

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

**AIR FORCE MANUAL 11-2CV-22,
VOLUME 3**



13 SEPTEMBER 2021

Flying Operations

CV-22 OPERATIONS PROCEDURES

COMPLIANCE WITH THIS PUBLICATION IS MANDATORY

ACCESSIBILITY: Publications and forms are available for downloading or ordering on the e-publishing website at www.e-publishing.af.mil/

RELEASABILITY: There are no releaseability restrictions on this publication.

OPR: AFSOC/A3V

Certified by: AF/A3T
(Maj Gen Albert G. Miller)

Supersedes: AFMAN11-2CV-22V3,
26 July 2019

Pages: 74

This manual implements Air Force Policy Directive (AFPD) 11-2, *Aircrew Operations*, Air Force Instruction (AFI) 11-200, *Aircrew Training, Standardization/Evaluation and General Operations Structure*, and is consistent with AFPD 11-4, *Aviation Service* and Air Force Manual (AFMAN) 11-202, Vol 3, *Flight Operations*. This is a specialized publication intended for use by Airmen who have graduated from technical training related to this publication. It establishes operating procedures for all CV-22 units. This manual applies to civilian employees and uniformed members of the Regular Air Force, Air Force Reserve and Air National Guard, unless explicitly otherwise provided. This publication does not apply to United States Space Force. This publication is used in conjunction with AFI 11-202, Vol 2, *Aircrew Standardization and Evaluation Program*, AFMAN 11-202, Vol 1, *Aircrew Training*, and Major Command (MAJCOM) supplements thereto. This AFMAN may be supplemented at any level, but all supplements that directly implement this publication must be routed to the Office of Primary Responsibility (OPR) of this manual for coordination prior to certification and approval. This Manual requires the collection and or maintenance of information protected by the Privacy Act of 1974 authorized by Department of Defense Directive (DoDD) 5400.11, *DoD Privacy Program*. The applicable SORN F011 AF XO A, *Aviation Resource Management Systems (ARMS)* is available at <http://dpclo.defense.gov/Privacy/SORNs.aspx>. 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 Instruction (DAFI) 33-360, *Publications and Forms Management*, 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 requestors commander for non-tiered compliance items. Refer recommended changes and questions about this publication to the OPR using the AF Form 847, *Recommendation for Change of Publication*; route AF Forms 847 from the field through the appropriate functional chain of command. Ensure all records generated as a result of processes prescribed in this publication adhere to Air Force Instruction 33-322, *Records Management and Information Governance Program*, and are disposed in accordance with the Air Force Records Disposition Schedule, which is located in the Air Force Records Information Management System. The use of the name or mark of any specific manufacturer, commercial product, commodity, or service in this publication does not imply endorsement by the Air Force.

SUMMARY OF CHANGES

This re-write of AFMAN 11-2CV-22 Volume 3, *CV-22 Operations Procedures*, has been substantially revised and needs to be completely reviewed. Major changes include: Mission Commander, Flight Lead, and Senior Enlisted Leader definitions, roles, and responsibilities. Incorporation of multiple standing Flight Crew Information Files (FCIFs) such as the anti-exposure suit wear guidance and the Ice Protection System Pre-Flight Built In Test (IPS PFBIT). The section on aircraft security has been removed and referenced appropriately. Flight planning/filing guidance has been included. Added clarification on Helicopter Landing Zone (HLZ) survey requirements and authorities. Updated guidance for personnel restraints during flight operations. Updated publication references to reflect new naming convention system and changes.

Chapter 1—OVERVIEW	7
1.1. General.....	7
1.2. Applicability.....	7
1.3. Key Definitions.....	7
1.4. Deviations and Waivers.....	7
1.5. Distribution.....	8
1.6. Development of New Equipment and Procedures.....	8
Chapter 2—ROLES AND RESPONSIBILITIES	9
2.1. General.....	9
2.2. Command and Control.....	9
2.3. Waiver and Approval Authorities.....	9
2.4. Mission Monitoring.....	10
2.5. Aircraft Commander Responsibility and Authority.....	10
2.6. Mission Commander (MSN/CC).....	10
2.7. Flight Lead.....	10
2.8. Senior Enlisted Leader.....	11
2.9. Mission Clearance Decision.....	11

2.10.	Civilian Law Enforcement Support.	12
Chapter 3—CREW COMPLEMENT AND MANAGEMENT		13
3.1.	Aircrew Qualification.	13
3.2.	Crew Complement.	13
Table 3.1.	Crew Complement.	14
3.3.	Interfly.	14
3.4.	Intrafly.	15
3.5.	Scheduling Restrictions.	15
3.6.	Maximum Flight Duty Period (FDP).	15
3.7.	Crew Rest.	15
3.8.	Alert Duty.	16
3.9.	Alert Procedures.	16
Chapter 4—COMMAND OPERATING GUIDELINES		18
4.1.	General.	18
4.2.	Responsibility.	18
4.3.	Environmental Control System (ECS).	18
4.4.	Fuel Systems.	18
4.5.	Landing Gear.	18
4.6.	Navigation Systems.	19
4.7.	Cockpit Displays.	19
4.8.	Ice Protection System (IPS).	19
Chapter 5—AIRCRAFT SECURITY		20
5.1.	General.	20
Chapter 6—MISSION PREPARATION		21
6.1.	Flight Planning Systems.	21
6.2.	Coordinates and Datum.	21
6.3.	Flight Logs.	21
6.4.	Mission Kits.	21
6.5.	Weather Planning.	21
6.6.	Illumination and NVG Requirements. WARNING:	22
6.7.	Adverse Weather Planning.	22
6.8.	Fuel Planning.	23

6.9.	Single Engine (OEI) Planning.	23
6.10.	En Route Planning.	23
6.11.	Pre-Mission Briefing Requirements.	23
6.12.	Flight Crew Information File (FCIF).	24
6.13.	Flight Plans.	24
6.14.	International Procedures.	25
Chapter 7—GENERAL OPERATING PROCEDURES		26
7.1.	Altitude Restrictions.	26
7.2.	Low-Level Operations.	26
7.3.	Master Low-Level Hazards Map.	27
7.4.	Landing Zones/Helicopter Landing Zone Survey Requirements.	27
7.5.	Aircrew Flight Equipment Requirements.	27
7.6.	Flying Clothing/Safety Equipment.	29
7.7.	Weight and Balance.	29
7.8.	AFTO Form 781, ARMS Aircrew/Mission Flight Data Document.	29
7.9.	Preflight Inspections.	30
7.10.	Checklist.	30
7.11.	Flight Briefings and Procedures.....	30
7.12.	Controls.....	30
7.13.	Crew Duties and Responsibilities.	30
7.14.	Communications.	31
7.15.	Aircraft Lighting.	31
7.16.	Aircraft Taxi Obstruction Clearance Criteria.....	31
7.17.	Taxiway and Runway Width Requirements.	32
7.18.	Arresting Cables.	32
7.19.	Proprotor Turning Offload and Onload Procedures.....	32
7.20.	Engine Requirements.	32
7.21.	Power Required for Vertical Take Off and Landing Terminal Operations Training.....	33
7.22.	Oxygen Requirements.....	33
7.23.	Transponder Operations.....	33
7.24.	Traffic Collision Avoidance System (TCAS) Operations.	33
7.25.	Automatic Dependent Surveillance-Broadcast (ADS-B) Operations.....	33

	7.26. Electronic Devices.....	33
	7.27. Jamming and Interference.....	34
	7.28. Aircraft Servicing and Ground Operations.....	34
	7.29. Forced or Precautionary Landings.....	34
	7.30. En Route Navigation and Instrument Approach Minimums.....	35
	7.31. Radar Altimeter Procedures (RADALT).....	36
	7.32. Radar Advisories.....	36
	7.33. Advisory Calls.....	36
	7.34. Passenger Guidelines.....	37
	7.35. Passengers Occupying Crew Positions.....	38
	7.36. Personnel Restraints.....	38
Table	7.1. US and Foreign Military SOF Personnel Passenger Classification and Restraint Guidance.....	40
	7.37. Customs, Immigration, and Agriculture Inspections.....	41
	7.38. Utilization of Civilian Law Enforcement or Medical Personnel.....	42
	7.39. Crew Debriefing.....	42
	7.40. Hazardous Material Procedures.....	42
	7.41. Hazardous Medical Equipment.....	44
Chapter 8—FLYING TRAINING GUIDANCE		46
	8.1. General.....	46
	8.2. Training Aircraft Not Capable of Flight.....	46
	8.3. Emergency Procedures.....	46
	8.4. Instrument Meteorological Conditions (IMC) TF/TA Training.....	46
	8.5. Obstacle Clearance for Terminal Area Operations Training.....	46
	8.6. Live-Hoist Training. WARNING.....	46
	8.7. Evasive Maneuver Training.....	47
	8.8. Electronic Countermeasures (ECM) Training Guidance.....	47
	8.9. Flare and Chaff Policy.....	47
Chapter 9—MISSION EMPLOYMENT		48
	9.1. Formation Flying.....	48
	9.2. Terminal Operations.....	48
	9.3. Alternate Insertion/Extraction.....	48
	9.4. Aerial Delivery.....	52

9.5.	Vehicles, Motorcycles, and All Terrain Vehicles (ATV).	53
9.6.	Weapons Employment.	53
9.7.	Peacetime Search and Rescue (SAR) On-Scene Procedures.	53
9.8.	Non-Tactical Shipboard Operations.	54
Chapter 10—LOCAL OPERATING PROCEDURES		55
10.1.	General.	55
Chapter 11—OPERATIONAL REPORTS, FORMS		56
11.1.	General.	56
11.2.	AFSOC Form 97, AFSOC Aircraft Incident Report.	56
11.3.	AF Form 457, USAF Hazard Report.	56
11.4.	AF Form 651, Hazardous Air Traffic Report (HATR).	56
11.5.	AF Form 711B, USAF Mishap Report.	57
11.6.	Reports of Violations/Unusual Events or Circumstances.	58
Chapter 12—FLIGHT ENGINEER PROCEDURES AND FORMS		60
12.1.	General.	60
12.2.	Unscheduled Maintenance.	60
12.3.	Authority to Clear a Red X.	60
12.4.	In-Process Inspections.	60
12.5.	Refueling/Defueling.	60
12.6.	Aircraft Configuration.	60
12.7.	Forms Management.	60
Attachment 1—GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION		62
Attachment 2—REQUIRED PUBLICATIONS LISTING		73

Chapter 1

OVERVIEW

1.1. General. This volume provides operational guidelines for CV-22 aircraft. It is written for normal and contingency operations to reduce procedural changes at the onset of contingencies. Training procedures are included. Air Force Special Operation Command Standardization/Evaluation (AFSOC/A3V) has overall responsibility for the administration of this volume.

1.2. Applicability. This manual is applicable to all individuals and units operating CV-22 aircraft unless specifically exempted by this manual. Copies will be made available to all aircrew members operating the CV-22. **(T-1).**

1.2.1. Unless otherwise stated in this manual, the CV-22 is considered a helicopter for the purpose of terminal area operations (takeoff, departure, approach, and landing) or when configured ≥ 60 nacelle. **(T-1).**

1.2.2. The CV-22 is considered a fixed-wing aircraft in all other modes of flight. **(T-1).**

1.3. Key Definitions.

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

1.3.2. "Should" indicates a recommended procedure.

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

1.3.4. **“WARNING:”** Operating procedures, techniques, etc., which will result in personal injury or loss of life if not carefully followed.

1.3.5. **“CAUTION:”** Operating procedures, techniques, etc., which will result in damage to equipment if not carefully followed.

1.3.6. **“Note:”** Operating procedures, techniques, etc., which are essential to emphasize.

1.3.7. See [Attachment 1](#), Glossary of References and Supporting Information for additional terms.

1.4. Deviations and Waivers. Do not deviate from the policies and guidance in this manual, except to protect life, for safety of flight, or when an in-flight emergency requires immediate action.

1.4.1. Deviations. Although this publication provides guidance for aircraft operations under most circumstances, it is not a substitute for sound judgment. When it is necessary to protect the crew and aircraft from a situation not covered by this manual, the Pilot in Command (PIC) has ultimate authority and responsibility for the course of action to be taken. Report deviations, in addition to the requirements of the AFMAN 11-202, Vol 3, AFSOCSUP, through channels to MAJCOM/A3 within 48 hours, followed by a written report, if requested.

1.4.2. Waiver Authority. Unless otherwise indicated, Director of Operations, Air Force Special Operations Command (AFSOC/A3) is the waiver authority for this manual. AFSOC/A3 may delegate this authority to the Commander Air Force Special Operations Forces (COMAFSOF) for operationally assigned forces. Delegation of waiver authority will

be done in writing and will specify which portions of this manual may be waived by the COMAFSOF. Request waivers through appropriate command and control channels.

1.5. Distribution. All CV-22B crewmembers and authorized personnel will have this publication available to them. **(T-1)**.

1.6. Development of New Equipment and Procedures. Units are encouraged to suggest new equipment, methods, tactics, and procedures. Coordinate these requirements through MAJCOM and 18th Flight Test Squadron. Units will obtain AFSOC approval prior to testing of new procedures or equipment. **(T-2)**.

Chapter 2

ROLES AND RESPONSIBILITIES

2.1. General. The AFSOC Command and Control (C2) system is based on the principles of centralized monitoring and decentralized control and execution. The result is a C2 mechanism which keeps the Commander, Air Force Special Operations Command (AFSOC/CC) informed of the current status of AFSOC forces while enabling the Wing (WG/CC) or Group Commander (OG/CC) to exercise control over day-to-day operations. Waiver request will be the responsibility of the C2 agency with the operational control of the mission. All waivers will be coordinated through Stan/Eval channels. **(T-3).**

2.2. Command and Control. AFSOC, as the service component to United States Special Operations Command (USSOCOM), exercises Operational Control (OPCON) of Continental United States (CONUS) based units. When deployed, the Geographic Combatant Commanders generally exercise OPCON of the Theater Special Operations Commands (TSOC) to which AFSOC assets are assigned. In practice, responsibility for planning and executing AFSOC missions is routinely delegated to the WG/CC or OG/CC. The WG/CC or OG/CC, in turn, exercises control of non-close hold missions through the command post supporting the wing or group. In the event assigned forces undergo a Change of Operational Control (CHOP), responsibility for mission monitoring passes from the wing or group C2 facility to the gaining command. Changeover will be accomplished in accordance with the pertinent Operational Plan, Operational Order, or deployment or execution order. **(T-2).**

2.3. Waiver and Approval Authorities.

2.3.1. WG/CCs or equivalent hold final waiver approval authority for the following:

2.3.1.1. Deployments.

2.3.1.2. Air Apportionment Allocation Conference taskings.

2.3.1.3. Joint Air Apportionment Allocation Conference (JAAAC) taskings.

2.3.1.4. Joint Combined Exchange Training (JCET)/Counter Narcotics Training missions.

2.3.1.5. Other specified missions as tasked via the Special Operations Forces (SOF) Air Tasking Order (ATO) in Special Operations Forces Applications (SOFAPPS).

