not takeoff or land when reported icy with poor braking action, without SQ/CC or SQ/DO approval. Aircrews will not conduct ground operations (taxi or towing) when poor braking action is reported. (T-2)

4.9. Pilot In Charge (PIC).

4.9.1. A certified AC will be at a set of flight controls during all critical phases of flight. (T-3) This does not preclude a seat swap with another AC or IP if such is designated on the Air Force (AF) Form 4327a, *Crew Flight (FA) Authorization*.

4.9.2. For missions with more than two qualified and current pilots, squadrons may designate secondary (double asterisk) PIC on the flight authorization. If more than one secondary PIC is designated, the primary PIC will determine who will act as PIC if both secondary PICs are occupying pilot seats at the same time. (T-3)

4.10. Diverts. The AC will ensure the Ops Sup or SOF are notified as soon as practical and request assistance coordinating transportation, security, classified storage, and lodging as required. (T-3)

4.11. Aircraft Ground Refueling. The AC or representative must monitor ground refueling when qualified maintenance and or fuels personnel are not available or cannot provide assistance.

4.11.1. Off-station Ground Refueling. Defense Fuel Supply Points (DFSP) located on military installations should be used to procure aviation fuel to the maximum extent possible.

4.11.1.1. When DFSP resources are not available use Defense Logistics Agency Energy (DLAE) Into-Plane contract fuel providers to the maximum extent possible. When using the DLAE Into-Plane contract location, ensure to procure the correct contracted product. If the wrong product is purchased, then the unit will be charged a non-contract price. If a non-contract vendor is used at a contract location units will be charged a non-contract price. When no DLAE into-plane contract exists at a commercial airport location, units are authorized to purchase fuel and services from any commercial vendor that has a Merchant Agreement with Multi Service Corporation (MSC) that accepts the Air Card contract. Refer to DLAE, *DLA Energy Environmental Guide for Fuel Facilities*. (See Energy Library (dla.mil)).

4.11.1.2. A list of DLAE into-plane contract merchants for each contracted airport location can be found on the Defense Logistics Agency web site (<https://www.dla.mil/Energy/Business/ContractInformationSystem/>) via the “Into Plane Contract Information System.”

4.12. Due Regard. ACs should be familiar with the concept of due regard and be prepared to declare such if necessary. Due regard is defined as 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 certain training activities. Flight under “Due Regard” obligates the military AC to be his or her own Air Traffic Control (ATC) agency and to separate his or her aircraft from all other air traffic. See Flight Information Publication General Planning (FLIP GP) and AFMAN 11-202V3 for more information.

4.13. Bird/Wildlife Aircraft Strike Hazard (BASH) Programs. BASH programs are centralized base efforts that provide information cross-feed, hazard identification, and a consolidated course of action. BASH programs are developed and executed by host base Safety and Bio-environmental offices and approved by host base CCs. Some airfields, i.e., Army, do not have BASH programs and will not set a Bird Watch Condition (BWC), requiring crews to use all available resources to determine local bird conditions.

4.13.1. Mission Planning: ACs will reference the Avian Hazard Advisory System (AHAS) website (<http://www.usahas.com>) within 24 hours of mission execution to determine forecast bird strike potential at takeoff, transition, and landing bases for Operational Risk Management (ORM) purposes. (T-3)

4.13.2. Flight: The PIC will obtain the airfield’s actual BWC from Automatic Terminal Information Service (ATIS), tower, SOF, airfield operations or pilot assessment. Crews may request an AHAS update within an hour of proposed takeoff or landing via C2 agencies to get live data with trend information. Aircrews will comply with the following restrictions:

4.13.2.1. BWC Low – No operating restrictions. **(T-3)**

4.13.2.2. BWC Moderate – Initial takeoffs and final landings are authorized only if the departure and arrival routes will avoid bird activity. **(T-3)** Flight crews should consult with the Ops Sup/SOF prior to landing or departing. CT is restricted to low approaches at or above 2,000 Above Ground Level (AGL). Visual Flight Rules (VFR) traffic patterns and Instrument Flight Rules (IFR) circling approaches are prohibited. **(T-3)**

4.13.2.3. BWC Severe (BWCS) – All takeoffs and landings are prohibited IAW AFMAN 11-202V3. Waiver authority for non-emergency landing is local OG/CC (or equivalent) or Ops Sup/SOF.

4.13.2.4. If authorized a waiver for a full stop, the AC will fly an approach using the best available glide path guidance using a constant rate of descent to the maximum extent possible. Limit the time spent flying at or below Minimum Descent Altitude (MDA) to the maximum extent possible. If a circling approach is required, the AC will fly the circling maneuver at the highest possible altitude up to VFR pattern altitude and limit time spent flying at the circling MDA. **(T-3)**

4.13.2.5. The AC is the final authority and may delay takeoffs and arrivals due to BWC. Coordinate delays through the Ops Sup/SOF and/or BMC if applicable.

4.14. Participation in Aerial Events. See DAFI 11-209, *Participation in Aerial Events*, and the appropriate MAJCOM supplements. Aerial events must be sanctioned and approved by the appropriate military authority and the FAA.

4.15. Suspected Laser Response and Exposure.

4.15.1. Aircrews should recognize the laser may be associated with a weapon posing a greater threat and initiate appropriate evasive action. If a laser threat exists in vicinity of an airfield of intended arrival or departure, Aircrew Laser Eye Protection (ALEP) devices should be readily available prior to descent from cruise altitude, or prior to takeoff, as applicable. Removal of ALEP devices after departing a defined laser threat area or after landing is left to discretion of the AC. The following procedures should be implemented immediately following suspected laser exposure.

4.15.2. Look away from laser source; do not remove ALEP devices.

4.15.3. Transition to aircraft instruments and turn away from the threat.

4.15.4. If exposed pilot is flying the aircraft, transfer control to unaffected pilot.

4.15.5. Assess visual functionality. If visual disturbance persists for more than 60 seconds, declare in-flight emergency, and return to base as soon as practical.

4.15.6. Notify C2 agency of suspected laser incident.

4.15.7. Avoid rubbing eyes.

4.15.8. If vision returns to normal and there is no pain within 3-5 minutes, the AC will consider the value of continuing the mission against potential loss of an aircrew member who may have sustained eye damage. **(T-3)** The AC will determine whether or not to return to base. **(T-3)**

4.15.9. Upon return to base, accomplish intelligence debrief and report suspected laser exposure incidents IAW procedures outlined in AFMAN 11-301V2, *Management and Configuration Requirements for Aircrew Flight Equipment (AFE)*.

4.15.10. Aircrew who suspects exposure to laser radiation from either friendly or hostile sources should report to Flight Surgeon's Office or nearest emergency room where they can be examined by an ophthalmologist immediately upon landing.

4.15.11. For continued flight in areas of known or suspected lasering activity, crews should obtain ALEP from AFE. Comply with any additional local or theater guidance that may be more restrictive.

Chapter 5

GENERAL OPERATING PROCEDURES

5.1. Personal/Professional Equipment. Minimum requirements/equipment are as follows:

- 5.1.1. Passports. Carry passports on missions when required by the Foreign Clearance Guide (FCG). (T-3)
- 5.1.2. Identification Tags. Identification tags should be worn around the neck or carried in a flight suit pocket. (T-3)
- 5.1.3. Flashlight. Operational flashlight will be available for use on all flights. (T-3)
- 5.1.4. Keep equipment clear of all entry doors, hatches, and emergency equipment during all ground operations. It is the responsibility of each crewmember to store/secure their personal and professional equipment carried onboard. (T-3)

5.2. Aircrew Publications Requirements. The AC will ensure the following publications, paper or digital, are on the aircraft prior to departure based on the mission profile:

- 5.2.1. All commercial publications (see [paragraph 1.6](#)) to include a weight and balance form or equivalent electronic form as required. (T-2)
- 5.2.2. AOR specific operations guidance (as required). (T-2)
- 5.2.3. Payload crypto re-key checklist (only required for operational missions and must be stored in a safe). (T-2)
- 5.2.4. FLIP appropriate for mission requirements or as specified in local standards. (T-2)
- 5.2.5. Mission Materials. Mission materials will contain the following, as applicable (electronic versions are acceptable):
 - 5.2.5.1. Navigational chart. (T-2)
 - 5.2.5.2. Applicable SPINS. Aircrew will possess a working knowledge of theater SPINS prior to operating within the theater. (T-2)
 - 5.2.5.3. Diplomatic Clearances. (T-2)
 - 5.2.5.4. Other documents as required by local or deployed governance.

5.3. Checklists. Locally produced checklists may be developed and maintained by the unit Standardization and Evaluation (Stan/Eval) office and are for assigned unit pilots only. The checklists should contain payload specific items found in the BACN AFM Supplement and will be specific to the aircraft series. (T-3)

5.4. Flight Crew Information File (FCIF). Review Volume I of the FCIF before all missions for any changes prior to flying. (T-3) For initial sorties in (or before arrival to) the deployed, Temporary Duty (TDY), or home station environments, aircrew will accomplish a complete review of the FCIF library prior to flying. Deployed squadrons will maintain an FCIF library IAW local procedures. The Operations Group Stan/Eval Office (OGV) FCIF program manager will make current home station FCIFs available to deployed and TDY members in an electronic format. (T-3)

5.5. Go/No-Go Procedures.

5.5.1. Purpose. Go/No-Go procedures ensure all individual crewmembers are current, qualified, or adequately supervised to fly on E-11 missions and have reviewed all required FCIFs.