2.3.1.6. CONUS and Outside the Continental United States (OCONUS) forces depart a TSOC/Joint Special Operations Air Component (JSOAC) Area of Responsibility (AOR) en route to United States Northern Command (NORTHCOM) AOR.

2.3.1.7. Air Reserve Component (ARC) forces (under Title 10).

2.3.1.8. Depart home station for AFSOC-directed contingencies, deployments and exercises (under Title 10).

2.3.2. Operational waivers will be coordinated through Stan/Eval channels. **(T-3).** Waiver requests will normally be the responsibility of the C2 agency with the operational control of the mission. **(T-3).**

2.3.3. WG/CC OPCON terminates when forces enter a TSOC/JSOAC AOR and picks up when forces exit a TSOC/JSOAC AOR.

2.4. Mission Monitoring. Mission monitoring and flight reporting duties will be accomplished in accordance with AFMAN 11-202, Vol 3, AFSOCSUP, *Flight Operations*, Attachment 6, Command And Control (C2) of AFSOC Forces, wing-level operations instructions (OI), and/or locally developed procedures outlined in **Chapter 10** of this publication.

2.4.1. PIC or mission commander flight reporting duties.

2.4.1.1. Stations with C2 Agency. Aircrews will provide a “30-minute out call” or as soon as possible within radio reception. **(T-3)**. Transmit a Ultra-High Frequency (UHF) or Very High Frequency (VHF) arrival advisory to the destination C2 agency approximately 30 minutes prior to arrival.

2.4.1.2. Stations without Mobility Air Force (MAF) C2 Agency. Transmit mission data (arrival, departure, and advisory messages) to the controlling C2 agency, within 30 minutes after landing, by any means available. (Preference in the following order: Defense Switched Network (DSN)/commercial telephone, high frequency (HF) phone patch, Iridium phone). For critical C2 communications, e.g., aircraft waiver request, maintenance delay, etc., voice communications are the primary method.

2.4.1.3. Provide controlling C2 agency with daily Deployed Status Report (DSR).

2.4.1.4. Reporting Agencies. See AFMAN 11-202 Vol 3 MAJCOMSUP.

2.5. Aircraft Commander Responsibility and Authority. Designate a PIC for all flights on the MAJCOM-approved flight authorization. In addition to the requirements of AFMAN 11-202, Vol 3, PICs are:

2.5.1. In command of all aircrew members and responsible for all persons aboard the aircraft.

2.5.2. Responsible for the welfare of their crew and the safe accomplishment of the mission.

2.5.3. The final authority for accepting a waiver affecting the crew, mission, or aircraft.

2.5.4. Charged with keeping the applicable commander informed of mission progress and difficulties.

2.5.5. Responsible for the timely reporting of aircraft movements in the absence of a mission commander.

2.5.6. For required maintenance support when away from home station, PICs will coordinate with the designated mission monitoring agency.

2.6. Mission Commander (MSN/CC). A MSN/CC will be designated when more than one aircraft or crew is deployed away from home station for any reason. **(T-3)**. The MSN/CC is responsible for overall mission accomplishment, including all personnel and equipment deployed in support of the mission, unless coordinated prior to departure.

2.7. Flight Lead. The primary purpose of the CV-22 flight lead certification is to mitigate risk to mission. When designated, a flight lead is responsible for tactical employment and execution. The flight lead is accountable to the squadron commander (SQ/CC) in garrison, or the MSN/CC when deployed or on temporary duty (TDY).

2.7.1. Training. Squadrons should assign a certified flight lead for exercises or training events with ground units, or any multi-lateral operations. Consider the unit(s) involved, the event complexity (number of assets, formation size, etc.), and the specific training conducted.

Squadrons should also consider the acceptable level of risk (ALR), as defined by the COMAFSOF or designated authority. In most cases, the SQ/CC determines ALR for routine training or exercises.

2.7.2. Combat. Squadrons will have a flight lead available for use during combat operations. **(T-3)**. Use of a certified flight lead during combat operations is at the discretion of the mission commander based on the assessed risk of individual missions, and the ALR prescribed by the designated authority. In most cases, the COMAFSOF determines ALR for combat operations.

2.7.3. Mission rehearsals in preparation for specific or named contingency operations deemed national priority will have a flight lead. **(T-3)**.

2.7.4. Flight leads will not dual hat as mission commanders. **(T-3)**.

2.8. Senior Enlisted Leader. A Senior Enlisted Leader (SEL) will be designated in conjunction with a mission commander per **Paragraph 2.6. (T-3)**. The SEL will be an instructor flight engineer (FE) or higher and should be an experienced Senior Noncommissioned Officer. **(T-3)**. The SEL may be a primary crew member when the unit commander so designates. However, full crew compliments required for exercise or deployment, not including the SEL, should be planned to the max extent. The SEL duties include, but are not limited to:

2.8.1. Principal advisor to the Mission Commander on operational requirements.

2.8.2. Directly advises Mission Commander on discipline, health, morale & welfare, policy execution, and aircrew health.

2.8.3. Focal point for medical support, adequate billeting, sustenance, transportation, and administrative action.

2.8.4. Direct conduit to in-place Personnel Support for Contingency Operations (PERSCO) team for personnel accountability and management.

2.9. Mission Clearance Decision. The final decision to delay a mission may be made either by the commander with directive authority or the aircraft commander when, in the opinion of either, conditions are not safe to start or continue a mission. Final responsibility for the safe conduct of the mission rests with the aircraft commander. If the aircraft commander refuses a mission, it will not depart until the conditions have been corrected or improved so that the mission can operate safely. **(T-3)**. Do not designate another aircraft commander and aircrew to take the same mission under the same conditions for purposes of circumventing this restriction. **(T-3)**.

2.9.1. Diverting or rerouting a mission must be authorized by the directive authority, except in an emergency or when required by en route or terminal weather conditions or facilities. In the event of an emergency or weather-related divert or reroute, the Mission Commander or aircraft commander must notify the controlling authority as soon as possible.

2.9.2. The controlling agency directing the diversion or rerouting is responsible for ensuring destination requirements or facilities are adequate for the aircraft and aircrew.

2.9.3. The aircraft commander will notify the controlling agency of any aircraft or aircrew limitations that may preclude diverting or rerouting the mission. **(T-3)**.

2.9.4. When directing an aircraft to an alternate airfield, the controlling agency should ensure the aircraft commander is provided existing and forecasted weather for the alternate.

2.10. Civilian Law Enforcement Support. When designated to support civilian law enforcement, it is the policy of the Department of Defense to assist civilian law enforcement officials to the extent practicable and permitted by law. Refer to AFI 10-801, *Defense Support of Civil Authorities* and AFPD 10-8, *Defense Support of Civil Authorities (DSCA)*, for United States Air Force (USAF) responsibilities for assistance to civil authorities.

Chapter 3

CREW COMPLEMENT AND MANAGEMENT

3.1. Aircrew Qualification. Each person assigned as a primary crew member must be qualified or in training for qualification in that crew position and mission. **(T-3)**.

3.1.1. Basic Aircraft Qualification (BAQ). Crew members may perform primary crew duties on any non-mission sortie and on mission sorties (including unilateral training, joint training, and exercises) when receiving mission qualification training or evaluations under the supervision of a qualified instructor or flight examiner in their respective crew position.

3.1.2. Basic Mission Capable (BMC). Crew members may perform primary crew duties on any unilateral training mission. For other missions, the unit commander must determine the readiness of each mission ready (MR) or combat mission ready (CMR) crew member to perform primary duties appropriate to the mission being accomplished.

3.1.3. Noncurrent (NC) or unqualified (UNQ) pilots may perform crew duties only on designated training or evaluation missions under the supervision of a qualified instructor or flight examiner pilot. Both pilots must be fully qualified unless exempt by DAFMAN 11-401, *Aviation Management*. An instructor pilot (IP) will be in a pilot's seat:

3.1.3.1. When an individual who is not fully qualified in the specific type aircraft, mission, and/or maneuvers being flown occupies a pilot seat. **(T-2)**.

3.1.3.2. When required by applicable operational instructions or at the discretion of the instructor pilot. **(T-3)**.

3.1.4. NC or UNQ FEs may perform duties in their primary crew position on any mission when under the direct supervision of a qualified instructor or flight examiner in their respective crew position or in accordance with AFMAN 11-2CV-22, Vol 1, *CV-22 Aircrew Training*, Chapter 4.

3.1.5. When a NC or UNQ pilot or FE occupies a primary crew position, the crew member and the instructor or flight examiner fulfills the requirement for one primary position as specified in **Table 3.1**.

3.2. Crew Complement. The crew complement for operations is specified in the flight manual and **Table 3.1**. The OG/CC or COMAFSOF may waive the crew complement specified in **Table 3.1** down to the flight manual minimum crew requirement.

3.2.1. Additional Crew Members (ACM). An ACM is one assigned in addition to the normal aircrew complement required for a mission. Air Education Training Command (AETC) crews will refer to DAFMAN 11-401, *Aviation Management*, AETCSUP, for ACM guidance.

3.2.2. Briefings. The aircraft commander will ensure all ACMs are briefed on emergency procedures and egress. **(T-3)**.

3.2.3. Logging of Flying Time. Log flying time in accordance with DAFMAN 11-401.

Table 3.1. Crew Complement.

Mission	Pilot	Copilot	FE
Engine Crank ⁹		1	1
Engine Ground Run ^{1,6}	1		1
Ferry ² /Functional Check Flight ³ Contact ³ /Instrument ³	1	1	1
Day ⁴ /Night Tactical/Night Remotes/LVA	1	1	2
Hot Refueling ^{5,6,7}		1	2
Day Remotes ⁸	1	1	1

Notes:

1. Minimum crew is either 1 pilot and 1 FE or 2 pilots. **(T-1)**.
2. Crew members non-current in mission events may still conduct Functional Check Flights (FCFs).
3. This mission category includes all basic non-tactical operations to and from improved/approved areas (airfields, helipads, etc.). Night Vision Device Qualified crews may use night vision goggles (NVGs) as appropriate to improve general flight safety.
4. At the discretion of the SQ/CC, crew complement may be 2 Pilots and 1 FE. Do not reduce crew complement if actual Low Visibility Approaches (LVAs) are anticipated. **(T-2)**.
5. Only one FE is required while operating at a location with sufficient ground crew to perform hot refueling duties.
6. A minimum of two pilots and one FE are required to taxi the aircraft. **(T-3)**.
7. One FE can act as the hot refueling pad supervisor during multiple position hot refueling operations.
8. The FE will move to the tail scanner position for all remote area take off and landings.
9. Minimum crew is ether 1 pilot or 1 FE.

3.3. Interfly. Interfly is the exchange and/or substitution of aircrew members from separate MAJCOMs to accomplish flying missions. OG/CC or COMAFSOF is the approval authority for interfly of Air Force crew members on CV-22 aircraft under their control. AFSOC/A3 is the approval authority for all other types of interfly. The aircrew and flight authorization will be in accordance with DAFMAN 11-401.

3.3.1. AETC and AFSOC will provide interfly for AFSOC crew members to fly on AETC training aircraft and devices and for AETC crew members to fly on AFSOC aircraft and devices. An AFSOC/AETC Memorandum of Agreement (MOA) governs the 58th Special Operations Wing (SOW) interfly requirements.

3.3.2. Air Combat Command (ACC) and AFSOC will provide interfly for ACC crew members to fly on AFSOC aircraft and devices. An AFSOC/Air Combat Command (ACC) MOA governs ACC Weapons Instructor Course (WIC) personnel interfly requirements.

3.3.3. Air Force Materiel Command (AFMC) and AFSOC will provide interfly for AFSOC crew members to fly on AFMC test aircraft and devices and for AFMC crew members to fly on AFSOC aircraft and devices. An AFSOC/AFMC MOA governs the interfly requirements.

3.3.4. The purpose of the interfly is to ensure AFSOC aircrews are familiar with current AETC training methods, procedures, and courseware; to ensure AETC and ACC aircrews are familiar with the latest AFSOC missions, tactics, and needs; and for augmentation, continuation training, test support, and other purposes mutually agreed upon by the respective MAJCOM/A3 and the AFSOC/A3.

3.4. Intrafly. Intrafly is the exchange and/or substitution of aircrew members from separate units under the same MAJCOM to accomplish flying missions. CV-22 aircrew assigned to AFSOC units may conduct intrafly between units.

3.5. Scheduling Restrictions. Reference AFMAN 11-202, Vol 3, and appropriate MAJCOM supplement for scheduling restrictions.

3.6. Maximum Flight Duty Period (FDP). In addition to AFMAN 11-202, Vol 3 MAJCOMSUP, the following restrictions apply:

3.6.1. The basic FDP is 16 hours providing no mission events (including air refueling), training, or Functional Check Flights (FCF) are accomplished after 12 hours. **(T-3)**. Maintenance ground runs may be accomplished after 12 hours but will not be accomplished if they are part of an open FCF card or after 16 hours regardless. **(T-3)**. If the autopilot (coupled modes) is not fully operational for the required mission profile, or its use is denied for more than 4 hours, the FDP will be 12 hours. **(T-3)**. A fully operational autopilot is defined as a system which is capable of coupling course (Electronic Navigation (ENAV) or Inertial Navigation (INAV)), and altitude. For the purposes of this paragraph, NVG terminal operations to a prepared surface are not considered mission events.

3.6.2. FDP for tactical events is 12 hours. PIC may extend crew duty day up to 2 hours for tactical events for a maximum of 14 hours. FDP waiver approval authority beyond 14 hours for tactical events and 16 hours for non-tactical events is the OG/CC or COMAFSOF. **(T-3)**. **Note:** Use of NVGs is authorized throughout the flight duty period.

3.7. Crew Rest. In addition to the restrictions in AFMAN 11-202, Vol 3, comply with the following:

3.7.1. Crew members departing on missions scheduled to recover away from home station should be notified 24 hours before reporting for the mission. The first 12 hours are designed to allow crew members to resolve personal affairs. During these first 12 hours, a crew member may perform limited nonflying duties, however the second 12-hour period shall be free from disturbances. **(T-3)**.

3.7.2. Post-mission crew rest applies to all flying TDYs and begins upon the final return of an individual to home station and runs continuously until completed. Post-mission crew rest must be completed before starting pre-departure crew rest for a subsequent mission. **(T-3)**. Do not require a crew member to get immunizations, engage in ground training, perform standby or squadron duties, or perform any other activity that would violate crew rest. **(T-3)**.

3.7.3. Post mission crew rest shall be computed at the rate of 1 hour off for every 3 hours of TDY not to exceed 96 hours. **(T-3)**.

3.8. Alert Duty. Refer to AFMAN 11-202, Vol 3, and AFMAN 11-202, Vol 3, MAJCOMSUP.

3.9. Alert Procedures.

3.9.1. Reference AFMAN 11-202, Vol 3, MAJCOMSUP for FDP guidance.

3.9.2. Alert Aircraft. Complete a normal preflight, configuration check, and any other system check deemed necessary by the flight lead, PIC or mission commander. After 72 hours on alert, aircrews should give maintenance access to inspect the aircraft and re-accomplish the alert acceptance procedure. **Exception:** Maintenance is authorized to service fluid levels and minor maintenance at the discretion of the Mission Commander.

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

3.9.2.2. Climatic Protective Facilities. During periods of extreme cold or severe weather, every effort should be made to shelter alert aircraft and essential equipment in a hangar to ensure operational readiness in the event of a mission.

3.9.3. Flying Alert Aircraft. The alert aircraft may be flown for purposes other than actual alert missions provided the following conditions are complied with:

3.9.3.1. Alert requirements can be met with sufficient fuel to meet mission requirements.

3.9.3.2. Communication contact is maintained with the primary controlling agencies.

3.9.3.3. A qualified (for the alert mission) crew is on board.

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

3.9.3.5. If maintenance actions are not required, the aircraft can be placed on alert once the thru-flight inspections are completed. Limited maintenance actions can be performed at the discretion of the Mission Commander.

3.9.4. Prior to each alert period provide the alert aircrew with a general briefing. Update the briefing every 24 hours to include weather, local Notices to Airmen (NOTAM), latest flight crew information file (FCIF) information, special instructions, and any other appropriate items.

3.9.5. A DD Form 365-4, *Weight and Balance Clearance Form F-Transport/Tactical*, will be prepared for the alert aircraft. Canned DD Form 365-4 is authorized, provided the aircraft configuration for the alert period does not change. The alert crews are authorized to prepare a takeoff and landing data (TOLD) card using the worst weather conditions expected for the alert period.

3.9.6. When an alert crew change occurs and the aircraft remains unchanged, the oncoming alert crew will complete an aircraft preflight, and should as a minimum, check applicable items listed below:

3.9.6.1. Air Force Technical Order (AFTO) Form 781, *ARMS Aircrew/Mission Flight Data Document*.

3.9.6.2. Aircraft interior and exterior for proper configuration and special equipment.

3.9.6.3. Fuel quantity.

3.9.6.4. Survival and emergency equipment.

3.9.6.5. Navigation and communication equipment.

3.9.6.6. Hydraulic and oil reservoirs via Ground Refuel/Defuel Panel (GRDP).

3.9.6.7. Publications.

3.9.7. Should an aircraft remain on alert for more than 72 hours, both maintenance and operations pre-flights are required.

3.9.8. Once the aircraft is accepted for alert, the aircraft commander will ensure an entry is made in the AFTO Form 781H, *Aerospace Vehicle Flight Status and Maintenance Document*, stating as a minimum, the local date and time the aircraft operations preflight was completed. **(T-2)**.

3.9.9. Alert aircraft are off limits to all personnel except alert crew members.

3.9.10. If maintenance was performed on an alert aircraft, upon receiving orders to launch, the crew will check any area/system in which maintenance was performed prior to flight.

Chapter 4

COMMAND OPERATING GUIDELINES

4.1. General. This chapter provides guidance for operations with certain degraded equipment. If the aircraft commander elects to operate with degraded equipment or aircraft systems, coordinate mission requirements (e.g., revised departure times, fuel requirements, maintenance requirements, etc.) prior to flight with the mission control agency to ensure the decision does not adversely impact follow-on missions.

4.2. Responsibility. The final responsibility regarding required equipment for a mission rests with the aircraft commander. If one aircraft commander accepts an aircraft to conduct a mission or mission segment with a degraded or inoperative item or system, this acceptance does not commit that aircraft commander, or a different aircraft commander, to subsequent operations with the same item or system inoperative. When the aircraft commander considers an item essential, designate the component mission essential (ME) on the AFTO Form 781A, *Maintenance Discrepancy and Work Document*, and the item will be repaired or replaced prior to departure. **(T-3)**.

4.2.1. If any condition exists with Naval Air Training and Operating Procedures Standardization (NATOPS) directed landing criteria, before deciding whether to continue the mission, aircrew should consider factors such as threat, remote location, local repair capability, practicality of a maintenance recovery team launch, remaining aircraft system redundancy, mutual support, etc.

4.2.2. If a land as soon as practical condition exists, the aircrew is authorized to continue the mission as scheduled and briefed at the aircraft commander's discretion. Consider factors in **Paragraph 4.2.1**.

4.2.3. If a land as soon as possible or immediately condition exists while the aircraft is on the ground, a takeoff should not be attempted unless conditions warrant. Consider factors in **Paragraph 4.2.1**.

4.2.4. The radar altimeter (RADALT) will be operational for LVAs, live Alternate Insertion/Extraction (AIE), and all night low-level events. **(T-3)**.

4.3. Environmental Control System (ECS). If environmental conditions permit, the aircraft may be flown without ECS. Crew comfort, type of mission, and length of mission should be considered when deciding whether to proceed.

4.4. Fuel Systems. Flight crews will reduce trapped fuel from fuel calculations and consider center of gravity (CG) limits during degraded fuel system operations. **(T-3)**. Consider potentially trapped fuel (CG limits) and decreased range should further degradation occur.

4.4.1. Fuel Pumps. All suction lift pumps will be operational prior to initial departure. **(T-3)**. Boost pumps should be operational prior to initial departure.

4.4.2. Operations will not be conducted with any malfunction in the fuel system that affects the fuel quantity warning system, except on life or death missions. **(T-3)**.

4.5. Landing Gear. Upon encountering a landing gear malfunction that cannot be resolved with flight manual guidance, only a full stop landing will be made. **(T-3)**. The discrepancy will be corrected prior to the next flight. **(T-3)**. **Exception:** If repair capability does not exist and a positive

determination is made that further flight can be accomplished with the gear down and locked, the aircraft may be flown to a destination where repair capability exists provided the gear is not moved from the down and locked position. Required en route stops are authorized. Takeoffs and landings should be minimized and made from a hover.

4.6. Navigation Systems. The aircraft should not be flown with more than one inertial navigation system (INS) failure, as this would remove any redundancy in the aircraft attitude indicating system and flight control system.

4.6.1. Global Positioning System (GPS). Without an operating GPS (INS only), navigation in all environments is degraded and requires constant vigilant monitoring and frequent updates to ensure the INS solution is within operating limits. Without a functioning GPS, precision events such as LVA, night water operations etc., should not be attempted.

4.6.2. When GPS operation is in question, an enhanced interrupted alignment should be accomplished.

4.7. Cockpit Displays. If the standby attitude indicator, standby flight instrument (SFI), or any of the standby pitot-static instruments are inoperative, the aircraft may only be flown in day visual meteorological conditions (VMC). Flight in night VMC is permitted if night vision goggles (NVG) are used.

4.7.1. As a minimum, one operating multi-function display (MFD) is required for each pilot's position with both display electronics units (DEUs) & display processing modules (DPMs) operational. With only one DEU operational, the side corresponding to the operating DEU must have both MFDs operational and at least one on the nonoperational side. **(T-3)**.

4.8. Ice Protection System (IPS). Aircrews will conduct the IPS PFBIT prior to flight when the potential for icing conditions exist. Aircraft with a fully functioning IPS may operate into known or forecasted icing conditions up to and including moderate, however aircrew should still use sound judgment and avoid icing conditions if able (change altitude, routing, ect). If any part of the IPS is degraded, operate in accordance with 1V-22(C)B-1, *NATOPS Flight Manual, CV-22 Tiltrotor*, Figure 4-18, Minimum Icing Protection Requirements for Icing Conditions.

Chapter 5

AIRCRAFT SECURITY

5.1. General. Tilt-rotor aircrew will follow aircraft security, arming, anti-hijacking guidance per the holdover AFMAN 11-202, Vol 3 AFSOCSUP Attachment 10. The Aircraft Force Security Recommendation Matrix is located in AFMAN 11-202, Vol 3 AFSOCSUP Attachment 10.

Chapter 6

MISSION PREPARATION

6.1. Flight Planning Systems. The primary flight/mission planning system is XPlan. Upgraded or new versions will be released and authorized by the AFSOC/A3 for use after completion of applicable testing (OPR: AFSOC Computer Systems Flight/Digital Dagger (CSF/SCP)).

6.1.1. Electronic Data Transfer. Aircrews will not use unapproved versions of any system to load aircraft avionics without AFSOC CSF/SCP approval. **(T-2)**.

6.1.2. AFSOC CSF/SCP will periodically publish a listing of approved systems.

6.2. Coordinates and Datum. Aircrew will confirm coordinate system and common datum with their supported personnel during the mission planning process.

6.2.1. WGS84 is the official Department of Defense (DoD) positional reference system. **(T-3)**. Failure to plan navigation and HLZs using a common datum may result in errors of up to several miles.

6.2.2. The default coordinate system for CV-22 operations is 8 digit Military Grid Reference System (MGRS) coordinates. **CAUTION:** When operating near the Equator or in North Polar regions, aircrew will confirm the MGRS grids are accepted correctly by the aircraft system. If the aircraft changes the coordinate, convert original MGRS to Lat/Long and re-input into the aircraft system.

6.3. Flight Logs. Prepare a MAJCOM approved flight log form for each mission and include the following as a minimum: turn points, headings, and distances, estimated time en route (ETE), minimum safe altitudes (MSA), and fuel computations. A flight log is not required if the above information is included on the map.

6.4. Mission Kits.

6.4.1. The following items will be on-board the aircraft for all missions. **(T-3)**. Publications, navigation charts, flight information publications (FLIP) (or equivalent), and Flight Manual Pocket Checklists. These items may be in electronic format as long as authorized Electronic Publication (EPUBs) is on board and easily accessible. Local area functional check flights require only an aircraft flight manual on-board.

6.4.2. Mission/Navigation kits weighing less than 200 lbs may be secured with seat belts.

6.4.3. Units may supplement kits. The following item will be included: AF Form 664, *Aircraft Fuels Documentation Log*. **(T-3)**.

6.5. Weather Planning.

6.5.1. OG/CCs may establish minimum weather criteria (ceiling or visibility) less than day minimums for flights during which only hovering maneuvers will be performed (e.g., hover checks, Operational Check Flight (OCF), Functional Check Flight (FCF)).

6.5.2. Weather Minimums:

6.5.2.1. Visual Flight Rules (VFR) Minimums. Comply with AFMAN 11-202, Vol 3, weather minimums unless local or theater specific-weather minimums are more restrictive.

In the absence of more restrictive criteria, the following minimum weather criteria (ceiling/visibility) apply during all VFR operations:

6.5.2.1.1. Day/NVG.

6.5.2.1.1.1. Vertical Takeoff and Landing (VTOL)/Conversion (CONV) (≤ 80 Knots Calibrated Airspeed (KCAS)): 1 statute mile (sm) clear of clouds.

6.5.2.1.1.2. VTOL/CONV (≥ 81 KCAS): 500/2 sm.

6.5.2.1.1.3. Airplane (APLN) (< 60 Nacelle): 1,000/3 sm.

6.5.2.1.2. Night Unaided (APLN/CONV/VTOL): 1,500/3 sm.

6.5.2.1.3. Terrain Following/Terrain Avoidance (TF/TA) procedures during combat or contingency operations are allowed when weather minimums are less than stated in [Paragraph 6.5.2.1.1](#) with COMAFSOF or equivalent approval.

6.5.2.2. Instrument Flight Rules (IFR) Minimums. Use category A approach minimums and comply with AFMAN 11-202, Vol 3, helicopter weather minimums and procedures unless local or theater specific weather minimums are more restrictive. Instrument meteorological conditions (IMC) TF flight may be accomplished on published IFR Military Training Routes (IR) or other approved, surveyed training routes.

6.6. Illumination and NVG Requirements. *WARNING:* Lack of sufficient illumination may prevent NVG contour operations in otherwise VMC conditions. Consideration should be given to using higher en route altitudes if possible with current mission, enemy, terrain, troops, time, and civilian (METT-TC) considerations.

6.6.1. NVG low-level operations require sufficient illumination to safely identify terrain and hazards commensurate with aircraft speed and altitude.

6.6.2. The decision on whether sufficient illumination exists to complete the mission rests with the aircraft commander.

6.6.3. Any training or operational low-level flight, as defined by [Paragraph 7.1](#), planned when the effective illumination (regardless of methodology or measurement) is forecast to be less than 10% incurs greater risk; during these periods of low illumination, these missions require:

6.6.3.1. Increased operational risk and discussion of mitigation procedures.

6.6.3.2. For training flights: an operational TF radar or forward looking infrared camera, and moving map with Digital Terrain Elevation Data (DTED) loaded are required.