5.5.2. Squadron Go/No-Go procedures will be IAW AFMAN 11-202V2 ACC Supplement, *Aircrew Standardization and Evaluation Program* and theater guidance as applicable.

5.5.3. The squadron Ops Sup, AC, and Squadron Aviation Resource Management Office (SARM) will ensure Go/No-Go procedures are accomplished when a crewmember is added to a flight. **(T-3)** The AC/Ops Sup at a deployed/TDY location without associated flight management personnel will accomplish Go/No-Go procedures.

5.5.4. TDY and deployed crews will follow SQ/CC or Detachment Commander (DETCO) guidance and local theater guidance as required.

5.6. Communications Security (COMSEC) and Classified Material. Obtain and safeguard COMSEC and other classified/keying material required for the mission. C2 Centers or Command Posts may be used for temporary storage of COMSEC/classified materials.

5.7. Call Signs. For operational sorties, crews will utilize the voice callsign for their platform as prescribed in the applicable theater Air Tasking Order (ATO) for the specified ATO day. **(T-3)**

5.8. Departure/Arrival Planning. The AC will verify routes and flight altitudes to ensure proper terrain and traffic clearance. **(T-2)**

5.9. Runway, Taxiway, and Airfield Requirements.

5.9.1. Minimum runway length is 5,000 ft (feet) (1524M) or as calculated using the aircraft Flight Management System (FMS), whichever is longer. **(T-3)**

5.9.2. Minimum runway width is 75 ft (23 M). **(T-3)**

5.9.3. Minimum taxiway width is 25 ft (8 M). **(T-3)**

5.9.4. Minimum width for a 180-degree turn is 68 ft (22 M). **(T-3)**

5.9.5. Minimum touch and go runway length will be the calculated landing distance utilizing a corrected factor of 1.67 for dry runways or 1.92 for wet runways and must be calculated based on the flap setting being used. Do not accomplish touch and go landings when total full stop landing distance exceeds runway available. **(T-3)**

5.9.6. Minimum touch and go runway width is 135 ft (41 M). **(T-3)**

5.9.7. E-11 aircrews should consult Air Mobility Command's (AMC's) Airfield Suitability and Restrictions Report (ASRR) (see "Giant Report" in ASRR) via Global Decision Support System 2 (GDSS2) website for airfields suitable for E-11 parking, taxi and takeoff/landing operations. As a rule of thumb, airfield dimensions (e.g., ramp, taxiway, and runway dimensions) for C-37 aircraft will be suitable for E-11 aircraft. To access a particular ASRR Giant Report, aircrew will need GDSS2 accounts. GDSS2 accounts may be obtained by contacting your Unit Program Account Manager (UPAM) or contacting the GDSS2 Helpdesk at DSN 576-4949 or C2ITV.User.Authentication@us.af.mil.

5.10. Touch-and-Go Landings and Missed Approach Limitations. Practice touch-and-go landings only on designated training, evaluation, and currency missions. Touch and go landings on operational sorties will only occur after the mission is complete and will only occur at the discretion of the SQ/CC or SQ/DO. **(T-3)** Accomplishing missed approaches and touch and go landings at deployed environments should appropriately consider local threat levels, risk to the aircraft and crew, maintenance, and scheduling concerns.

5.10.1. Touch-and-go landings may be performed by any pilot from either seat provided that a current and qualified IP or EP occupies the other seat.

5.10.2. Wind and Runway Restrictions: See the local Operations Group (OG) (or equivalent) Supplement to this document for touch and go restrictions related to wind and weather. Deployed E-11 SQ/CCs may use restrictions contained in that document or implement their own IAW theater guidance.

5.11. Taxi Clearance. Without wing walkers, avoid taxi obstructions by at least 25 ft. With wing walkers, avoid taxi obstructions by at least 10 ft. **Exception:** Aircraft at home station may delete wing walker restrictions IAW AFMAN 11-218, *Aircraft Operations and Movement on the Ground*. **(T-3)**

5.11.1. When taxi clearance is not adequate, use one or more wing walkers. The AC should use marshallers or wing walkers to act as an observer while maneuvering on narrow taxiways if clearance is in doubt. **(T-3)**

5.11.2. During night taxi operations, marshallers will have a lighted wand in each hand. **(T-3)**

5.12. Taxi Speed. Maximum taxi speed in congested areas or turns is 10 knots. Maximum taxi speed in uncongested areas and straight taxiways is 25 knots. High-speed runway exits are extensions of the runway and are not restricted by taxiway turn speeds. **(T-2)**

5.13. Foreign Object Damage (FOD) Avoidance. Make every effort to minimize the potential for engine FOD. Crews should:

5.13.1. Minimize power settings during all taxi operations.

5.13.2. Avoid unnecessary use of thrust reversers. **Note:** It is acceptable to utilize thrust reversers during taxi to minimize brake temperatures. Take into consideration: winds, flap settings, and other environmental factors to minimize FOD and contaminants entering the flap sections.

5.14. Operations over Arresting Cables and Barriers.

5.14.1. Takeoffs will normally commence from the approach end of the runway to maximize runway available. **(T-3)**

5.14.1.1. Do not taxi at more than 10 knots over arresting cables or loose objects. **(T-2)**

5.14.1.2. Aircraft may takeoff immediately past approach-end arresting cables provided that the takeoff data is recomputed for the new runway takeoff position.

5.14.2. Do not land on raised arresting cables to avoid damaging cables or aircraft. **(T-2)**

5.14.3. Do not land over a raised arresting barrier such as an MA-1A. **(T-2)** This does not preclude landing over a BAK 12/14 or other cables.

5.14.4. Do not takeoff or land over a raised arresting cable that has been reported as slack, loose or improperly rigged. (T-2)

5.15. Takeoff and Landing.

5.15.1. The left-seat pilot normally performs the landing during aircraft emergencies; however, pilots may perform takeoffs and landings from either seat. For safety, left-seat pilots will use the Heads Up Display during right-seat takeoffs and landings if it is operational. (T-3)

5.15.2. Intersection takeoffs are permitted at the discretion of the PIC. Takeoff distance must be verified by the PIC before an intersection departure that Takeoff and Landing Data (TOLD) is acceptable for the conditions. (T-3)

5.16. Flight Management System (FMS) Waypoint Verification. One pilot will load planned routing and verify with the other pilot. (T-2) In addition, pilots will verify and confirm the coordinates for all points that are not contained within a current digital aeronautical flight information file (e.g., tactical routing, orbit points). (T-2)

5.17. Takeoff and Landing Data (TOLD). Verify TOLD IAW the AFM. Data entry into the FMS is to be verified by both crewmembers. (T-3)

5.17.1. Performance of static takeoffs will be conducted anytime TOLD indicates a performance limited situation. These situations include but are not limited to Special Departure Procedure (SDP) weight limit codes for Brake Energy, Field Length, or Obstacle, or any time calculated takeoff distance is within 1,000 ft of available runway length. The available runway restriction does not apply during crosswind takeoff procedures. (T-2)

5.17.2. SDPs are authorized for use on all missions. Crewmembers will be trained and certified in SDP operations prior to use. FMS TOLD will be verified against SDP data before takeoff. (T-2)

5.18. Wind Restrictions. Maximum wind components (including gusts) for takeoff and landing are IAW applicable AFM and RSI limitations based on aircraft tail number.

5.18.1. Wind in any direction is 50 knots for all aircraft.

5.18.2. Tailwind component is 10 knots for all aircraft.

5.18.3. Crosswind component is 29 knots.

5.18.3.1. Crosswind component for takeoff in Aircraft 9001 is limited to 24 knots.

5.18.3.2. Crosswind component for landing in Aircraft 9001 is limited to 22 knots.

5.19. Bird Strikes.

5.19.1. Following a bird strike, aircrews should land as soon as conditions permit to have the aircraft inspected by qualified maintenance personnel. Aircrews involved in a wildlife strike will fill out an AF Form 853, *Air Force Wildlife Strike Report*, and forward to their unit safety offices. For TDY or deployed sorties, forward to the local base safety office IAW local procedures. (T-2)

5.19.2. Bird strike damage cannot be accurately assessed in flight and undetected damage may result in a complex airborne emergency. Aircrews should not change the aircraft configuration until it has been determined that it is safe to do so.

5.20. Radar Altimeter. Any crewmember detecting any low altitude warning of the radar altimeter will immediately notify the PF. **(T-2)** Aircraft position must be verified by the crew. **(T-2)**

5.21. Use of Automation. See [paragraph 10.4](#).

5.22. On-Station Procedures. The authorized Tactical (TAC) C2 agency (if applicable) is the authority for assigning operational mission orbits. For non-operational missions, orbits will be coordinated through appropriate airspace approval authorities.

5.22.1. Aircrew will accomplish locally developed orbit checklists upon initial and subsequent orbit entries to ensure appropriate configuration and inflight planning for the working area. **(T-3)** Such inflight planning will include but is not limited to bingo/joker calculations, emergency/contingency divert field suitability, drift down data, and glide data.

5.22.1.1. Some considerations are weather, airfield/runway suitability (e.g., length, width, surface condition), instrument approach options, and hostile/friendly airfield control.