6.6.3.3. For operational flights: flight may be conducted with all systems listed in [Paragraph 6.6.3.2](#) degraded or inoperative, if, on a case-by-case basis, it can be determined by the approving official that the increased mission risk is still commensurate with mission benefit.

6.7. Adverse Weather Planning. Flight in the vicinity of thunderstorms will be conducted in accordance with AFMAN 11-202, Vol 3, and appropriate MAJCOM supplement's fixed-wing procedures.

6.7.1. Planned flight in the vicinity of thunderstorms requires operable weather radar.

6.7.2. Do not fly directly above (within 2,000 ft of) thunderstorms or cumulonimbus clouds. If unable to clear thunderstorms or cumulonimbus clouds by at least 2,000 ft vertically, maintain the following clearance:

6.7.2.1. 10 nautical miles (nm) below flight level 230 or 5 nm for tactical low-level operations. **CAUTION:** Aircraft damage is possible 20 nm or more from any thunderstorm.

6.8. Fuel Planning. The following fuel planning figures are intended to meet the requirements of AFMAN 11-202, Vol 3, MAJCOMSUP.

6.8.1. For all flights VFR or IFR, landing must occur at destination in accordance with AFMAN 11-202, Vol 3, MAJCOMSUP, or 1,500 pounds, whichever is greater. **(T-2).**

6.8.2. For flight planning purposes, fuel requirements for descent, approach, and missed-approach will be no less than 1,200 pounds. **(T-2).**

6.8.3. Aircraft Commanders will declare "Minimum Fuel" when fuel calculations indicate a landing at the intended destination below 1,500 lbs. **(T-2).** "Emergency Fuel" will be declared when fuel calculations indicate a landing at the intended destination below 1,200 lbs. **(T-2).**

6.9. Single Engine (OEI) Planning. Aircrews will mission plan to ensure their airplane (APLN) mode OEI service ceiling will provide adequate terrain clearance, or sufficient escape options, for the route to be flown should an engine fail. **(T-3).** OEI level flight capability in VTOL/CONV is not required when vertical takeoff and landing (VTOL)/conversion (CONV) flight will only be conducted for transitory periods in conjunction with takeoff and landing. **(T-3).** SQ/CC, director of operations, or MSN/CC or Approving Authority approval is required for extended or en route operations in VTOL/CONV if 500 ft above ground level (AGL) OEI capability is not available.

6.10. En Route Planning. While conducting operations below 3,000 ft AGL, the following are required on mission planning documents:

6.10.1. Emergency Safe Altitude (ESA). ESA is an altitude that will provide positive terrain clearance in IMC during situations that require the exiting of the low-level environment. To compute ESA, add 1,000 ft (2,000 ft in mountainous terrain) to the highest obstacle or terrain feature within 10 nm of route centerline or intended flight path, rounded up to the next 100-foot increment. Use of area ESA is recommended whenever possible; however, a single ESA is sufficient when there are no significant changes in topography.

6.10.2. Minimum Safe Altitude (MSA). MSA provides terrain clearance and limited threat avoidance during situations that require the interruption of low-level operations. To compute MSA for each leg or leg segment, add 500 ft (or the planned set clearance for TF operations) to the elevation of the highest terrain or obstacle within 3 nm of route centerline or the planned flight path, and round up to the next 100-foot increment.

6.10.2.1. To compute MSA during aerial refueling, add 1,000 ft to the elevation of the highest terrain or obstacle within 5 nm of route centerline or the planned flight path, and round up to the next 100-foot increment.

6.11. Pre-Mission Briefing Requirements.

6.11.1. Use the applicable briefing guides in AFMAN 11-2CV-22, Vol 3, CL-1, *Flight Crew Checklist and Signal Tables*, for briefings. The aircraft commander will ensure their crews

receive a briefing prior to each mission, covering all specific areas to be accomplished. **(T-3)**. Units may convert AFMAN 11-2CV-22, Vol 3, CL-1 briefing items to electronic briefing formats if desired or as defined in unit standard operating procedures (SOP).

6.11.2. If critical pre-mission duties conflict with the briefing, the aircraft commander may excuse crew members. Prior to engine start the aircraft commander will give a mission brief to any excused crew members detailing all areas pertinent to their duties.

6.11.3. Passenger Briefings. Prior to each flight, the aircraft commander will ensure that all passengers are briefed in accordance with AFMAN 11-202, Vol 3, MAJSCOMSUP. **(T-3)**.

6.11.4. In addition to the minimum briefing items contained in AFMAN 11-202, Vol 3, MAJCOMSUP, the briefing will include demonstration of seat belt and egress systems. **(T-3)**. All overwater flights will include a briefing on personal and aircraft-installed life-saving equipment; e.g., life preserver use and life rafts. **(T-3)**.

6.12. Flight Crew Information File (FCIF). In addition to requirements listed in AFI 11-202, Vol 2, the following applies:

6.12.1. Aircraft Commanders will ensure all crew members have read and signed off all FCIF, operations notes, or mission specific read files. **(T-3)**. This does not relieve individuals from ensuring that required sign-offs are completed.

6.12.2. If electronic FCIF record is not used, e.g., Patriot Excalibur (PEX), then update FCIF Currency Record (or MAJCOM equivalent form) and squadron read file manually, if new material has been added to the FCIF since the last review. Legibly enter the last FCIF item number, the current date, and initial the FCIF Currency Record. Initialing the FCIF Currency Record certifies review of all items.

6.12.3. The aircraft commander will ensure any crew members joining a mission en route receive an FCIF update. **(T-3)**. Instructor pilots who fly with senior officers are responsible for briefing FCIF items.

6.12.4. Crew members not assigned or attached to that unit will certify FCIF review by entering the last FCIF number and their initials behind their name on the file copy of the flight authorization or their ACM orders. **(T-3)**.

6.13. Flight Plans. File a flight plan in accordance with FLIP General Planning (GP) or MAJCOM guidance. **(T-1)**.

6.13.1. Aircrews should use the DD Form 1801, *DoD International Flight Plan*, but may also use International Civil Aviation Organization (ICAO), host nation, or electronic filing methods as required. When filling out the DD form 1801 use the following guidance:

6.13.1.1. Item 9 Type of Aircraft: V22

6.13.1.2. Item 10 Equipment and Capabilities. List equipment per GP pages 4-13/14:

6.13.1.2.1. SGRZIUTDY / S

6.13.1.2.2. Adjust equipment if systems are inoperative. If aircraft has an installed and operable HF radio, insert 'H' into the equipment list.

6.13.1.3. Item 18 Other Information. Insert the following descriptors as required:

6.13.1.3.1. If 'G' is listed in item 10: NAV/RNVE99

6.13.1.3.2. If 'R' is listed in item 10: PBN/B2B5L1

6.13.1.3.3. If 'Z' is listed in item 10: RMK/PTP

6.13.1.3.4. For all other descriptors follow guidance in GP, pages 4-20 through 4-24.

6.13.1.4. The CV-22 is not certified to fly area navigation (RNAV) routes (Q or T routes) or RNAV terminal area procedures, and thus crews will not file these on the DD form 1801.

6.14. International Procedures. The aircraft commander will review the USAF Foreign Clearance Guide and brief crew members on applicable items before flights outside the CONUS. **(T-1).** Comply with customs, immigration, agriculture, immunization, and quarantine requirements. The unit dispatching the mission is responsible for border clearance and other special clearances when required. Entry into foreign countries by personnel and equipment are governed by military agreements, diplomatic agreements, and directives of the operational control commander, ICAO standards, and the Foreign Clearance Guide.

6.14.1. For all OCONUS or operational missions use the appropriate call sign assigned via USAF Voice Call Sign Listing (VCSL). For CONUS or exercises aircrew should use the appropriate call sign assigned via USAF Voice Call Sign Listing (VCSL) which can be found on SIPR at: <https://intelshare.intelink.sgov.gov/sites/usafcallsigns/sitepages/home.aspx>

6.14.1.1. Transoceanic/Remote area Procedures. The following procedures will be used during ocean transits and in areas where divert locations are not immediately available:

6.14.1.1.1. Equal Time Points (ETP). Calculate an ETP for all flights in which flight time is greater than 2 hours between suitable landing areas using forecast winds. Update ETPs every hour until reaching ETP using observed and forecast winds during flight.

6.14.1.1.2. Remote or Island Destinations. Remote or island destinations are defined as intended landing areas that do not have suitable alternate destinations within 30 minutes of flight time at 10,000 ft mean sea level (MSL) or en route altitude (whichever is lower) and max range airspeed.

6.14.1.1.3. If holding in lieu of an alternate for a remote or island destination per AFMAN 11-202, Vol 3, MAJCOMSUP, use an additional 1,500 lbs (APLN mode) as the holding fuel in addition to all other fuel reserve/minimum fuel requirements. **(T-2).**

Chapter 7

GENERAL OPERATING PROCEDURES

7.1. Altitude Restrictions.

7.1.1. Conduct all APLN mode operations at or above 500 ft AGL and CONV/VTOL mode operations above 300 ft AGL, except when lower altitudes are required for takeoff, landing, operational missions, training flights in approved surveyed areas or routes, approved exercise missions, or while conducting a route survey under day VMC.

7.1.2. Operations below these altitudes and aircraft configurations will be considered low-level.

7.2. Low-Level Operations.

7.2.1. Low-level operations are inherently dangerous and therefore require specific planning and operational risk management (ORM) measures to maintain safety of flight throughout the mission. This section outlines the requirements to meet to fly low-level missions.

7.2.2. Conduct low-level sorties in mountainous terrain no lower than 200 ft modified contour or 200 ft set clearance plane (SCP) in airplane mode, 100 ft in CONV mode. In non-mountainous flat to rolling terrain, overwater or where there is a valid mission requirement, crews may descend to no lower than 100 ft AGL in APLN and 50 ft in CONV. Limit the time at minimum altitudes to the duration required for mission accomplishment. **Note:** Mountainous terrain is defined as having a 500 ft change in surface elevation in 1/2 nm. **Note:** NVG modified contour low level is defined as a flight profile that plans to follow a given height above the ground using NVG and NLT 80% of modified contour altitude (rad alt low setting) as the primary height reference. This profile plans to crest over terrain at some clearance less than the specified.

7.2.3. Unaided (no NVG and no TF system). Minimum en route altitude for night navigation, both operationally and for training, is 500 ft above the highest obstacle within 3 nm (MSA).

7.2.4. Aided (NVGs and/or TF systems) is the only approved method for conducting night operations below MSA.

7.2.5. Geographical areas, such as range complexes, may be designated as exercise or low-level navigation areas.

7.2.6. Route Surveys. Prior to any low-level operations in non-surveyed areas, accomplish a survey of the route or area as follows:

7.2.6.1. Conduct an extensive map study of the selected routes and areas. Annotate all man-made obstacles over 50 ft AGL (or the lowest altitude to be flown), except when below the tree line. Additionally, annotate any published low-level routes, avoid areas or other hazards within the boundaries. Use the chart updating manual (CHUM) or host nation procedures to depict current obstacles on maps.

7.2.6.2. A highly experienced pilot selected by the unit commander or MSN/CC will fly the route survey during the day. **(T-3)**. The pilot will conduct a visual search of the proposed route or area at the lowest applicable altitude down to a minimum altitude of 50ft

AGL in CONV mode or 100 ft AGL in APLN mode. (T-3). Check the obstacle location against map location and any additional obstacles charted.

7.2.6.3. Flight surveys are not required provided the area is within a designated training complex, Military Training Route (MTR), or the host provides suitable information.

7.2.6.4. Route or area surveys conducted by other participating aircraft may be used provided the survey information is available and flight operations are conducted no lower than the survey altitude.

7.2.6.5. If a route or area has been inactive or flight operations have not been conducted at survey minimums for 12 months, re-accomplish the survey or restrict operations to or above the lowest level flown during the 12-month period.

7.2.7. En route. To ensure altitude clearance when flying MSL altitudes, one of the following will be used:

7.2.7.1. Use of a known/forecast lowest altimeter setting.

7.2.7.2. Barometric Pressure Update function.

7.3. Master Low-Level Hazards Map. Each unit must have a master low-level hazards map (or suitable digital substitute) depicting hazards to low-flying aircraft for the local area and areas of frequent operation. (T-3). Annotate the date of the update on the master map (if used). When uncharted obstacles are found, record appropriate information (location, approximate height AGL, and MSL).

7.4. Landing Zones/Helicopter Landing Zone Survey Requirements. Refer to DAFMAN 13-217, *Drop Zone, Landing Zone Operations, and Helicopter Landing Zone Operations*, MAJCOM supplements including applicable waivers, Air Force Tactics, Techniques, and Procedures (AFTTP) 3-3.CV-22 *Combat Aircraft Fundamentals CV-22*, and the AFTTP 3-2.6, *JFIRE* for requirements and procedures.

7.4.1. Approval Authority. In lieu of a digital or physical signature on an AF IMT 4303, *Helicopter Landing Zone Survey*, the approving authority may give verbal approval to use a surveyed HLZ. Aircrew will use high/low recon techniques prior to first landing. Verbal approvals are on a case-by-case basis only and as required to meet mission or training requirements, or where a tactical HLZ survey has not been completed. Blanket verbal approvals are not permitted.

7.4.2. Qualified Aircrew. At the discretion of the SQ/CC or deployed mission commander, HLZ surveys may be conducted by the following aircrew:

7.4.2.1. Airborne Survey: experienced aircraft commanders using high/low recon techniques. Once the site has been determined safe for landing, crews may land in order to take pictures, measure distance, and gather more precise HLZ information.

7.4.2.2. Ground Survey: experienced aircraft commanders and/or instructor FEs.

7.4.3. Tactical, Host Nation (HN), and Joint HLZ Surveys. Aircrew will identify risk and discuss mitigation for the use of a tactical, HN, or Joint surveys in their squadron ORM process.

7.5. Aircrew Flight Equipment Requirements. Upon arriving to the aircraft, the aircraft commander or designated representative will ensure sufficient quantities of appropriate

serviceable life support, survival equipment, and protective clothing for the entire mission are aboard the aircraft. **(T-3)**. Verify AFTO Form 46, *Prepositioned Aircrew Flight Equipment* reflects actual equipment on board, prior to departing home station.

7.5.1. Survival vests will be onboard the aircraft and available to the crew for all flights and may be worn at the discretion of the aircraft commander. **(T-3)**. Individuals will wear properly equipped survival vests on all combat and contingency missions. **(T-3)**.

7.5.2. Helmets will be worn by both pilots during all sorties. **(T-3)**. At the discretion of the PIC, extra aircrew as well as FEs may wear headsets in lieu of helmets during non-tactical flights based on mission needs. If headsets are worn, helmets, oxygen masks and regulators properly attached to the aircraft oxygen system, must be within arm's reach of crew members and attached and readily accessible to cabin crew members. **(T-3)**.

7.5.3. NVGs will be available if operating at night. **(T-3)**.

7.5.4. Oxygen mask/regulator. Prior to stepping, crew members will accomplish a preflight of their helmet and oxygen mask, to include communications check. **(T-3)**. Crew members occupying a primary crew position will have an oxygen mask/regulator connected and readily available for use before engine start through engine shutdown. **(T-3)**. Crew members working in the cabin may disconnect from aircraft oxygen system, but oxygen mask/regulator must remain readily available. **(T-3)**.

7.5.5. Overwater Flight. When the route of flight is beyond gliding distance of the shore aircrew will adhere to the following guidelines:

7.5.5.1. Life preservers Units (LPUs) will be worn by all aircrew. **(T-3)**. Passengers will have life preservers available and will be worn at the discretion of the Pilot in Command.

7.5.5.2. Underwater breathing devices; Survival Egress Air (SEA), Helicopter Aircrew Breathing Device (HABD), or Helicopter Emergency Egress Device (HEED) will be worn by aircrew. **(T-3)**.

7.5.5.3. Life raft(s) will installed and able to hold all personnel on board. **(T-3)**.

7.5.6. Anti-exposure Suits.

7.5.6.1. If water temperature is 60F/15.5C or colder, tilt-rotor aircrews will have constant wear anti-exposure suits readily available when preplanned overwater flight is conducted. If any of the following situations apply, constant wear anti-exposure suits will be worn by aircrew:

7.5.6.1.1. Overwater hover operations without cover-ship or safety boat.

7.5.6.1.2. Overwater flight greater than 30 minutes from a suitable landing site.

7.5.6.1.3. Transoceanic ferry flights.

7.5.6.2. If the water temperature ranges between 60F (15.5C) and 51F (10.5C), and the local air temperature is 70F (21.2C) or greater, the operations OG/CC (or equivalent) may waive the requirement to wear the anti-exposure suit after considering the factors in AFMAN 11-301, Vol 2, *Management and Configuration Requirements for Aircrew Flight Equipment (AFE)*. **Paragraph 2.2.2.3. (T-1)**.

7.5.6.3. When weather/operating conditions are outside of the parameters in **Paragraph 7.5.6.1** and/or **Paragraph 7.5.6.2**, the WG/CC may waive wear of anti-exposure suits on a case-by-case basis. No blanket or permanent waivers are authorized at the WG/CC level. Permanent waivers will be approved by AFSOC/A3. **(T-2)**.

7.6. Flying Clothing/Safety Equipment.

7.6.1. All crew members will wear the aircrew uniform and other flying clothing/equipment in accordance with AFMAN 11-301, *Aircrew Flight Equipment (AFE) Operations in a Chemical, Biological, Radiological, Nuclear (CBRN) Environment*, AFMAN 11-301, Vol 2, and AFI 36-2903, *Dress and Personal Appearance of Air Force Personnel*, unless forbidden by Foreign Clearance Guide (FCG) or host nation rules.

7.6.1.1. Flight Gloves: All aircrew members will have issued flight gloves readily available during all phases of flight and will wear them should environment or flight conditions dictate.

7.6.1.2. Identification Tags. Identification tags will be carried on person during all flights. **(T-3)**.

7.6.2. Eye Protection.

7.6.2.1. Use protective goggles, plastic/shatter resistant lens glasses/sunglasses, or the helmet visor for eye protection if duties require personnel to be in close proximity of the aircraft when the propellers are turning. Wear goggles whenever dust, sand, dirt, etc., constitute a hazard.

7.6.2.2. During all live firing of weapons from the aircraft, ensure that all personnel involved in the firing of weapons wear eye protection to include one of the following: helmet visors, shatter resistant glasses/eye protection, safety goggles, or aircrew gas mask. Glass lens eyeglasses alone do not satisfy the requirement. All aircrew aft of the ramp hinge during ramp mounted weapons system (RMWS) live fire must also wear an approved vest, with either soft or hard armor installed, and helmets. **(T-3)**.

7.7. Weight and Balance. The aircraft weight and balance system (AWBS) program is the primary means for accomplishment of the DD Form 365-4, *Weight and Balance Clearance Form F*. The basic weight on the DD Form 365-3 *Basic Weight and Balance Record*, will be checked during preflight. The record for basic weight and moment will be derived from the DD Form 365-3, *Chart C - Basic Weight and Balance Record*.

7.7.1. When the Chart C Basic Weight is changed by +/- 0.3%, or Basic Weight CG is changed by +/- 0.3 inches, a new Form F which reflects this change must be prepared in accordance with Technical Order (T.O) 1-1B-50, *Aircraft Weight and Balance*.

7.7.2. Payload items such as cargo, PAX, and ammunition will be annotated on the Form F in accordance with TO 1-1B-50. Crews will not exceed CG and weight limits. Brief these computations during the crew brief or during flight, if required.

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

7.8.1. Review the AFTO Form 781 before applying power to the aircraft or operating aircraft systems.

7.8.2. Ensure that the USAF fuel card and/or other authorized method of payment are aboard the aircraft.

7.8.3. The exceptional release must be signed before flight. An approved individual (maintenance officer, maintenance superintendent, or authorized civilian) will normally sign the exceptional release. If one of these individuals is not available, the aircraft commander will sign the exceptional release. See TO 00-20-1, *Aerospace Equipment Maintenance Inspection, Documentation, Policies, and Procedures*, for additional guidance.

7.9. Preflight Inspections.

7.9.1. Preflight inspection should normally be accomplished by the FE(s) for the assigned mission; however, pilots may perform or participate in the preflight.

7.9.2. Face-to-face turnovers between crew members are acceptable during a hot turn or when the sortie is not debriefed to maintenance.

7.9.3. During higher headquarters-directed exercises and contingency operations, any qualified aircrew may accomplish the preflight inspection and brief the oncoming crew.

7.10. Checklist.

7.10.1. Checklist/Response Steps. "AS REQUIRED" responses will state the current setting or condition of the system associated with that step. **(T-3)**.

7.10.2. Aircrew will accomplish the Combat Ingress/Egress checklists prior to entering and exiting a non-permissive/threat environment. **(T-3)**.

7.11. Flight Briefings and Procedures. Briefings and procedures are the responsibility of the aircraft commander and will be completed in addition to other briefing requirements in accordance with AFMAN 11-2CV-22V3 CL-1. **(T-3)**.

7.12. Controls. A qualified pilot will be at a set of flight controls with harness fastened at all times when propellers are turning. **(T-2)**.

7.13. Crew Duties and Responsibilities.

7.13.1. Change of Aircraft Control. Use a statement which includes the crew position such as, "Pilot/Copilot has controls" to transfer control. The other aircrew member will acknowledge using the crew position also such as, "Pilot/Copilot has controls." **(T-3)**. Any crew member who is in doubt as to which pilot is controlling the aircraft should immediately query the pilots.

7.13.2. Boldface. The pilot not flying normally calls for boldface procedure execution and states the boldface items. The pilot not flying is the primary crew member responsible for executing Boldface and other emergency checklist procedures while the pilot flying maintains aircraft control and establishes the appropriate flight profile. The FE, if in the cockpit, is primarily responsible for manipulation of engine control levers (ECLs) and T-Handles and switches and will reference the checklist for guidance during the emergency. All movements of ECLs, T-Handles, and non-reversible actions will have dual concurrence between the non-flying pilot and FE (or flying pilot if FE is out of cockpit) prior to execution. The second FE, if on board, should review the flight manual as appropriate. The Aircraft Commander will brief specific Boldface crew duties and responsibilities if different from above.

7.13.3. Nacelle Boldface. Prior to flight, aircraft commanders will brief individual crew duties for conducting nacelle boldface.

7.14. Communications.

7.14.1. Interphone Communications.

7.14.1.1. Limit intraplane transmissions to those essential for crew coordination.

7.14.1.2. Do not discuss classified information over intercommunications system (ICS) during non-secure radio transmissions.

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

7.14.1.4. Clearance is required from the aircraft commander prior to going off ICS.

7.14.2. Command Radios.

7.14.2.1. The pilot operating command radios will brief the crew on which radio is primary. All crew members will monitor the primary command radio unless specifically directed to do otherwise by the aircraft commander.

7.14.2.2. Regardless of the primary command radio, monitor (UHF) GUARD (243.0) on Comm 2 or 3 by selecting TR+Guard. Deviations will be briefed by the Aircraft Commander.

7.15. Aircraft Lighting. Operate aircraft lighting in accordance with AFMAN 11-202, Vol 3, MAJCOMSUP, and the following, except where operational mission requirements dictate otherwise.

7.15.1. Anti-collision lights. All anti-collision lights will be operational for day or night operations. **(T-1)**.

7.15.1.1. When flying in formation, only the trail aircraft is required to have a visible anti-collision light on.

7.15.1.2. In the event of failure of any light or all lights of the anti-collision light system after takeoff, flight may be continued.

7.15.1.3. Aircrew are authorized to use the Refueling Probe Light to comply with AFMAN 11-202, Vol 3, MAJCOMSUP, Landing Lights requirements.

7.15.1.4. Emergency Egress Lighting. In the event the Emergency Egress Lighting System is inoperative, aircrew will configure chemlights in an inverted "U" shape around each egress point anytime overwater flight will occur. **(T-3)**. During flight beyond aircraft glide distance or extended overwater operation (i.e. Hoists) aircrew will activate the chemlights in order to illuminate Emergency Egress locations. **(T-3)**.

7.16. Aircraft Taxi Obstruction Clearance Criteria. All aircrews will abide by taxi distances and restrictions per AFMAN 11-218, *Aircraft Operations and Movement on the Ground*.

7.16.1. Aircrew will not taxi an aircraft within 25 ft of obstructions without wing walkers unless exempted or waived. **(T-3)**.

7.16.2. When taxi clearance is doubtful, use a wing walker. If wing walkers are unavailable or if provided and doubt still exists as to proper clearance, deplane a crew member to ensure obstruction clearance.

7.17. Taxiway and Runway Width Requirements.

7.17.1. Taxiway width: 20 ft.

7.17.2. Runway width for rolling takeoff, short takeoff (STO), or run on landing: 30 ft.

7.17.3. 180° turn: 35 ft.

7.18. Arresting Cables. Taxiing over arresting cables should be done at the slowest speed possible to preclude damage to the bottom of the aircraft.

7.19. Proprotor Turning Offload and Onload Procedures. Employ the following procedures when engines are running: Do not approach the aircraft until cleared by the crew. **Note:** Place one ECL in START, when practical, to reduce the proprotor downwash whenever personnel are present near the aircraft. If ECL is placed in any position other than FLY, the applicable checklist will be accomplished to ensure aircraft is properly configured for takeoff.

7.19.1. Personnel and equipment should approach to and depart between the 4 and 8 o'clock position during engine running ground operations. When using the crew door, approach to and depart from the nose of the aircraft as much as possible to stay in the pilot's field of view until clear of the aircraft. Avoid the regions directly outboard of the nacelles (3 and 9 o'clock) due to the engine exhaust deflected by the coanda system. **WARNING:** Personnel will have weapons pointed down and radio antennas collapsed prior to approaching the aircraft.

7.19.2. During engine running crew changes, the enplaning crew will not approach the aircraft until it has come to a complete stop, and the ramp has been lowered. **(T-3)**.

7.19.3. During warm-turns crews will verify the *Before Starting Engines Checklist* has been completed prior to engine start. **(T-3)**.

7.20. Engine Requirements.

7.20.1. Pre-mission Planning. During pre-mission planning aircrew will calculate power available using 95% engine, 117% Mast Torque charts. **(T-3)**.

7.20.2. Power Assurance Checks (PAC). Aircrew will conduct a PAC when OAT < 20 C, Measured Gas Temperature (MGT) increases 30-40 degrees for the same Qm, or when indicated power available is less than calculated power available. **(T-3)**. Aircrew will complete a hover PAC prior to returning the aircraft to maintenance unless an emergency situation dictates otherwise. If MGT PAC results are less than 95% on either engine, return the aircraft to maintenance in accordance with 1V-22(C)B-1, [chapter 7](#).

7.20.3. Power Checks. Aircrew will reconfirm power requirements using either the cockpit management system (CMS) or performance charts when power required is within ten (10) percent of power available. **(T-3)**.

7.21. Power Required for Vertical Take Off and Landing Terminal Operations Training.

7.21.1. Approach. Clear escape route: out of ground effect (OGE) hover power. Restricted escape route or potential LVA: OGE hover power plus 5%.

7.21.2. Departure. Clear escape route: 30 foot hover power. Restricted escape route or Low Visibility Take Off (LVTO): OGE power

7.22. Oxygen Requirements. Comply with AFMAN 11-202, Vol 3, MAJCOMSUP, for unpressurized aircraft.

7.23. Transponder Operations. Aircrew will operate transponders in accordance with AFMAN 11-202, Vol 3, MAJCOMSUP. Aircraft will not depart with inoperative identification friend or foe (IFF) equipment (if required for the mission or airspace) without the approval of Air Traffic Control (ATC) and the aircraft commander. **(T-3). Exception:** Formations must have at least one operational IFF per element. **(T-3).**

7.23.1. IFF modes 1, 2, 3A, and S codes are not classified and may be left set in the transponder. IFF Mode 5 codes must be zeroized before leaving the aircraft in an unsecured location.