5.22.1.2. If possible, identify emergency landing fields within engine-out glide distance that meet minimum airfield criteria. If no location is available from the planned orbit, consideration, in coordination with the BMC and IAW theater CC mission priorities should be given to shifting orbit to the vicinity of a suitable airfield that still meets mission requirements.

5.22.1.3. Contingency airfields are acceptable divert fields for emergencies when an immediate landing is not required.

5.22.2. Aircrew should monitor the appropriate ATC or TAC C2 frequencies to the maximum extent practicable. Crews will coordinate with the appropriate ATC or TAC C2 agency to de-conflict with overlapping airspace. **(T-3)**

5.22.3. Aircrews will evaluate weather considerations within one hour of assuming station and make periodic weather checks as required. **(T-3)** This check will include enroute, landing base, and alternate base weather.

5.22.4. If requirements necessitate a modification to on-station duration, orbit pattern, or altitude, the AC will notify the appropriate ATC/TAC C2 agency and/or BMC. **(T-3)**

5.22.5. The BMC will monitor the on-station E-11's position and immediately inform the aircrew of any identified deviations from the planned orbit. **(T-3)**

5.23. Retrograde/Defensive Procedures. Defensive procedures may be directed by theater C2 agencies or initiated by the AC/PIC for self-defense. The decision to maneuver, retrograde, or change the orbit for self-defense is the decision of the AC based on the tactical situation and/or theater SPINS.

5.24. Aircraft Recall/Diversion. For non-operational training sorties, aircrew will adhere to all appropriate weather recall and divert procedures as determined by the AC with consultation with the Ops Sup/SOF and ATC.

5.25. Enroute Navigation.

5.25.1. Performance Specification Airspace. The E-11 Communication Navigation Surveillance/Air Traffic Management capabilities are located within Bombardier AFM Supplements and FCOM 1.

5.25.2. Reduced Vertical Separation Minimums (RVSM) Certification. E-11 aircraft and aircrews are certified to fly in RVSM airspace. Notify ATC immediately if any RVSM-required equipment fails while operating in RVSM airspace.

5.25.3. Crews are not authorized to fly Required Navigational Performance 0.3 approaches. **(T-1)**

5.26. In-flight Troubleshooting.

5.26.1. After accomplished flight manual emergency procedures, aircrews should use all resources available, time permitting, to safely operate and recover the aircraft.

5.26.2. Cockpit Voice Recorder and Flight Data Recorder. If involved in a mishap or incident ensure the following: after landing and terminating the emergency, open the Electrical Management System/Control Display Unit circuit breakers. **(T-1)**

5.27. Prior to Descent or Approach. Prior to entering the terminal area, the PF the approach will brief the planned procedures IAW locally developed briefing guides. **(T-2)**

5.28. Descent below Approach Minimums using Enhanced Vision System (EVS). Pilots that are trained, certified, and current on EVS are authorized to descend below the MDA, Decision Altitude (DA), or Decision Height (DH) if sufficient visual reference with the runway environment has been established and the aircraft is in a safe position to land. **(T-2)** Pilots will set EVS to "Clear" NLT 100 ft above threshold elevation or touchdown zone elevation (TDZE) to determine if the red termination bars or the red side row bars are distinctly visible and identifiable for landing. **(T-2)**

5.29. Functional Check Flights.

5.29.1. Original Equipment Manufacturer (OEM) engineering and manufacturer maintenance manuals determine the requirement for Functional Check Flights (FCFs). E-11 OEM engineering and manufacturer checklists do not require flight checks, therefore, FCFs are not required.

5.29.2. If manufacturer maintenance manuals or engineering reviews recommend an in-flight check following ground maintenance check(s), a flight check specific to the recommendation will be accomplished. **(T-3)**

5.29.3. Aircraft will be at least Partially Mission-Capable (PMC) to perform the check on repaired systems. **(T-3)** Flights should have a fuel load that allows an immediate landing. Flights can be accomplished on operational missions at the discretion of SQ/CC or SQ/DO.

5.29.4. Crew complement for Operational Check Flight (OCF)/Maintenance check. At a minimum one IP (occupying the left seat) and one MP (occupying the right seat) are required. **(T-3)**

5.30. Simulated Emergency Flight Procedures. Simulated emergency procedures are flight deck procedures where the normal configuration of the airplane is altered (e.g., an engine pulled

to idle to simulate the loss of an engine) for training. All aircraft systems will be restored to normal operation prior to landing, except for simulated engine-out landings. **(T-3)**

5.30.1. Simulated emergency procedures may be conducted on operational sorties only after the mission is complete and will only occur at the discretion of the SQ/CC or SQ/DO. Accomplishing simulated emergency procedures at deployed environments should appropriately consider local threat levels and more restrictive local guidance. Simulated emergency procedures may be accomplished for CT or as part of a formal training syllabus. **(T-3)**

5.30.2. Simulated emergency procedures are authorized on non-operational training sorties IAW restrictions in this manual. **(T-3)**

5.30.3. In the event of an actual emergency, all training will be terminated until the AC determines that all required actions are complete, and that further training will not add additional risk.

5.30.4. Prohibited Simulated Emergencies While Airborne.

5.30.4.1. Multiple or combined simulated emergencies.

5.30.4.2. Practice actual engine shutdown, except during FCFs.

5.30.4.3. Practice approach to stall recovery.

5.30.4.4. Practice spins.

5.30.4.5. Practice unusual attitude recovery.

5.31. Debriefings. Aircrew members, as designated by the AC, will debrief with the following agencies as soon as practicable after engine shutdown: maintenance, intelligence (if required), BMC and supporting agencies. **(T-2)** The method for this debrief will be determined by operational capabilities (e.g., conference call, in-person, e-mail).

5.32. Cargo Documentation. Proper cargo documentation must accompany each cargo load. An OG/CC (or equivalent) approved cargo manifest is required prior to all departures with cargo aboard. If a computerized cargo manifest is not available, a cargo listing will accompany the load. The cargo or mail listing may be an abbreviated manifest but will contain all required Military Standard Transportation and Movement Procedures (MILSTAMP) data and information for weight and balance purposes. A Shipper's Declaration for Dangerous Goods is required for hazardous cargo. A Department of Defense (DD) Form 1387-2, *Special Handling Data/Certification*, is required for signature service cargo. The final authority on the acceptance of any cargo is the AC. **(T-2)** The following information should normally be obtained before shipping cargo:

5.32.1. Nomenclature of item. Give military or civilian name, national stock number (NSN), and a brief description of the item to be shipped.

5.32.2. Dimensions (in inches): Length, width, and height.

5.32.3. Gross Weight (in lbs.).

5.32.4. Agency/Office responsible for loading the aircraft.

5.32.5. Aircraft Configuration Required.

5.32.6. Preparation of Cargo for Loading.

5.32.7. Loading Procedures.

5.32.8. Tie Down Points.

5.32.9. Off-loading Procedures

Chapter 6

AIRCREW PROCEDURES

6.1. General. This chapter provides general aircrew procedures that should be utilized during E-11 operations.

6.2. Preflight Guidance. Two pilots are required in primary crew positions to conduct engine start and payload initialization. **(T-3)** Single pilot power-on preflights are authorized. Aircrew members performing preflight duties prior to a scheduled crew's arrival (preflight crews) must be crew rested. **(T-2)**

6.2.1. ACs are to conduct a review of all aircraft forms and sign the aircraft pre-flight briefing form located in the Aircraft Flight Log and Forms Binder onboard the aircraft prior to any crewmember conducting pre-flight duties. **(T-3)** Items affecting the pre-flight/flight will be briefed before execution of preflight duties. **(T-3)** The AC will also ensure the AFTO Form 46, *Prepositioned Aircrew Flight Equipment* located at the back of the binder is reviewed and signed. **(T-2)**

6.2.2. Crews will verify the following are stored on the aircraft prior to departure:

6.2.2.1. Fuel Cards (all applicable for mission profile). **(T-2)**

6.2.2.2. Aircraft Access and Storage Keys. **(T-2)**

6.2.2.3. Additional survival equipment (as required for directed mission). **(T-2)**

6.3. Engine Runs. Flight operations and maintenance personnel are responsible for providing Bombardier's guidance to aircrew to complete required actions. A crew chief will maintain contact with crew via interphone and have safety equipment readily available. **(T-2)** If a maintenance procedure is required in addition to the aircrew checklist, a brief will be conducted between maintenance and the aircrew. **(T-3)** The brief will include at a minimum:

6.3.1. Plan for engine run. **(T-2)**

6.3.2. Maintenance procedures to be accomplished. **(T-2)**

6.3.3. Potential emergency procedures, including egress plan in case of an emergency. **(T-2)**

6.3.4. Engine start procedures based on wind and rotor bow criteria IAW AFM limitations. **(T-2)**

6.4. Cabin Security. The AC will ensure all items in the cabin are secure prior to taxi. **(T-2)** Curtains will be open for taxi, takeoff and landing and may be closed once above 10,000 ft Mean Sea Level (MSL) but will be opened before descent through 10,000 ft MSL. **(T-2)**

6.5. Carriage of Mission Essential Personnel (MEP). The AC will ensure personnel onboard are familiar with or briefed on emergency egress IAW [Attachment 2](#) and the Bombardier Cabin Safety Card. **(T-2)** Personnel will remain seated until passing above 10,000 ft AGL and be seated for landing when descending below 10,000 ft AGL or as directed by the AC (e.g., in the event of an in-flight emergency, turbulence, retrograde procedures). **(T-2)**

6.6. Jump Seat Usage. If used, keep the jump seat stowed until after the engines are started to maintain a clear path for the crew to egress the aircraft. Do not let unfamiliar personnel deploy or stow the jump seat. **(T-3)**

6.7. Seat Belts. All occupants will have a designated seat with a seat belt. Use of seat belts will be as directed by the AC, this manual, AFMAN 11-202V3, and the MAJCOM Supplement.