7.23.2. Mode S Flight ID. Operate in accordance with AFMAN 11-202, Vol 3, MAJCOMSUP.

7.23.3. Aircrews will ensure that they have an operable Mode 5 prior to departure if the aircraft will transit an area where safe passage procedures are implemented or when required for mission accomplishment. **(T-3).**

7.23.3.1. If Mode 5 fails in-flight, crews may continue to their intended destination if Mode 5 is no longer required. If Mode 5 is required, the aircraft will land and accomplish repairs at the first destination where equipment, parts, and maintenance personnel are available. **(T-3).**

7.23.3.2. Ground and in-flight checks of the Mode 5, when conducted, are a mandatory maintenance debrief item. Crews will annotate successful and unsuccessful interrogation of Mode 5 on AFTO Form 781A. **(T-3).**

7.24. Traffic Collision Avoidance System (TCAS) Operations. TCAS use is required when installed and operational. Operate TCAS in accordance with AFMAN 11-202, Vol 3, MAJCOMSUP and aircraft flight manual. **Note:** This system was not designed for use in the low-level environment, but provides valuable awareness of other aircraft. Use the above/below/normal settings as appropriate for the phase of flight.

7.25. Automatic Dependent Surveillance-Broadcast (ADS-B) Operations. If installed, operate in accordance with AFMAN 11-202, Vol 3, MAJCOMSUP.

7.26. Electronic Devices. The use of electronic devices is specified in AFMAN 11-202, Vol 3, MAJCOMSUP. For electronic devices not listed, the user will provide the aircrew a letter from the Aeronautical Systems Division, Deputy for Engineering (ASC/ENAE), 2530 Loop Road West, Wright Patterson AFB OH 45433-7101, DSN 785-8928 or (937) 785-8928 certifying the device is approved for airborne use. **(T-3).** If the aircrew detects any interference from an electronic device used aboard the aircraft, discontinue the use of this device for the duration of the flight.

7.27. Jamming and Interference. All aircrews and other radio users must be familiar with the procedures for reporting incidents of meaconing, intrusion, jamming, and interference (MIJI) or spectrum interference (SI). **(T-3)**. Info Air Force Special Operations Air Warfare Center (AFSOAWC) on all MIJI/SI reports.

7.28. Aircraft Servicing and Ground Operations.

7.28.1. Conduct hot refueling in accordance with AFI 11-235, *Specialized Refueling Operations*, TO 00-25-172, *Ground Servicing of Aircraft and Static Grounding/Bonding*, and appropriate flight manuals. The guidance in this section supplements the procedures outlined in TO 00-25-172, appropriate flight manuals, and checklists. A comprehensive mission briefing and strict compliance with procedures will ensure an expeditious safe refueling operation.

7.28.2. Rearming may be conducted in conjunction with hot refueling.

7.28.3. Forward Arming and Refueling Point (FARP). Use the following guidance for aircraft marshaling during FARP operations:

7.28.3.1. Hose deployment personnel will not be used to marshal aircraft. When Combat Control Team (CCT) or Special Tactics Squadron (STS) are responsible for primary ATC of an airfield, or are responsible for ATC operations at the FARP site, they will marshal and control all aircraft movement into and out of the FARP site. If CCT/STS are not available, units are responsible for self-marshaling into and out of the FARP site.

7.28.3.2. Land just prior to the FARP site and deplane a crew member to marshal the aircraft to the designated refueling point if deemed necessary by the Aircraft Commander.

7.28.3.3. If terrain features do not allow for landing just prior to the FARP site, aircraft will hover taxi to the designated refueling point. Be aware of proprotor downwash effects on personnel and equipment in the area.

7.28.3.4. The aircraft commander will ensure marshaling procedures outlined in the above paragraphs are briefed between the tanker and receiver aircraft prior to aircraft-to-aircraft refueling operations. **(T-3)**. These procedures must be strictly adhered to at all times, ensuring all safety requirements are met.

7.28.4. Aircrews will not wear Gortex garments within 50 ft of the aircraft when refueling with low flashpoint fuels i.e., JP-4, Jet B, etc. **(T-3)**. Refer to TO 00-25-172 for further information.

7.28.5. In the absence of qualified maintenance personnel, aircrew may service aircraft hydraulic and oil systems in accordance with applicable maintenance technical orders or NATOPS guidance.

7.28.6. Personnel not directly involved in refueling operations will remain clear outside the fuel servicing safety zone. **(T-3)**.

7.29. Forced or Precautionary Landings. If the crew becomes doubtful of the aircraft's airworthiness or encounters hazardous weather conditions preventing further flight, they should execute a precautionary landing, provided the landing conditions are not more hazardous than the in-flight situation. Aircraft security and accessibility for maintenance are secondary considerations

to aircrew safety. All precautionary landings must be reported through the appropriate chain of command as soon as communications are established.

7.29.1. When the forced or precautionary landing occurs at an Air Force base and the maintenance issue has been investigated, corrected, and inspected by qualified maintenance personnel and the aircraft commander has determined that no significant operating hazards exist at the departure base or en route, the aircraft commander may continue flight.

7.29.2. The operational SQ/CC approval is required prior to further flight where qualified USAF maintenance is not available. At the SQ/CC's discretion, this approval authority may be delegated to the aircraft commander.

7.29.3. In the event a forced or precautionary landing occurs at a location where communications are not available, the following procedures apply:

7.29.3.1. Remain at the landing site and await assistance if the aircraft commander determines the aircraft is not safe for flight.

7.29.3.2. If a greater hazard exists to the crew or aircraft at the landing site, then continue to the nearest safe landing area. The decision to resume flight under these circumstances should be based on a thorough evaluation of all the hazards and risks involved.

7.29.4. Precautionary Landings Due to Weather.

7.29.4.1. If deteriorating weather is encountered during VFR operations, consider reversing course, continuing under an IFR clearance or as a last resort executing a precautionary landing.

7.29.4.2. Further flight may be authorized by the aircraft commander after a precautionary landing for weather. Make a reasonable effort to notify appropriate agencies of the precautionary landing and to determine additional weather information.

7.30. En Route Navigation and Instrument Approach Minimums.

7.30.1. The aircraft navigation system is cleared for area navigation point to point (RNAV PTP) in CONUS, Required Navigation Performance (RNP 4), and enroute OCONUS navigation RNAV 5, RNAV 10, and RNP 4. Aircraft commanders should reference the appropriate Aeronautical Information Publication (AIP) and Aeronautical Information Service (AIS) for navigation requirements when operating OCONUS. **Note:** Basic Area Navigation (BRNAV), the European standard, has been re-designated RNAV 5. **Note:** RNP 10 has been re-designated RNAV 10. For the purposes of oceanic & remote navigation applications, RNP 10 = RNAV 10.

7.30.1.1. In order to fly RNAV PTP outside the navigational aid (NAVAID) navigation criteria listed in FLIP, the GPS update function must be operational and aircrew must confirm that the INSs are accepting the GPS update.

7.30.1.2. RNAV standard instrument departure (SID) or RNAV standard terminal arrival route (STAR) are not approved. Aircrew will not file or fly RNAV or GPS approaches. (T-2).

7.30.1.3. PTP navigation is allowed to the initial approach fix (IAF), the intermediate fix (IF), or designated points between the IAF and IF on instrument approaches.

7.30.1.4. Without an operating GPS or GPS update function, /I may still be filed in accordance with GP; however, INS only navigation in all environments is severely degraded and requires constant vigilant monitoring and frequent updates to ensure the INS solution is within operating limits. An Enhanced Interrupted Alignment (EIA) should be accomplished in this situation and ENAV procedures should be the primary method of navigation.

7.30.2. With a GPS Monitor Fault posted, the GPS lateral limit associated with the current mode of flight has been exceeded and therefore RNAV procedures will revert to the ENAV capabilities of the aircraft VHF Omnidirectional Range/ Distance Measuring Equipment, Tactical Air Navigation System (VOR/DME, TACAN). Refer to CV-22 Flight Manual for information on procedures. When NAVAIDs are not used as the primary method of RNAV, crews must monitor satellite and GPS status while operating under RNAV and BRNAV procedures. **(T-3). CAUTION:** As the aircraft is not equipped with a database, take extreme vigilance when entering in coordinates for a point that is not within NAVAID reception. It is also possible to be cleared to a point not filed as part of the flight plan. In this case if unable to locate the point, request clarification, request a different routing, or request a heading until able to locate the point.

7.30.3. Ceiling Below Minimums. If the reported ceiling is below the minimum for the approach and the visibility is at or above the authorized minimums before initiating an en route descent and approach, ensure fuel remaining is sufficient to accomplish the en route descent and approach, missed approach, and flight to alternate with appropriate reserves.

7.31. Radar Altimeter Procedures (RADALT).

7.31.1. During low-level enroute operations, set the RADALT to no lower than 80% of intended low-level altitude. The RADALT may be set lower only on final approach to landing.

7.31.2. For instrument approaches, set the RADALT low altitude warning to the appropriate height above touchdown (HAT) or height above aerodrome (HAA) prior to the final approach fix (FAF).

7.32. Radar Advisories. Maintain VFR flight following to the maximum extent possible while operating in VFR or simulated IFR conditions

7.33. Advisory Calls. The nonflying pilot will make advisory calls to the flying pilot. Calls indicated in quotes (i.e. “ ”) are mandatory, additional advisory calls should be stated as follows:

7.33.1. Descent:

7.33.1.1. Transition level.

7.33.1.2. 1,000 ft above assigned altitude.

7.33.1.3. 1,000 ft above initial approach fix or holding altitude.

7.33.2. Non-Precision Approaches:

7.33.2.1. 100 ft above procedure turn and final approach fix altitude.

7.33.2.2. 100 ft above minimum descent altitude (MDA).

7.33.2.3. "Minimums" at MDA.

7.33.2.4. "Runway in sight." Called when sufficient visual reference with the runway environment is established and the aircraft is in a safe position to land.

7.33.2.5. "Go around." Called at the missed approach point when visual reference with the runway environment is insufficient to continue the approach or any time the approach falls outside of required criteria for the type of approach being flown.

7.33.3. Precision Approaches:

7.33.3.1. One hundred ft above decision height/decision altitude (DH/DA).

7.33.3.2. "Continue." Called at DH/DA if only the approach light system is in sight and a determination cannot yet be made that the aircraft is in a position for a safe landing. If an approach is continued below DH/DA based on seeing the approach lights only (an approach to visibility minimums), "go-around" must be called by 100 ft if a determination to land cannot be made. **(T-3)**.

7.33.3.3. "Land." Called at DH/DA or later if runway environment is in sight and the aircraft is in a position for a normal landing.

7.33.3.4. "Go around." Called at DH/DA or later if the runway environment is not in sight or if the aircraft is not in a position for a safe landing. If an approach is continued below DH/DA based on seeing the approach lights only (an approach to visibility minimums), "go-around" must be called by 100 ft if a determination to land cannot be made.

7.33.4. Climb out:

7.33.4.1. Transition altitude.

7.33.4.2. One thousand ft below assigned altitude.

7.33.5. Any crew member observing unannounced heading deviations greater than 10°, airspeed deviations of 10 knots, altitude deviations of 100 ft during approach or 200 ft while en route, or potential terrain or obstruction problems will immediately advise the pilot flying. Also, announce deviations from briefed procedures for the approach being flown.

7.34. Passenger Guidelines. DoD 4515.13, *Air Transportation Eligibility*, establishes criteria for passenger movement on DoD aircraft. DAFMAN 11-401 provides further guidance on orientation and public affairs travel. When available, manifest passengers on a DD Form 2131, *Passenger Manifest*. If the DD Form 2131 is not available, annotate the passengers by any means and leave with proper authorities at the point of departure.

7.34.1. In addition to the restrictions in DAFMAN 11-401, during spouse orientation flights, air refueling and threat reaction maneuvers are prohibited.

7.34.2. For other orientation categories, passengers will be seated with belts fastened during threat maneuvers. **(T-3)**.

7.34.3. Space-required. DoDI 4515.13 lists several categories of passengers who are authorized official travel on DoD aircraft. OG/CC or COMAFSOF determine and approve eligibility for all space-required categories, with the following exceptions:

7.34.3.1. Supported forces (Mission forces). US and foreign military personnel who are an integral part of the mission being performed, functioning with the aircrew to execute this mission. This may include, but is not limited to, mission specialists and special

operations forces. The mission tasking assumes approval. Manifest on DD Form 2131 according to mission classification.

7.34.3.1.1. Restrictions. There are no restrictions on mission events. Restrain passengers by the safest means possible within mission constraints. Reference **Paragraph 7.36**, Personnel Restraints, and **Table 7.1**, Passenger Classification/Restraint Policy.

7.34.3.1.2. The aircraft commander will ensure that supported forces are briefed on the mission profile and mission events before flight. **(T-3)**.

7.34.3.2. Supporting forces. US and foreign military, DoD civilians, and US civilian employees under contract to the DoD, who directly support the mission or a deployment of an AFSOC unit. This may include, but is not limited to: maintenance, communications, intelligence, logistics, fuels, flight test personnel, unit-supporting chaplains and public affairs personnel, civilian contractors required for in-flight checks or deployment support, Federal Aviation Administration (FAA) representatives, STS, fire support officers, and other military personnel who are on board to communicate/coordinate with ground forces. Off-station travel requires travel orders. Document local flights by letter of authorization from the OG/CC or COMAFSOF. **Exception:** SQ/CC or MSN/CC may approve squadron assigned personnel. SQ/CC or MSN/CC may also approve maintenance personnel required for mission accomplishment. Planners and MSN/CC should coordinate supporting forces authorizations with the OG/CC prior to exercises whenever possible. The 18th Special Operations Test and Evaluation Squadron and 413th Flight Test Squadron are the approval authority for supporting forces in conjunction with test missions. When frequent local flights are necessary, commanders may issue annual authorizations by name or Air Force Specialty Code (AFSC). When using this option, the aircraft commander will ensure that all restrictions in the following paragraph are complied with for each individual mission. Manifest all supporting forces on DD Form 2131.

7.34.3.2.1. Restrictions. Both pilots must be fully qualified unless exempted by **DAFMAN 11-401, Paragraph 1.12** (Requirements for Pilots in Dual-Controlled Aircraft). **(T-2)**. Simulated emergencies are prohibited. **(T-2)**. **Exception:** Degraded systems required for the purposes of a functional check flight are authorized. In this context, personnel on board are required for mission accomplishment.

7.34.3.2.2. Limit personnel to absolute minimum required. Other mission events are authorized. Passengers will be seated with belts fastened during threat maneuvers. The aircraft commander will ensure that supporting forces are briefed on the mission profile and mission events before flight.