6.8. Egress Procedures. The AC will brief appropriate egress locations and procedures prior to engine start. Plan to rally no closer than 300 ft from the aircraft or at a suitable safe shelter. (T-3)

Chapter 7

AIRCRAFT SECURITY

7.1. General. This chapter provides guidance for aircraft security on the ground and in flight. This security priority designation applies to operational aircraft, wherever they are located, worldwide. Some aircraft contain equipment and documents that require protection per AFMAN16-1404V3, *Information Security Program: Protection of Classified Information*. Guidance can be found on aircraft security in AFI 13-207-O, *Preventing and Resisting Aircraft Piracy (Hijacking) (FOUO)*; AFMAN 31-101V1, *Integrated Defense (ID) Defense Planning (CUI)*; and other specific MAJCOM or theater security publications. Aircrews will not release information concerning hijacking attempts or identify armed aircrew members or missions to the public. **(T-2)**

7.2. Protection Level (PL). The E-11 and Payload Control Element are PL-3 assets.

7.3. Procedures. The AC is ultimately responsible for the security of their aircraft when not at US military installations. AFMAN 31-101V1 covers security arrangements when USAF aircraft are at other DoD installations. Arrangements must be made to protect the aircraft during crew rest at non-US protected locations. **(T-0)** If US military security forces are not available, the US embassy assigned to that country must be consulted to ensure security arrangements are made. **(T-0)** For missions involving a planning agency, the agency must coordinate with the AC to ensure that planned security measures meet mission requirements. **(T-0)** The level of security required may vary, depending on location and ground time.

7.3.1. For permissive environments, the AC will receive a threat assessment and force protection capability evaluation briefing prior to departure and receive updates enroute, if required. **(T-2)** Aircrew should consider Operations Security (OPSEC) and “zero-ize” FMS routing, waypoints, and takeoff data, as required, before departing the aircraft. At DoD installations, the installation CC is responsible for providing adequate security for the aircraft. The AC will determine if security is adequate. **(T-2)** Planning agencies and the AC will assess the risk to aircraft for planned overnight stops at non-US military installations. **(T-2)**

7.3.2. For unscheduled landings at non-USAF installations, the AC will assess the aircraft security situation and determine suitability IAW aircraft protection level requirements. **(T-2)** If force protection capabilities are insufficient, the AC will take the following actions:

7.3.2.1. Aircrew Surveillance. If not remaining overnight, aircrew members may maintain aircraft security. The AC will direct armed crewmembers (if available) to remain with the aircraft and maintain surveillance of aircraft entrances and activities in the aircraft vicinity. **(T-2)**

7.3.2.2. Area Patrol. The AC will request area patrol coverage from local security forces to include back-up response forces. **(T-2)** If local authorities request payment for this service, contact the SQ/CC who will coordinate with ACC/A3CA, the BACN Weapon System Team, and the SPO. **(T-2)** If unable to contact leadership and secure the aircraft by other means, use Standard Form (SF) 44, *Purchase Order – Invoice Voucher (Storage Safeguard Form)*, and contact leadership as soon as possible.

7.3.2.3. Departure without Crew Rest. If local security forces are not suitable, the AC is authorized to exceed the FDP and depart as soon as possible for a destination with adequate

force protection. If unable to depart the location due to system malfunction, the aircrew must secure the aircraft to the best of their ability. **(T-0)** In no case will the entire crew leave the aircraft unattended. Crew rest requirements will be subordinate to aircraft security when the aircraft may be at risk. The AC should rotate a security detail among the crew to provide for both aircraft protection and crew rest until relief is available. The AC will coordinate through C2 channels to acquire additional security. **(T-2)**

7.4. Use of Aircraft Safe. The aircraft safe on E-11 aircraft meets the requirements set forth in AFMAN 16-1404V3, *Information Security Program: Protection of Classified Information* and Department of Defense Manual (DoDM) 5200.01 Volume 3, *Information Security Program: Protection of Classified Information*. Crews are authorized to store classified materials in the safe while off-station provided crews abide by the caveats in the aforementioned publications. When off-station at non-DoD installations, the AC will ensure the safe is secured and that the aircraft is locked. **(T-2)** Northrop Grumman contracted personnel may also be used if available.

7.5. Divert Guidance. Secure materials in the safe, lock the airplane and check for tampering when arriving at the aircraft the next day. IAW AFMAN 16-1404V3, attempt to have the aircraft and safe checked for tampering every 12 hours. If unable to check for tampering every 12 hours due to crew rest, perform these checks as soon as possible after official end of crew rest. **(T-3)**

Chapter 8

NAVIGATION PROCEDURES

8.1. Portable Electronic Devices for Navigation. IAW AFMAN 11-202V3, aircrews are authorized to carry approved GPS-enabled devices for additional situational awareness (SA) if approved by lead/user MAJCOM.

8.2. Extended Range Operations (EROPS)(Oceanic).

8.2.1. An EROPS area of operation is considered to be any geographical area where, at any point on the planned route, the aircraft is more than 60 minutes from an adequate airport at the single-engine drift-down speed and altitude in still air. An EROPS area of operation may also be considered to apply to over-land areas having suitable alternates within 60 minutes (at the single-engine drift-down speed and altitude in still air), but are considered not usable for political, military, security or performance considerations.

8.2.2. Mission Planning. The EROPS area of operation is considered and factored into route planning considerations. Use of appropriate extended range flight planning tools is authorized. Identify, review for suitability, and include adequate airfields contained in FMC/FMS database. Verify weather, airfield, aircraft systems, instrument approach, passenger handling, maintenance support, fire and rescue support, operations hours and NOTAMs determine suitability.

8.2.2.1. PIC's will use the latest available forecast weather conditions for a period commencing from the earliest time of landing and ending at the latest time of landing at the airport, equals or exceeds the authorized weather minima for en-route alternate airports. In addition, and for the same period, the forecast crosswind component, including gusts, for the landing runway expected to be used should be less than the maximum permitted crosswind for landing. Additionally, PICs will identify EROPS alternate airfields with weather conditions forecasted to be at or above the following conditions.

8.2.2.2. For airports with at least one operational navigational facility providing a straight-in non-precision approach procedure, or Category I precision approach, or, when applicable a circling maneuver from an instrument approach procedure, add 400 ft to the MDA(H) or DA(H) as applicable, and add 1 Statute Mile (SM) (1600M) to the charted landing minimum.

8.2.2.3. For airports with at least two operational navigational facilities, each providing a straight-in approach to different suitable runways, add 200 ft to the higher DA(H) or MDA(H) of the two approaches used, and add ½ SM or 800 M to the higher authorized landing minimum of the two approaches used. **Note:** Conditional forecast elements need not be considered, except that a PROB 40 or TEMPO condition below the lowest applicable operating minima must be taken into account. When dispatched under the provisions of the MMEL, those MMEL limitations affecting instrument approach minima must be considered in determining EROPS alternate minima. Operations outside the US, because of variations in the international metric weather forecasting standards, 700M may be used in lieu of 800M.

8.2.3. Units will publish specific EROPS guidance in local supplement to enhance operational safety. **(T-2)** As a minimum, the PIC must have a qualified alternate planned for category I

fuel, and a contingency plan for weather, suitability and MEL/MMEL (e.g., loss of APU, fire detection, generator). **(T-2)** The PIC has the ultimate responsibility for aircrew safety.

8.2.4. Although the E-11 is not generally considered 180-minute EROPS compliant. ACs are expected to maintain that standard, the unit OG/CC (or equivalent) evaluates the MEL situation with unit Stan/Eval and direct as to how the route should be planned and how the aircraft should be operated. OG/CC (or equivalent) will approve any deviation from EROPS route guidance or approve a new route conforming to reduced EROPS limits (120, 90, 60 minutes).

8.2.5. Required Landing Fuel for EROPS Capable Aircraft.

8.2.5.1. Minimum required fuel must be greater than or equal the fuel required to fly to the equal time point (ETP), experience a loss of cabin pressure, and proceed from the ETP to a recovery field at 10,000 ft or 13,000 ft (if sufficient crew oxygen is available). **(T-2)** If extra fuel is necessary, it is added and identified extra. **Note:** If passengers are not onboard and all crew are equipped with supplemental oxygen, flight may be planned and flown using recovery from the ETP at Single Engine Service Ceiling (up to Flight Level (FL) 250), instead of 10,000 ft.

8.2.5.2. **Critical Fuel Required** : Critical Fuel Required represents the most critical diversion situation whereby a cabin decompression occurs at the most critical point. The aircraft is drifted down to a 10,000 ft cruising altitude, within the limitations of the oxygen supply system, and is flown directly to the EROPS alternate. Fuel supply requirements are:

8.2.5.3. Critical Fuel Required must be the greatest of the following three scenarios:

8.2.5.3.1. Loss of one engine at the most critical point followed by a descent to the one-engine-inoperative drift down altitude and speed.

8.2.5.3.2. Loss of one engine and rapid decompression at the most critical point followed by a descent to a safe altitude in compliance with the aircraft's oxygen supply system.

8.2.5.3.3. All-engine-operating rapid decompression at the most critical point followed by a descent to a safe altitude in compliance with the aircraft's oxygen system.

8.2.5.4. Upon reaching the alternate, hold at 1,500 ft above field elevation for 15 minutes and then conduct an instrument approach and land.

8.2.5.5. Add a 5% wind speed factor (that is, an increment to headwind or decrement to tailwind) on to the actual forecast wind used to calculate fuel supply to account for potential errors in wind forecasting.

8.2.5.6. Add additional fuel for the greater of: The effect of airframe icing during 10% of the time during which icing is forecast (including ice accumulation on unprotected surfaces, and the fuel used by engine and wing anti-icing during this period). Unless a reliable forecast is available, icing may be presumed to occur when the total air temperature at the one-engine cruise speed is less than +10 degrees Celsius, or if the outside air temperature is between 0 and -20 Celsius with a relative humidity of 55% or greater. Or Fuel for engine anti-ice, and if appropriate wing anti-ice, for the entire time during which icing is forecast.

8.2.6. 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). **(T-2)**

8.2.7. Oceanic procedures. Crews will use the MAJCOM-approved Minimum Navigation Performance Specification (MNPS) Oceanic Checklist and the Oceanic Expanded Checklist for oceanic crossings. **(T-2)** Where appropriate, units may augment the MNPS checklist with local supplements such as Altitude Reservation (ALTRV), and other unique mission requirements but in no case will they substitute for the MNPS checklist. **(T-2)**

8.2.8. For North Atlantic Oceanic airspace, pilots will follow the procedures written in the latest version of the MNPS manual. **(T-2)** 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 “must.” **(T-2)** DoD Area Planning procedures will be followed only if they do not conflict with the Minimum Navigation Performance Specification Airspace (MNPSA) manual.

8.2.9. For Northern Pacific Oceanic airspace, pilots will follow the procedures written in the FAA Alaska or Pacific Supplement. **(T-2)** DoD Area Planning procedures will be followed only if they do not conflict with these supplements. **(T-2)**

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

8.2.10.1. 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 FL value (e.g., FL310 equals a minimum distance of 31 miles). **(T-2)**

8.2.10.2. Display progress page on an MCD and enter the NAVAID identifier at BRG DST TO Line Select Key (LSK) 5R. **(T-2)**

8.2.10.3. 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. **(T-2)**

8.2.10.4. Record the following navigation accuracy check information on the master document: NAVAID identifier, time (Coordinated Universal Time [UTC]), Actual Navigation Performance (ANP) value, and courses and distances from progress page display and ND Compass display. **(T-2)**

8.2.10.5. 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 to FMS. **(T-2)**

8.2.11. Ten-minute plotting information will include the following (Radar navigation (RNAV) Airways do not require plotting):

8.2.11.1. Full Latitude/Longitude position. **(T-2)**

- 8.2.11.2. UTC time at that position. **(T-2)**
- 8.2.11.3. FL/Altitude. **(T-2)**
- 8.2.11.4. Aircraft position update source with aircraft ANP. **(T-2)**
- 8.2.11.5. Annotate hourly altimeter checks on the master document. **(T-2)**
- 8.2.11.6. Another pilot will verify waypoint data inserted into the FMS. **(T-3)** Check both the coordinate information and the distances between waypoints against the flight plan.
- 8.2.11.7. Once the oceanic clearance is received and any time the oceanic clearance is changed, both pilots will reverify waypoint data inserted into the FMS. **(T-3)**
- 8.2.11.8. Obtain a coast out fix prior to, or immediately on entering Class II Airspace or overwater segment. **(T-2)** Perform a gross navigational error check using available NAVAIDS and annotate the position and time on the chart. **(T-2)**
- 8.2.11.9. When approaching each waypoint on a Class II Airspace, recheck coordinates for the next waypoint. **(T-2)**
- 8.2.11.10. 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. **(T-2)**
- 8.2.11.11. If a revised clearance is received, record and plot the new route of flight on the chart. **(T-2)** Verify course and distance information using an appropriate source (e.g., FMS or electronic FLIP applications). **(T-2)**

Chapter 9

FUEL PLANNING

9.1. General. A fuel plan is required for all flights except AOR flights with established standard profiles. Missions should be planned at altitudes, routes, and airspeeds to minimize fuel usage and maximize mission effectiveness, allowing for mission extensions if required.

9.2. Fuel Planning Profiles. Enroute cruise airspeeds should be planned at a constant Indicated Airspeed (IAS)/Mach IAW the performance manual. Divert profiles should be fully fuel planned and represent what will actually be flown in a divert situation. Throughout the mission, FMS Performance pages should be updated to ensure SA is maintained on accurate bingo time and fuel for recovery requirements.

9.3. Fuel Planning Procedures. Fuel optimization will be considered throughout all phases of mission planning and execution. Do not ferry extraneous fuel beyond requirements for mission accomplishment (with reasonable extension capability) and training objectives. **(T-3)** Aircrew should employ the following aviation fuel optimization measures without compromising flight safety or jeopardizing mission/training accomplishment. Aircrew will:

9.3.1. Delay engine start time. Establish and implement local engine start time standards as required for payload start-up and minor troubleshooting. **(T-3)**

9.3.2. Establish procedures to ensure timely notification of mission changes or cancellations to avoid unnecessary or unproductive flight time. **(T-2)**

9.3.3. Crews will declare “minimum fuel” and request priority handling by ATC when projected fuel at the planned destination will be less than 2,100 lbs. (pounds). (2,400 lbs. for aircraft 11-9001) plus required fuel to reach the primary alternate. **(T-2)**

9.3.4. Crews will declare “emergency fuel” and request priority handling by ATC when fuel state is anticipated to be 2,100 lbs. (2,400 lbs. indicated for aircraft 11-9001) or less at landing. **(T-2)**

Chapter 10

FLIGHT PATH MANAGEMENT (FPM), OPERATIONAL RISK MANAGEMENT (ORM), CREW RESOURCE MANAGEMENT (CRM), THREAT AND ERROR MANAGEMENT (TEM)

10.1. Flight Path Management (FPM). The term “flight path” applies any time the aircraft is in motion, including taxiing the aircraft. FPM is the planning, execution, and assurance of the aircraft’s guidance, trajectory, and energy state in flight or on the ground. All flight deck aircrew members must ensure that effective FPM is a primary and shared responsibility during all phases of flight. FPM is comprised of 3 aspects (Planning, Executing, and Monitoring):

10.1.1. Planning. Developing a thorough understanding of the aircraft’s desired flight path. Planning is dynamic and includes changes driven by the mission, environmental considerations, and clearances from authorities, such as ATC. **Note:** For the purposes of this document, a clearance is the flight path of the aircraft, as normally defined by the assigned ATC clearance. Typically, two pilots must hear/read, understand, anticipate its impact, and comply with the clearance, unless otherwise deemed necessary for the safe conduct of the flight. Other flight deck members who have the training, ability, and authority to do so should assist with clearance acceptance.

10.1.2. Executing. The process through which the aircrew controls the aircraft and achieves compliance with the desired flight path.

10.1.3. Monitoring. The process through which aircrew members monitor compliance with the desired (planned) flight path. Effectively monitoring the flight path is a critical TEM task that identifies and corrects FPM errors that might lead to flight path deviations or Undesired Aircraft States. As a primary and shared responsibility, monitoring is equally as important as controlling the aircraft. Monitoring requirements vary depending on phase of flight and on situations encountered within each phase of flight. Aircrews should anticipate flight situations or phases where they will be most vulnerable to flight path deviations (Areas of Vulnerability – AOVs) and strategically manage workload and distractions to maximize monitoring during these AOVs. **(T-3)**

10.2. Operational Risk Management (ORM).

10.2.1. 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 DAFI 90-802, *Risk Management*. ACs will accomplish ORM worksheets IAW MAJCOM and local guidance as part of preflight activities. **(T-2)**

10.2.2. Flying units will develop a local ORM program to include personal ORM assessment for all missions and accomplished by all crew members at the beginning of each FDP. **(T-3)**

10.3. Crew Resource Management/Threat and Error Management (CRM/TEM).

10.3.1. CRM is the effective use of all available resources, people, weapon systems, facilities, equipment, and environment by individuals or crews to safely and efficiently accomplish an assigned mission or task.

10.3.2. TEM is a structured, proactive, systems approach that is intuitively, logically, and flexibly designed. It builds on multiple layers of defenses to identify, prevent, and mitigate

threats and/or trap or mitigate inevitable human errors to avoid undesired aircraft states and potential mishaps. See AFMAN 11-290, *Cockpit/Crew Resource Management Program*, or applicable MAJCOM Supplement for additional information.