7.35. Passengers Occupying Crew Positions.

7.35.1. The aircraft commander may authorize passengers to sit in the center seat.

7.35.2. DAFMAN 11-401 governs approval for passengers to occupy a crew position with a set of flight controls.

7.35.3. Any passenger occupying a crew position must be on ICS. **(T-3)**.

7.36. Personnel Restraints (See [Table 7.1](#)).

7.36.1. Aircrew. All personnel must be restrained by the safest means possible for the type mission being flown (i.e. static line, cargo tie-down rings, ropes, etc.). **(T-2)**. Seats will be available for all passengers not covered in **Paragraph 7.34.3.2**; passengers will be seated with seatbelts fastened for takeoff and landing and will not be unrestrained when any door is opened in-flight. **(T-2)**. Additional crew members will also be seated as stated above or restrained with a restraint harness (i.e., gunner's belt) during takeoff and landing or operating near an open door. **(T-2)**. Crew members may perform duties that require them to be unrestrained for short periods of time, provided they are not in close proximity to an open door.

7.36.2. The preferred method of unsecured personnel movement in the cargo compartment for all phases of flight is with the ramp closed. If the ramp must be open for mission requirements (e.g., ramp weapon employment, terminal area operations, etc.), all passengers and crew members not required to be unsecured for the mission event (i.e., AIE) will remain restrained by either a seat belt, personal restraint device, or properly adjusted gunner's belt to prevent inadvertent departure from the aircraft. **(T-2)**. **WARNING:** Unless performing hoist operations, personnel will not hang any part of their body below the ramp edge during taxi, take off, or landing operations.

7.36.3. Combat equipped troops. When carrying troops/teams and seats/seat belts are not installed/used due to mission or aircraft load, alternate restraints will be used by those personnel. **(T-3)**. These restraints may not protect occupants in a crash sequence as well as a seat belt, but must be of such design to keep occupants from falling out of open doors. Each individual will have a restraint to secure them to the aircraft. **(T-3)**.

7.36.4. Alternate loading methods used should allow seats and equipment not required for the mission to be removed. Define the cabin floor itself as the seat and either a seat belt, snap link device, tie-down strap, or similar restraining device to restrain all occupants. Brief all users on the type of restraining device installed. **Note:** Additional aircrew may be secured with alternate restraints.

7.36.4.1. Alternate restraints will be in accordance with USSOCOM Manual 350-6, *Standards for Rotary Wing and Tiltrotor Infiltration/Exfiltration Training*. Waivers will only be submitted by the ground forces requesting waiver to USSOCOM Manual 350-6. When early release is authorized in accordance with USSOCOM Manual 350-6, restraints will not be removed until as late as practical prior to the landing/assault (no earlier than the 1-minute call).

7.36.4.2. Accomplish troop security by one of the following methods in descending order of preference:

7.36.4.2.1. Seatbelts or snap links attached to tie-down rings on the cabin floor.

7.36.4.2.2. Static Line Kit.

7.36.4.2.3. Five thousand (5,000) pound tie-down straps.

7.36.4.2.4. Woven nylon rope attached to the wall rings with carabineers.

7.36.5. Except for primary and additional aircrew and SOF team members, all cabin occupants must be seated with seat belts fastened during taxi, initial takeoff, and initial approach and landing. **(T-3)**. Passengers authorized flight on tactical missions may be secured by alternate

methods for subsequent takeoffs and landings provided they do not interfere with primary crew members' duties.

Table 7.1. US and Foreign Military SOF Personnel Passenger Classification and Restraint Guidance.

Passenger Classification	Approval Authority	Restraint	Air Refueling	Tactical Events
Space Available	AFSOC/CC or AFSOC/CD	Seat/Seat Belt	Yes *	No
Aero medical Evacuation	OG/CC, COMAFSOF	Seat/Seat Belt	Yes *	Yes*
Orientation				
Incentive Flights	See DAFMAN 11-401, Table 1.1	Seat/Seat Belt	Yes*	Yes*
Distinguished Visitor (DV)	See DAFMAN 11-401, Table 1.1	Seat/Seat Belt	Yes*	Yes*
Familiarization Flights	See DAFMAN 11-401, Table 1.1	Seat/Seat Belt	Yes*	Yes*
Spouse	See DAFMAN 11-401 Table 1.1	Seat/Seat Belt	No	No
Public Affairs Flights	See DAFI 35-101	Seat/Seat Belt	Yes*	Yes*
Space-required				
Supported Forces				
US and Foreign Military Personnel	Mission Tasking Authority	Alt Load	Yes	Yes
Additional Aircrew	Aircraft Commander	Alt Load	Yes	Yes
Maintenance Personnel Supporting deployment	Unit/CC, Mission Commander	Seat/Seat Belt	Yes	Yes
Unit Assigned/Attached Personnel	Unit/CC, Mission Commander	Seat/Seat Belt	Yes	Yes
Other Military Personnel & DoD Civilians	OG/CC, COMAFSOF	Seat/Seat Belt	Yes	Yes
Personnel Required for 18 FLTS	18 FLTS/CC	As Req	As Req	As Req
Note: * When authorized by approving authority				

7.37. Customs, Immigration, and Agriculture Inspections.

7.37.1. Obtain customs, agriculture, and public health clearance, as required, prior to opening any doors other than the crew door or enplaning and deplaning personnel.

7.37.2. Proceed directly from the aircraft to customs, immigration, or agricultural inspection for processing at those stations where federal or local inspections are required. The FE or the aircraft commander completes the necessary forms before reporting to inspectors. **(T-0)**.

7.37.3. After clearing with border clearance agencies, the pilot or FE will return to the aircraft for off-loading and other post-flight procedures. **(T-3)**.

7.37.4. A US military aircraft is a sovereign instrument. When cleared to overfly or land in foreign territory, it is US policy to assert that military aircraft are entitled to the privileges and immunities which customarily are accorded warships. These privileges and immunities include, in the absence of stipulations to the contrary, exemption from duties and taxation; immunity from search, seizure, and inspections (including customs and safety inspections); or other exercise of jurisdiction by the host nation over the aircraft, personnel, equipment, or cargo on board. USAF aircraft commanders will not authorize search, seizure, inspection, or similar exercises of jurisdiction enumerated above by foreign authorities except by direction of USAF or the American Embassy in the country concerned. **(T-2)**.

7.37.5. The aircraft commander will not permit the inspection of their aircraft by officials of any foreign government. **(T-3)**. If requested to do so, the aircraft commander and crew will deny access and seek aid from the senior AFSOC representative or US Embassy or consulate within the host nation. **(T-3)**. Inform customs or other officials of the above policy and request that they confirm their request through their own government and with US Department of State representatives. **(T-3)**. If necessary, the aircrew will seal the aircraft and enter into crew rest, and delay departure intentions, until resolution of the matter by appropriate authority. **(T-3)**. Using the fastest communications available, inform command and control facilities.

7.37.6. When confronted with a search request by foreign authorities, aircrews should consider the following procedures:

7.37.6.1. In most cases, search attempts may be stopped by a statement of the aircraft commander to the foreign officials that the aircraft is a sovereign instrument not subject to search without consent of USAF or the chief of mission in the country concerned. Clearly convey this in a polite manner so as not to offend foreign authorities that may honestly, but mistakenly, believe they have authority to search USAF aircraft.

7.37.6.2. If foreign authorities insist on conducting a search, the aircraft commander must negotiate to delay the search until contact is made with the mission controlling agencies C2 or the appropriate embassy. The aircraft commander should unequivocally state, the aircrew has no authority to consent to the search and that they must relay the foreign request to these agencies for decision. The aircraft commander should then notify these agencies of the foreign request by the most expeditious means available. Thereafter, the aircraft commander should follow instructions provided by the appropriate embassy and C2.

7.37.6.3. If foreign officials refuse to desist in their search request, the aircraft commander should indicate that they would prefer to fly the aircraft elsewhere (provided fuel and mechanical considerations permit a safe departure) and request permission to do so.

7.37.6.4. If permission is refused and the foreign authorities insist on forcing their way on board an aircraft, the aircraft commander should verbally protest the course of action being pursued and that they intend to notify both USAF and the appropriate American Embassy of the foreign action. The aircraft commander should then allow the foreign agents on board the aircraft, without physical resistance, and thereafter report the incident to USAF and appropriate embassy as soon as possible.

7.37.7. In all instances, specific instructions may be briefed because of sensitive cargo or equipment. These instructions and applicable provisions of classified supplements to the foreign clearance guide should be followed where applicable.

7.38. Utilization of Civilian Law Enforcement or Medical Personnel. Generally, before transporting civilian law enforcement officials or civilian medical personnel, obtain proper authorization through installation commander, MAJCOM, or USSOCOM. Civilian law enforcement or medical personnel may be required to perform duties at an accident site. These duties may include death determination or human remains removal. Local and international laws may affect mission execution and should be reviewed prior to deployment or pickup of civilian personnel. The primary method of deploying or recovering civilian law enforcement or medical personnel is by landing. Civilian law enforcement or medical personnel may be deployed and recovered by hoist provided all other transport resources have been examined and determined to be inadequate and approval is obtained from the OG/CC or COMAFSOF. Prior to hoist deployment, brief civilian law enforcement or medical personnel on all applicable procedures and safety and emergency considerations involved. If unable to contact the controlling agency for approval, the aircraft commander may approve the carrying of civilian personnel on life or death missions when it is determined that these passengers are essential for the successful completion of the mission. Commanders will not transport civilian law enforcement personnel into areas of imminent danger or where confrontation with civilian criminal targets is likely, and will not direct the action of civilian authorities in enforcing the law or making arrests. **(T-1).**

7.39. Crew Debriefing.

7.39.1. Training Missions. The aircraft commander will conduct the debriefing and complete the appropriate documentation. **(T-3).**

7.39.2. Operations Under Combat Conditions. Each aircrew participating in operations under actual combat conditions will participate in an intelligence debriefing. **(T-3).**

7.39.3. Commanders will ensure that all aircrews are debriefed immediately following a combat or combat support mission during which any tactics or procedures were observed that may affect other operations.

7.39.4. The aircraft commander encountering hostile fire will submit an immediate airborne report to their controlling agency followed by a hostile fire incident report to intelligence immediately after landing. **(T-3).**

7.39.5. Other Missions. The aircraft commander has the responsibility of affording to each crew member the opportunity to discuss unusual aspects of the mission. Debriefings may be formal or informal, as the situation requires.

7.40. Hazardous Material Procedures. The term hazardous material includes any material, which, because of its quantity, properties, or packaging, may endanger human life or property.

Procedures in this paragraph apply whenever aircraft carry DoD Hazard Class/Division 1.1, 1.2, or 1.3 explosives, Department of Transportation (DoT) Class A and B poisons, etiological or biological research materials, radioactive materials requiring yellow III labels, and inert devices. Also included are DoD Hazard Class/Division 1.4 explosives, oxidizers, compressed gases, flammable solids and liquids, and corrosive liquids listed in AFMAN 24-604, *Preparing Hazardous Materials For Military Air Shipments*.

7.40.1. Hazmat Briefing. Reference AFMAN 24-604.

7.40.2. Cargo Documentation. Do not accept hazardous materials unless proper documentation, certification, and identification of cargo are provided. This includes transportation control number entered correctly on both the cargo manifest and the Shipper's Declaration for Dangerous Goods.

7.40.3. Flight Planning. The aircraft commander (unless specifically briefed otherwise):

7.40.3.1. Enters Hazardous Cargo and the mission number in the appropriate section of the flight plan. Use remarks in the information section of DD Form 1801, or ICAO *Flight Plan Form*.

7.40.3.2. Plans the flight to minimize overflying heavily populated or otherwise critical areas.

7.40.3.3. Prepares a departure message. The remarks section of the departure message should include the following:

7.40.3.3.1. DoT class and DoD hazard class or division, if applicable, of hazardous material on board (include net weight of DoT Class A or B poisons and net explosive weight of Class A or B explosives).

7.40.3.3.2. Request for special support (e.g., isolated parking, security, technical escort teams, etc.).

7.40.3.3.3. Inert devices (when applicable).

7.40.3.4. If ETE is less than 1 hour, or if other circumstances preclude timely receipt at destination, notify base operations at the first intended landing, by priority telephone.

7.40.4. Before Engine Start. Remove placards. Give the controlling agency parking location, approximate engine start time, and verify that the firefighting agency has the hazardous materials information. If not, request relay the following to the firefighting agency:

7.40.4.1. DoT class of hazardous material on board and the DoD hazard class or division for explosive material on board.

7.40.4.2. Net Explosive Weight.

7.40.4.3. Request for isolated parking (if necessary).

7.40.4.4. Estimated time of departure.

7.40.5. En Route. Normal procedures apply. Avoid flying over metropolitan or otherwise critical areas.

7.40.6. Before Landing. Accomplish the following unless specifically prohibited by the theater commander or FLIP planning:

7.40.6.1. Contact the base operations dispatcher, control tower, approach control, or other agency specified in FLIP at least 30 minutes (or as soon as practical) before estimated time of arrival (ETA) to announce that hazardous materials are on board and to verify that the appropriate base support agencies have received the departure message. If not, transmit the mission number, ETA, and information.

7.40.6.2. If landing at a CONUS civil airport without a tower, give the same information to the nearest FAA flight service station (FSS).

7.40.6.3. Request the information be relayed immediately to base operations or the civil airport manager, crash or fire protection agency, and other support activities.

7.40.7. Parking:

7.40.7.1. DoD requires aircraft carrying DoD Hazard Class or Division 1.1, 1.2, 1.3 explosives, DoT Class A poisons, and certain biological agents and munitions be parked in areas isolated from personnel. PICs are responsible for ensuring cargo is correctly identified to the tower and ground control. When aircraft are not directed to an isolated area, identify the cargo again to tower or ground control. When identification is acknowledged, the host is solely responsible for selecting the parking area. Should host procedures be questionable, submit trip reports, as appropriate, to document such occurrences.

7.40.7.2. The military host is responsible for ensuring aircraft are properly placarded. For non-military installations, the briefing to the aircraft commander will include placard requirements and, if required, placards will be furnished at the on load base. The shipper must make prior arrangements with the airport manager for shipments of hazardous materials requiring placards. The shipper is responsible for cargo identification, firefighting procedures, and isolated parking requirements.