10.3.3. “Time Out.” “Time Out” is the common assertive statement for use by all crew members. The use of “Time Out” is intended to:

10.3.3.1. Provide a clear warning sign of a deviation or loss of SA.

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

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

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

10.3.3.4.1. Safety permitting, stabilize the aircraft. **(T-2)**

10.3.3.4.2. The initiating crewmember will voice their concerns to the crew. **(T-2)**

10.3.3.4.3. The AC will provide all other crew members with the opportunity to voice inputs relative to the stated concerns. **(T-2)**

10.3.3.4.4. After considering all inputs, the AC will direct the aircrew to continue the current course of action or direct a new course of action. **(T-2)**

10.3.4. Knock-It-Off (KIO) and Terminate Procedures. Use KIO or Terminate procedures to direct aircraft or aircrew to stop engagements, scenarios, and tactical maneuvering. **(T-2)**

10.3.4.1. KIO Procedures. A KIO call ceases all tactical maneuvering and ends the overall scenario. Use KIO procedures for the following and IAW AFMAN 11-214, *Air Operations and Procedures*:

10.3.4.1.1. If safety of flight is a factor.

10.3.4.1.2. A dangerous situation is developing.

10.3.4.1.3. Loss of SA.

10.3.4.2. Once a “KNOCK-IT-OFF” is called, all participating aircraft will:

10.3.4.2.1. Acknowledge with call sign in roll call fashion. **(T-2)**

10.3.4.2.2. Cease tactical maneuvering and end the scenario. **(T-2)**

10.3.4.2.3. Deconflict flight paths and climb/descend to a safe altitude, block, or as briefed. **(T-2)**

10.3.4.3. TERMINATE procedures. A TERMINATE ceases all tactical maneuvering with the terminating aircraft or within a specific portion of a larger scenario. Use TERMINATE procedures when safety of flight is not a factor and IAW AFMAN 11-214.

10.4. Automation Management. It is the responsibility of the crew to fully understand the operations and limitations of the automation on each aircraft. The first priority is to fly the aircraft.

10.4.1. Aircraft automation systems are tools intended to enhance safety, maximize efficiency, improve operational capabilities, and reduce pilot workload. **Note:** Although automation can assist with seeing and avoiding conflicting traffic, at least one pilot should maintain visual outside awareness by remaining “heads-up.”

10.4.2. Flight Automation. Pilots should maintain proficiency in the use of all flight automation levels and the skills required to seamlessly shift between those levels. Available flight automation levels vary between aircraft and may include many combinations of flight director guidance and autopilot modes including partial automation. The level of flight automation used will permit both pilots to maintain SA and a comfortable distribution of workload. If the use of flight automation creates a loss of SA or results in task saturation, the pilot should shift to a less demanding level or disconnect the automation entirely and re-establish the desired aircraft flight path. Pilots should choose an appropriate flight automation level consistent with changing flight environments and balanced with the requirement to maintain manual flying skills.

10.4.2.1. The PF will determine, announce, and fly the aircraft using the appropriate level of flight automation IAW SOPs, flight manual guidance, and applicable regulations. **(T-2)** The pilot monitoring (PM) will acknowledge the announcement. **(T-2)**

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

10.4.2.2.1. Fixating on automation. One pilot should always remain “heads up” and eyes outside the cockpit. Establish clear roles for computer-related tasks. Announce “heads down” when the task requires focusing significant attention on the FMS in flight and ensure the other pilot is aware.

10.4.2.2.2. Poor prioritization of programming tasks. Work to minimize reprogramming during critical phases of flight or during periods of high workload should be avoided.

10.4.2.2.3. Poor mode awareness. Pilots must apply the concept of “verbalize, verify and monitor” when using automation. During uncoupled flight, the PF should direct the PM to make changes to the guidance panel (GP) to match the flight director. Confirm all mode changes by observing the correct flight mode annunciations.

10.4.2.2.4. Mismanagement of altitude preselect. Programmed altitudes and altitude changes will be confirmed by both pilots. **(T-2)**

10.4.2.3. Units may develop local SOPs, supplementing Bombardier Global BBD-700 Operations Reference Manual automation guidance. **(T-3)**

10.4.3. Information Automation (IA). Managing information is an important aspect of FPM. The quantity and type of information available to the aircrew has substantially changed and will continue to change. IA is automation devoted to the management and presentation of relevant information to flight deck aircrew members. Examples of IA systems include the EFB, Aircraft Communications Addressing and Reporting System (ACARS), moving map displays, performance management calculations, multi-function displays, data uplink, alerting systems including lights and audible and tactile alerts, and FMS display unit pages and scratch pads.

10.4.3.1. Aircrew members must be proficient in the use of automated systems and in accessing and interpreting automated information, determining its reliability, and understanding how to use the acquired information. These tasks must occur seamlessly throughout the flight to prevent distraction from primary FPM tasks.

10.4.3.2. Head-Up/Head-Down Policy. Establish clear roles for computer-related tasks. One pilot should always remain “heads-up.” Announce “pilot head-down” or “copilot head-down” when the task requires prolonged attention within the flight deck. Other than momentary occasions, any crewmember who observes both pilots “heads-down” at the same time (other than instrument flying) will announce the issue to the aircrew without delay. (T-2)

10.4.4. Verbalize, Verify, and Monitor (VVM). VVM is a closed-loop system of communication designed to significantly reduce aircraft automation errors. Aircrews will utilize VVM practices unless safety of flight requires a temporary deviation from these requirements. (T-3) VVM consists of a three-step process:

10.4.4.1. Verbalize. Prior to making changes to the selected/armed flight guidance (including altitude), the crewmember performing the action verbalizes the intended change(s).

10.4.4.2. Verify. The appropriate crewmember(s) verify the intended changes prior to execution. The crewmember(s) responds to the intended change(s) by verbally confirming the change or notifies the challenging crewmember of an issue and/or concern. When necessary, visual cues confirming intended change(s) are acceptable but are not normally the primary method for confirmation. If visual cues are used, when time allows, ensure all appropriate flight deck crew members are aware of the executed action by verbally reviewing the executed action.

10.4.4.3. Monitor. Once the intended action(s) has/have been confirmed and “executed,” crew members continually monitor the aircraft to ensure the expected performance is achieved by staying vigilant and situationally aware.

10.5. Pilot Flying (PF) and Pilot Monitoring (PM) Duties. There must be a clear understanding of the PF and the PM duties at all times. The terms PF and PM are used to designate pilot roles and procedural duties when the aircraft is in motion or as designated by airplane flight manual guidance. Controlling and monitoring the aircraft flight path is the highest priority of the PF and PM, regardless of automation level.

10.5.1. PF/PM roles may change throughout a flight. Transfer of PF and PM roles must be clear to all primary crew members. The transfer will be expressed using a three-part aircraft control transference statement and should be done positively with verbal assignment and verbal acceptance to include a short brief of aircraft state, as necessary. Depending on the situation it is suggested that the transference statement include airspeed, altitude, heading, and/or automation configuration. An example is as follows: Pilot: “Copilot’s aircraft. We’re level at flight level 310 at 275 knots and the autopilot is engaged in heading mode; heading 3-0-0.” Copilot: “Understood. Copilot’s aircraft.” Pilot: “Copilot’s aircraft.”

10.5.2. Pilot Flying (PF).

10.5.2.1. The pilot at the flight controls who is in direct maneuvering control of the aircraft. The PF is primarily responsible to control and monitor the aircraft's flight path (including auto flight systems, if engaged).

10.5.2.2. The PF is secondarily responsible to monitor non-flight path actions (e.g., radio communications, aircraft systems) but must never allow these activities to interfere with their primary responsibility.

10.5.2.3. The PF should also recognize when the PM is not adequately monitoring the flight path and make the PM aware of this deviation.

10.5.2.4. Assigning non-flight path-related tasks to the PF should generally be avoided. If the PF must engage in activities that distract from flight path control tasks, the PF should transfer aircraft control to the other pilot, and then assume the PM role.

10.5.3. Pilot Monitoring (PM).

10.5.3.1. In addition to Mission Design Series (MDS)-specific Technical Order (T.O.) guidance, the PM is the pilot at the flight controls who is not in direct maneuvering control of the aircraft yet is primarily responsible to actively monitor the aircraft's flight path, intervening, if necessary, within pre-established parameters.

10.5.3.2. The PM supports the PF by accomplishing non-flight path actions (e.g., radio communications, aircraft systems) but should continue to monitor the flight path.

10.5.4. Pilot Monitoring (PM) Behaviors. An effective PM should:

10.5.4.1. Be knowledgeable of all policies and procedures related to monitoring the flight path (e.g., callouts).

10.5.4.2. Recognize when the PF is not adequately controlling the flight path. This includes pilot task loading and signs of diminished performance (e.g., lack of communication, channelized attention, and failure to make required callouts)

10.5.4.3. Be aware of applicable common errors regarding monitoring the flight path. This includes appropriate methods of recognizing precursors and signs of degraded monitoring and on resolving monitoring errors and/or lapses.

10.5.4.4. Be competent regarding the concept of Areas of Higher Vulnerability. If the PM recognizes the flight phases or situations when they are most vulnerable to flight path deviations (including when little time exists to correct deviations), then tasks can be planned strategically, and workload managed to maximize flight path monitoring during those phases.

10.5.4.5. Be knowledgeable of CRM/TEM principles and human performance vulnerabilities related to monitoring, the importance of monitoring, and the approved practices that achieve effective monitoring of the flight path.

10.5.4.6. Be aware of system failures that may distract from effective monitoring and proper FPM.

10.5.4.7. Be able to manage distractions that interfere with monitoring the flight path by managing task priorities and effectively switching between other tasks and monitoring of the flight path so that flight path vigilance is always maintained. The PM should be able to

apply task management strategies that enable pilots to use charts, EFB, ACARS, etc. While also effectively monitoring the flight path and airplane energy state.

10.5.4.8. Employ intervention methods that can be used to help the PF regain proper control of the flight path (e.g., calling out deviations, levels of assertiveness).

10.5.4.9. Have a working understanding of automated flight guidance and flight control systems. The PM should understand what happens next given a certain set of flight circumstances, and the reasons why. The knowledge should incorporate FMS degradations, failures, and operational consequences requiring flight crew action, known flight guidance and flight control system-behavioral challenges and environmental/circumstantial traps (e.g., vectors off and on a Standard Terminal Arrival (STAR) during a “descend via” clearance) that are known to lead to flight path-related errors.

10.5.5. Be able to sufficiently collaborate with the PF to transition seamlessly between combinations/levels of flight guidance or flight control automation (including manual flight) by anticipating, recognizing, and recovering from known flight guidance system-behavioral challenges (e.g., subtle mode reversions). **Note:** Flight guidance includes FMS and flight control (includes autopilot and autothrottles).

10.6. Advisory Calls.

10.6.1. Advisory calls and responses between the PF and PM will be accomplished IAW the Bombardier FCOMs and the AFMAN 11-202V3 ACC Supplement. This does not prevent unit CCs from publishing and utilizing additional procedures for advisory callouts.

10.6.2. The PF will announce intentions for departures, arrivals, approaches, and when circumstances require deviating from normal procedures. **(T-2)** Should any crewmember be unsure of the PF’s intentions, they will ask for clarification prior to accomplishment. **(T-2)** Unless otherwise directed, all primary crew members (as applicable) will acknowledge mandatory calls. **(T-2)**

10.6.3. The PM will make all normal advisory calls except those designated for other crew members by FAA specific guidance and this manual. **(T-2)** **Exception:** Automated aircraft advisories satisfy this requirement if acknowledged by a primary crewmember. Additionally, aircrew members (PM or otherwise) will advise the crew anytime the primary radio is changed. **(T-2)**

10.6.4. Deviation Advisories. IAW sound CRM/TEM practices, aircrew members will inform the PF when flight path deviations exceed (or will exceed) tolerances, and no attempt is being made to correct the deviation. Tolerances are defined by MDS specified SOPs. In absence of MDS SOPs, use the most restrictive of MDS specific Vol 2 (e.g., takeoff safety speed) criteria, standards, or flight manual guidance. **(T-2)** Any crewmember noticing a potential terrain and/or obstruction issue will immediately notify the PF. **(T-2)** The PF will take immediate corrective action. **(T-2)** This is especially important during critical phases of flight, nighttime, and/or instrument conditions.

10.6.4.1. Under normal flight conditions, deviations observed in excess of heading (+/- 5 degrees), airspeed (+10/-5 knots), or altitude (+/- 100 ft) will be announced by any aircrew member using clear and concise terminology (example: “XX knots fast”). **(T-2)**

10.6.4.2. When conducting planned maneuvers with tolerances different than those listed above, comply with Air Force Tactics, Techniques, and Procedures (AFTTP) 3-3 guidance for “Terminate Criteria.” (T-2)

10.6.4.3. Emergency Advisories. Any crewmember detecting an existing or impending emergency condition will immediately inform the AC. The PF will take necessary action to establish and/or maintain control of the aircraft and call for the appropriate checklist. (T-2)

10.7. Critical Action Coordination (CAC). During an emergency, as a general guideline the AC should attempt to assume control of the aircraft unless it has been determined that safety of flight would be compromised by assuming control (e.g., PIC is not at the controls during the induction of the emergency). Those actions that are flight critical/irreversible in nature must always be confirmed by two crew members. (T-2) These actions include but are not limited to placing the throttles to IDLE and engine run switches to off, pulling the engine fire handle, discharging agent, and other actions determined to be critical in the aircraft flight manual. CAC is performed as follows:

10.7.1. Flight Deck crew members verbally and visually identify the affected control, (e.g., “CONFIRM LEFT ENGINE”). The crewmember performing the action points to the affected control. The crewmember monitoring the action verbally and visually confirms the proper control is selected, (e.g., “LEFT ENGINE”). The crewmember performing the action then actuates the affected control. **Note:** During any emergency, the AC normally notifies the crew of the emergency, and the PM normally notifies all others concerned, such as ground control, tower, etc.

10.7.2. Rejected Takeoff (RTO) Decision Making. The RTO/Continue Takeoff decision making process is dynamic, time critical, and may be complex. Aircrew can mitigate takeoff hazards by building a shared mental model of the takeoff including TOLD, aircraft systems, weight and balance, terrain, environmental conditions, high-speed vs. low-speed reject risks. The AC is the final decision authority and should ensure a clear understanding of expected crew actions.

10.8. 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. Although tactical approaches are inherently less constrained, they must still result in the aircraft arriving at a position in space in an appropriate configuration and within acceptable parameters that will permit a safe landing consistent with aircraft flight manual restrictions as well as performance manual assumptions and limitations.

10.8.1. Stabilized Approach Criteria. The following stabilized approach criteria applies to all approaches and will be emphasized and briefed for every approach (Use an abbreviated briefing for multiple approaches conducted in the same terminal area):

10.8.1.1. Aircraft is in landing configuration. Final flap configuration may be delayed but will be briefed. (T-3)

10.8.1.2. Airspeed is appropriate for the configuration and conditions. (T-3)

10.8.1.3. Sink rate is no greater than 1000 feet per minute (fpm). **Note:** Under certain conditions (e.g., weather, terrain, etc.) some approaches may require greater than a 1000 fpm descent rate. This increased sink rate will be briefed. (T-2)

10.8.1.4. All briefings and checklists are complete unless contrary to AFM guidance. (T-3)

10.8.1.5. Aircraft is on the correct track. (T-3)

10.8.1.6. Aircraft is in the correct bank angle to maintain proper approach track for instrument, circling, or visual approach. (T-3)

10.8.1.7. Power set to maintain the descent profile at approach speed. (T-3)

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

10.8.1.8.1. Airspeed: +10/-5 knots from target. (T-3)

10.8.1.8.2. Bank Angle: +/- 15 degrees from target. (T-3)

10.8.1.8.3. Rate of Descent: +/- 300 fpm from target. (T-3)

10.8.2. Stabilized Approach Procedures. The following procedures apply to all approaches:

10.8.2.1. At 1000 ft Height Above Touchdown (HAT), the stable criteria in [paragraph 10.8.1](#) apply or as determined by specific MDS SOPs, standards, or AFM guidance.

10.8.2.1.1. If these criteria are not met at 1000 ft HAT, the PM will announce the deviation and the PF will take immediate corrective action. (T-2) PM will state “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. Example: “1000, 15 fast.” (T-2)

10.8.2.1.2. If criteria are met, PM will state “1000, stable.”

10.8.2.2. Between 1000 ft and 500 ft HAT:

10.8.2.2.1. Parameters are the same as those in [paragraph 10.8.1](#).

10.8.2.2.2. If these criteria are not maintained, the PM will announce the deviation using the “XXXX” Format (Example: “15 fast”) and the PF will take immediate corrective action. (T-2)

10.8.2.3. At 500 ft HAT:

10.8.2.3.1. Parameters are the same as those in [paragraph 10.8.1](#). If accomplishing a VFR or circling approach, aircraft must meet all parameters in [paragraph 10.8.1](#), and also, be in a safe position to land.

10.8.2.3.2. If criteria are met, PM will state “500, stable.”

10.8.2.3.3. If unstable or not in final flap configuration at 500 ft HAT, the PM will call “Go around” and the PF will execute a go-around.

10.8.2.4. From 500 ft HAT to the runway, if these parameters are exceeded the PM or any other crewmember will announce, “Go around” and the PF will execute a go-around.

10.8.3. Descent Planning and Energy Management. Awareness of maneuver entry parameters and energy management is crucial to meeting the stabilized approach criteria on every

approach. Aircrew members will ensure the aircraft is following the planned descent profile. All non- tactical descents should follow a normal descent profile IAW AFMAN 11-202V3 procedures and techniques in the absence of ATC or FLIP guidance. 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.

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

10.8.5. 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. **Note:** Execute missed approach/go-around IAW the Flight Manual and AFMAN 11-202V3 procedures.

10.8.6. Aviation Safety Action Program (ASAP).

10.8.6.1. ASAP is an identity-protected, self- reporting system that is integral to reducing mishaps and improving operations and training. ASAP is designed for Airmen to report information and concepts critical to resolving mishap precursors and to share this information across AF aviation communities. The information is used to reduce mishaps through operational, logistic, maintenance, training, and procedural enhancements.

10.8.6.2. Data generated from the ASAP process is not used for monitoring personnel performance or to initiate punitive or adverse action. Violations of the UCMJ or criminal statute should not be reported via ASAP. Aircrews reporting incidents involving personal injury and/or aircraft damage should contact unit or local safety offices for appropriate guidance. The ASAP Report Submission, Fatigue Submission, and ASAP Scoreboard websites are accessible at <https://afsas.safety.af.mil/>.

ADRIAN L. SPAIN, Lt Gen, USAF
Deputy Chief of Staff, Operations

Attachment 1**GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION*****References***

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AFI 13-207-O, *Preventing and Resisting Aircraft Piracy (Hijacking) (FOUO)*, 5 February 2019

AFI 33-322, *Records Management and Information Governance Program*, 23 March 2020

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AFMAN 11-2E-11V2, *E-11 Aircrew Evaluation Criteria*, 3 December 2021

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AFMAN 11-301V2, *Management and Configuration Requirements for Aircrew Flight Equipment (AFE) (CUI)*, 13 February 2020

AFMAN 31-101V1, *Integrated Defense (ID) Defense Planning*, 12 March 2020

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DAFI 90-802, *Risk Management*, 1 April 2019

DAFMAN 11-401, *Aviation Management*, 27 October 2020

DAFI 91-202, *The US Air Force Mishap Prevention Program*, 12 March 2020

DoDM 5200.01V3, *DoD Information Security Program: Overview, Classification, and Declassification*, 24 February 2012

Adopted Forms

AFTO Form 46, *Prepositioned Aircrew Flight Equipment*

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

AF Form 853, *Air Force Wildlife Strike Report*

DAF Form 847, *Recommendation for Change of Publication*

DD Form 1387-2, *Special Handling Data/Certification*

SF Form 44, *Purchase Order - Invoice Voucher (Storage Safeguard Form)*

Abbreviations and Acronyms

AC—Aircraft Commander

ACARS—Aircraft Communications Addressing and Reporting System

ACC—Air Combat Command

AF—Air Force

AFCENT—Air Forces Central Command

AFE—Aircrew Flight Equipment

AFH—Air Force Handbook

AFI—Air Force Instruction

AFM—Airplane Flight Manual

AFMAN—Air Force Manual

AFPD—Air Force Policy Directive

AFTO—Air Force Technical Order

AFTTP—Air Force Tactics, Techniques, and Procedures

AGL—Above Ground Level

AHAS—Avian Hazard Advisory System

ALEP—Aircrew Laser Eye Protection

ALTRV—Altitude Reservation

AMC—Air Mobility Command

ANP—Actual Navigation Performance

AOR—Area of Responsibility

AOV—Area of Vulnerability

APU—Auxiliary Power Unit

ARMS—Aviation Resource Management System

ARTCC—Air Route Traffic Control Center

ASAP—Aviation Safety Action Program
ASRR—Airfield Suitability and Restrictions Report
ATC—Air Traffic Control
ATIS—Automatic Terminal Information Service
ATO—Air Tasking Order
A3—Director of Operations
BACN—Battlefield Airborne Communications Node
BASH—Bird/Wildlife Aircraft Strike Hazard
BMC—BACN Mission Coordinator
BMC—Basic Mission Capable
BWC—Bird Watch Condition
BWCS—BWC Severe
C2—Command and Control
CAC—Critical Action Coordination
CAOC—Combined Air Operation Center
CC—Commander
CMR—Combat Mission Ready
COMSEC—Communications Security
CRM—Crew Resource Management
CSEL—Combat Survivor Evader Locator
CT—Continuation Training
CUI—Controlled Unclassified Information
DA—Decision Altitude
DAFI—Department of the Air Force Instruction
DAFMAN—Department of the Air Force Manual
DD—Department of Defense (Forms only)
DDG—Dispatch Deviation Guide
DETCO—Detachment Commander
DFSP—Defense Fuel Supply Points
DH—Decision Height
DO—Director of Operations
DoD—Department of Defense

DoDI—Department of Defense Instruction
DoDM—Department of Defense Manual
EDR—Engineering Disposition Report
EFB—Electronic Flight Bag
EGPWS—Enhanced Ground Proximity Warning System
EP—Evaluator Pilot
ETA—Equal Time Point
ETP—Estimated Time of Arrival
EROPS—Extended Range Operations
EVS—Enhanced Vision System
FAA—Federal Aviation Administration
FAR—Federal Aviation Regulation
FCF—Functional Check Flight
FCIF—Flight Crew Information File
FCG—Foreign Clearance Guide
FCOM—Flight Crew Operating Manual
FDP—Flight Duty Period
FMS—Flight Management System
FL—Flight Level
FLIP—Flight Information Publications
FLIP GP—Information Publication General Planning
FOD—Foreign Object Damage
FP—First Pilot
FPM—Flight Path Management
fpm—Feet Per Minute
ft—Feet
GDSS2—Global Decision Support System 2
GP—Guidance Panel
GPS—Global Positioning System
HAT—Height Above Touchdown
IA—Information Automation
IAS—Indicated Airspeed

IAW—In Accordance With

ICAO—International Civil Aviation Organization

ID—Integrated Defense

IFG—In-Flight Guide

IFR—Instrument Flight Rules

IP—Instructor Pilot

KIO—Knock-It-Off

lbs.—Pounds

LSK—Line Select Key

M—Meters—MAJCOM—Major Command

MDS—Mission Design Series

MDA—Minimum Descent Altitude

MEL—Minimum Equipment List

MEP—Mission Essential Personnel

MILSTAMP—Military Standard Transportation and Movement Procedures

MMEL—Master Minimum Equipment List

MNPS—Minimum Navigation Performance Specification

MNPSA—Minimum Navigation Performance Specification Airspace

MP—Mission Pilot

MSC—Multi Service Corporation

MSL—Mean Sea Level

NAT SPG—North Atlantic Systems Planning Group

NAVAID—Navigational Aid

NLT—No Later Than

NOTAM—Notice to Airmen

NSN—National Stock Number

OCF—Operational Check Flight

OEM—Original Equipment Manufacturer

OG—Operations Group

OPR—Office of Primary Responsibility

OPSEC—Operations Security

Ops Sup—Operations Supervisor

ORM—Operational Risk Management
PAX—Passengers
PF—Pilot Flying
PIC—Pilot in Command
PM—Pilot Monitoring
PMC—Partially Mission-Capable
PSK—Parachute Spacer Kit
QRH—Quick Reference Handbook
RAP—Ready Aircrew Program
Rev—Revision
RNAV—Radar navigation
RSI—Restriction/Special Instructions
RTO—Rejected Takeoff
RVSM—Reduced Vertical Separation Minimums
SA—Situational Awareness
SARM—Squadron Aviation Resource Management Office
SDP—Special Departure Procedure
SF—Standard Form
SM—Statute Mile
SOF—Supervisor of Flying
SOP—Standard Operating Procedure
SPINS—Special Instructions
SPO—Systems Project Office
Stan/Eval—Standardization and Evaluation
STAR—Standard Terminal Arrival
TAC—Tactical
TCAS—Traffic Collision Avoidance System
TDY—Temporary Duty
TDZE—Touchdown Zone Elevation
TEM—Threat and Error Management
T.O.—Technical Order
TOLD—Takeoff and Landing Data

UPAM—Unit Program Account Manager

UCMJ—Uniform Code of Military Justice

US—United States

USAF—United States Air Force

USSF—United States Space Force

UTC—Coordinated Universal Time

V—Volume—VFR—Visual Flight Rules

VMC—Visual Meteorological Conditions

VVM—Verbalize, Verify and Monitor

Office Symbols

ACC/A3—ACC/Director of Operations

ACC/A3CA—ACC/Airborne Command and Control (C2) Systems Branch

ACC/A3TV—ACC/Standardization and Evaluation Branch

AF/A3T—Air Force Training and Readiness Directorate

OG/CC—Operations Group Commander

OGV—Operations Group Stan/Eval Office

SQ/CC—Squadron Commander

SQ/DO—Squadron Director of Operations

Attachment 2

E-11 MISSION ESSENTIAL PERSONNEL (MEP) BRIEFING GUIDE

A2.1. Required Briefing Items. The AC, or designated representative will brief the following items unless individuals have been previously briefed during the pre-mission briefing:

A2.1.1. AC name. **(T-3)**

A2.1.2. ETA to destination. **(T-3)**

A2.1.3. Cruise altitudes. **(T-3)**

A2.1.4. Weather enroute and at destination. **(T-3)**

A2.1.5. Emergency Signals:

A2.1.5.1. Ground evacuation: **(T-3)**

A2.1.5.1.1. Signal for evacuation. **(T-3)**

A2.1.5.1.2. Primary/secondary exits. **(T-3)**

A2.1.5.1.3. Assembly area. **(T-3)**

A2.1.5.2. Crash landing/ditching:

A2.1.5.2.1. Signal for preparation. **(T-3)**

A2.1.5.2.2. Signal to brace for impact. **(T-3)**

A2.1.5.2.3. Brace position. **(T-3)**

A2.1.5.3. Loss of pressure: **(T-3)**

A2.1.5.3.1. Signal. **(T-3)**

A2.1.5.3.2. Oxygen requirements. **(T-3)**

A2.1.6. Oxygen/Survival Equipment Inspection/Usage. **(T-3)**

A2.1.7. Restrictions:

A2.1.7.1. Reading lights. **(T-3)**

A2.1.7.2. Lavatory. **(T-3)**

A2.1.7.3. Seat belts. **(T-3)**

A2.1.7.4. Smoking and smokeless tobacco are prohibited. **(T-1)**

A2.1.7.5. Operation of electric/electronic devices (except watches, handheld non-print calculators, hearing aids, medically prescribed physiological instrumentation, and portable voice recorders when approved by MAJCOM) will be IAW AFMAN11-202V3. Electronic flash attachments will not be used. **(T-2)**

A2.1.7.6. Transportation or use of narcotics, marijuana, or other dangerous drugs is prohibited unless approved by proper medical/legal authority. **(T-1)**

A2.1.7.7. Explosive, flammable, and corrosive materials, or materials with toxic or irritating fumes are prohibited unless approved by competent authority. **(T-2)**

A2.1.8. Internal Environmental Systems (T-3)

A2.1.9. Discuss extreme cold temperatures that may occur in flight and ensure they have proper attire for the flight.