7.40.8. **Unscheduled Landing Due to in-flight emergency (IFE).** Transmit unclassified information to the appropriate air traffic control facility as follows:

7.40.8.1. Nature of emergency and intent to land.

7.40.8.2. Aircraft position and ETA.

7.40.8.3. Number of personnel and location in aircraft.

7.40.8.4. Fuel on board.

7.40.8.5. That hazardous materials are on board, location of the cargo, and applicable information.

7.40.8.6. After Unscheduled Landing. Contact the AFSOC Command Center or theater command and control center (CCC) by telephone, HF radio, or message, giving arrival notice, hazardous materials information, and other pertinent information as required.

7.41. Hazardous Medical Equipment.

7.41.1. Nonstandard equipment possessed by medical facilities that use AFSOC air evacuation services should be regarded as potentially hazardous. Two types of equipment are of major concern:

7.41.1.1. Electronic medical equipment produces electromagnetic interference (EMI) which is commonly beyond the limits specified by MIL-STD-461A, *Electromagnetic Interference Characteristics Requirements for Equipment*, and therefore can interfere with aircraft communication and navigational equipment.

7.41.1.2. Therapeutic oxygen systems present an increased hazard of fire or explosion. A potential hazard is the inadvertent disruption of the cylinder neck, manifold, or regulator resulting in explosion and propulsion of the container or accessories.

7.41.2. For nonstandard electronic medical equipment, take the following precautions:

7.41.2.1. Pararescue personnel must inform the aircraft commander when nonstandard electronic medical equipment is brought on board the aircraft. **(T-3)**.

7.41.2.2. The aircraft commander must be informed of the anticipated period of use of the equipment during the mission. **(T-3)**.

7.41.2.3. The aircraft commander must be alert for any interference with aircraft communications or navigation equipment during periods of use of this equipment. **(T-3)**.

7.41.2.4. When continuous use of the equipment is required throughout the duration of the mission, flight must be restricted to VFR conditions. **(T-3)**. Furthermore, exercise additional caution on night VFR missions to ensure there are no adverse effects on navigational equipment.

7.41.3. For nonstandard oxygen equipment, take the following precautions:

7.41.3.1. All compressed oxygen equipment with exposed, unprotected cylinder neck, manifold, or regulator must be completely secured from all movement in its longitudinal and lateral axes. **(T-3)**.

7.41.3.2. Pararescue personnel must continually monitor the operation of the equipment to detect possible malfunction during exposure to altitude. **(T-3)**

Chapter 8

FLYING TRAINING GUIDANCE

8.1. General. See AFMAN 11-2CV-22, Vol 1, *CV-22 Aircrew Training*, and AFMAN 11-2CV-22, Vol 2, *CV-22 Evaluation Criteria*, and the applicable supplements for additional information.

8.2. Training Aircraft Not Capable of Flight. If an aircraft is not capable of departure within 4 hours after scheduled departure time, cancel the training mission unless waived by the aircraft commander. Departure consists of actual takeoffs for assigned or planned training missions, and does not include maintenance ops checks.

8.3. Emergency Procedures. Emergency procedures are normally practiced in the aircrew training device (ATD).

8.3.1. Do not retard ECLs or fail any aircraft systems, except as required during authorized check/test flights.

8.3.2. Simulated single engine maneuvers may be accomplished with power limited verbally (ECLs will remain in fly).

8.4. Instrument Meteorological Conditions (IMC) TF/TA Training. Do not conduct degraded systems training during IMC TF/TA operations.

8.4.1. Prior to entering IMC the aircrew must ensure the TF/TA radar and navigation systems are functioning properly. **(T-3)**.

8.4.2. Altitude Restrictions. For IMC TF/TA en route training, the minimum altitude is 300 ft SCP, and will be conducted along a surveyed/approved route. **(T-3)**.

8.4.3. IMC TF routes flown to a flight director (FD) approach (APPR). Approaches during training will only be conducted to surveyed or approved landing zones along specified routes. **(T-3)** Establish visual contact with the ground for confirmation of aircraft position and drift state (by someone on the crew) prior to descending below 100 ft AGL.

8.5. Obstacle Clearance for Terminal Area Operations Training.

8.5.1. Horizontal obstacle clearance will be no less than 25 ft from the proprotor tip path plane. **(T-3)**. Shipboard operations to marked spot cleared for V-22 may be conducted with less clearance.

8.5.2. The aircraft commander has the ultimate responsibility for obstacle clearance and ensuring that all crew members are thoroughly briefed and aware of their duties and responsibilities involving obstacle clearance.

8.6. Live-Hoist Training. **WARNING** : Personnel trained in hoist operations will assist a survivor who is not familiar with rescue hoist procedures.

8.6.1. Restrict live-hoist training to the minimum necessary to accomplish initial qualification, re-qualification, and proficiency training. Do not conduct live hoist training with the hoist operator's intercom inoperative.

8.6.2. Hover altitude will be the minimum required to safely accomplish the mission. When over water or over vessels, hover at the minimum altitude necessary to avoid salt spray. Hoist training over trees should be conducted at sites adjacent to suitable emergency landing areas.

8.6.3. Hoist operations with or without a tag line is permissible for all devices except SKEDKO™ litters. SKEDKO™ litters will use tag lines to ensure safety during hoist operations. (T-3). Use of SKEDKO™ litters over water is prohibited.

8.6.4. Squadron CC determines eligibility of personnel to ride the hoist during training. Personnel may ride the hoist in accordance with the following:

8.6.4.1. Aircrew/Qualified Supported Forces. No safety observer is required.

8.6.4.2. Other Personnel. There will be a qualified safety observer on the ground available to ensure the survivor properly uses the rescue device.

8.7. Evasive Maneuver Training.

8.7.1. With regard to altitude, initiate evasive maneuvers in APLN mode no lower than 200 ft above highest obstacle (AHO) and maintain a minimum of 200 ft AHO throughout the evasive maneuvering. The minimum altitude for evasive maneuvering in CONV mode (≥ 60 nacelle) is 100 ft AHO.

8.7.2. Pilots will make advisory calls to the crew prior to beginning the evasive maneuver. Crew members will clear the aircraft of obstacles throughout the maneuvering.

8.8. Electronic Countermeasures (ECM) Training Guidance.

8.8.1. For training, operational ECM software can only be used in the CONUS and only after the signal collection risk is evaluated through coordination with squadron intelligence personnel. Crew members will provide geographical coordinates of the intended operating area, the block of time of concern, and the frequency range of ECM operations. (T-3).

8.8.2. After analyzing the signal collection risk, operational ECM software may be used during scheduled airborne intercept training against air, ground and sea-based threats. Use of operational software against multiple threat emitter system (MUTES) is prohibited at all times. Accomplishing system built in test (BIT) in accordance with aircraft checklist with operational software is approved. In all other training situations within the CONUS and in all training situations overseas only use ECM software versions specifically designated for training.

8.9. Flare and Chaff Policy.

8.9.1. Dispense flares in accordance with controlling agency procedures and restrictions. If not in a designated range structure, exercise due diligence and regard prior to dispensing. When over water, dispense flares at least 3 nm from any surface vessel, platform, or landmass.

8.9.2. If a hung flare is detected, follow appropriate local procedures. If no local procedures are developed use the following: Upon next landing and prior to entering a congested area, deplane a crew member to visually inspect dispensers to ensure that there are no hung flares. If a hung flare is observed, contact appropriate agency, (tower, ground, command post etc.) and follow their instructions.

Chapter 9

MISSION EMPLOYMENT

9.1. Formation Flying.

9.1.1. Spacing.

9.1.1.1. During formation flight, minimum spacing is in accordance with flight manual restrictions. Base rotor disk separation on the largest rotor span/rotor disk diameter when engaged in dissimilar formation operations.

9.1.1.2. Maintain a minimum of 100 ft spacing during ground taxi.

9.1.2. Dissimilar Formation. Formation flights are authorized when participating crew members are briefed and thoroughly familiar with the other aircraft's performance and tactics.

9.1.3. Communication.

9.1.3.1. Prior to formation flight, aircrew will conduct a secure communications check of all available aircraft radios in the formation, to include at least one radio with anti-jam (AJ).

9.1.3.2. Do not initiate formation flight without positive interplane radio communications. **Exception:** communications out procedures. Whenever possible, dedicate one of the four primary radios to an interplane communications frequency.

9.2. Terminal Operations.

9.2.1. For the first approach into any unprepared landing zone, both pilots will display hover symbology automatically on the MFD prior to commencing a descent into the LZ. **(T-3)**.

9.2.2. If any degradation in on-board systems is discovered which could result in loss of situational awareness during approach/hover, the aircraft commander will inform the crew. **(T-3)**. The decision to proceed rests with the aircraft commander.

9.2.3. When LVA conditions are expected, both pilots will have hover symbols set to automatically engage prior to commencing final approach into the HLZ. **(T-3)**. At least one pilot will have the hover page on the inboard MFD.

9.2.4. Go-Around Calls. If any crew member calls "go-around" and the aircraft is able to safely transition to forward flight, the pilot flying shall immediately apply power and set nacelles as required to establish a climb that clears all obstacles. **(T-3)**.

9.3. Alternate Insertion/Extraction. See AFTTP 3-3.CV-22, *Combat Aircraft Fundamentals*, for additional information. **WARNING:** The aft VTOL CG limit on the aircraft's flight envelope can be exceeded by as much as ten inches if proper care is not exerted during deployments/recovery operations from the ramp. In high winds, this aft CG condition can approach the absolute control limit of the aircraft. It is extremely important to ensure that the troops deplane in the proper order, and that troops remain in/near their seats until it is time for them to exit the aircraft. Team members will ensure 24-27 inch spacing between each member due to CG limits. Allow only three personnel at a time past the ramp hinge due to CG limits.

9.3.1. A cutting device will be readily available to cut ropes or AIE devices in case of emergencies or rope entanglement.

9.3.2. Equipment certified for training use only will not be used for live personnel. (T-3).

9.3.3. Aircrew will ensure operations off the ramp will not exceed aircraft CG limits. (T-3).

9.3.4. Mission Briefing. Prior to deployment or pickup, the aircraft commander will ensure the appropriate briefing for the planned alternate insertion and extraction operations is completed. (T-3). Aircrew and team briefings will emphasize proper hand signals, time calls, and emergency procedures. (T-3).

9.3.5. The crew member at the deploying station will ensure the departing team members have removed any potential restraints (ICS connections, personnel restraints, etc.) prior to deploying. (T-3).

9.3.6. Hoist.

9.3.6.1. Aircrew will inspect the entire length of the hoist cable any time a live-hoist is anticipated. During the hoist preflight inspection, aircrew should make every effort to avoid cable contact with the ground and/or the aircraft. Hoist cable contact with the ground and/or aircraft could create unnecessary wear on the cable.

9.3.6.2. Ground the hoist to discharge static electricity and prevent personnel on the ground or water from sustaining a shock. Do not ground the hoist near spilled fuel.

9.3.6.3. The hoist operator will wear a heavy, work-type glove or equivalent on the hand used to guide the hoist cable and have eye protection in place.

9.3.6.4. Complete the hoist operator's checklist prior to final approach.

9.3.6.5. If the survivor is attached to a parachute, hover at an adequate distance to prevent the rotor wash from billowing the parachute and dragging the survivor.

9.3.6.6. Hoist Equipment.

9.3.6.6.1. Forest Penetrator/Rescue Seat.

9.3.6.6.1.1. Do not use the hoist to relay messages except when all other possible means of communications (e.g., radio, message streamer, tag line) have been exhausted.

9.3.6.6.1.2. All crew members must be vigilant for shock loads to the cable. If shock loading is observed, cease live hoist operations. Inspect hoist, and if necessary, replace the cable prior to the next mission. **Note:** During water operations, the dynamic action of waves increases the potential for shock loading.

9.3.6.6.1.3. While conducting live hoist operations during training, if the cable contacts the aircraft, operations will cease until a visual check of the cable is complete and no defects are noted. During contingencies, the decision to continue operations rests with the hoist operator and the pilot in command. Additionally, the increased drag of the stokes litter/personnel in the water increases the total force applied to the cable.

9.3.6.6.1.4. The description and maintenance instructions for the forest penetrator and rescue seat are contained in TO 14S6-3-1, *Forest Penetration, Rescue Seat Assembly*, PN K26-1000-5,-9 (Kaman), and TO 00-25-245, *Operations Instructions Testing and Inspection Procedures for Personnel Safety and Rescue*

Equipment, paragraph 4.5 and NAVAIR TO 13-1-6.5 *Rescue and Survival Equipment*, Chapter 14.

9.3.6.6.1.5. The forest penetrator and rescue seat can be used to recover unresponsive or injured personnel safely with the exception of those with back injuries.

9.3.6.6.1.6. It is possible to recover three people at once with the penetrator. However, this should only be done when time is critical since it may exceed the hoist load limit of 600 lbs.

9.3.6.6.2. Stokes Litter. Configure the stokes litter with the sling, flotation devices, three restraining belts, and tag line when stowed on the aircraft.

9.3.6.6.3. Horse Collar (Rescue Strop). The horse collar can be used for single occupant recoveries from land or water. Only use the horse collar to recover ambulatory personnel.

9.3.6.6.4. Tag Line. It should be used to guide the recovery device to or from confined areas, such as ship rigging, trees, etc. It may also be used to pass messages or transfer small items to or from the aircraft.

9.3.6.6.5. Rescue Net. The sea anchor drogue may be replaced by a 10-foot line with a 3-to-5 pound bag of shot for stability.

9.3.6.7. During training missions, terminate live hoisting immediately at the first indication of equipment malfunction. If possible, return the individual to the surface as soon as possible by lowering the device or reducing hover height. For actual search and rescue (SAR) missions, existing circumstances must dictate actions to be taken. The hoist operator will advise the pilot and check hoist power sources and hoist controls.

9.3.6.8. During a water hoist pickup it may be advantageous to extend the cable and displace the aircraft such that the survivor is not in an area of extreme downwash while preparing to be lifted. Once the survivor is ready for hoisting, establish the hover over the rescue device and lift the survivor(s) straight up out of the water.

9.3.6.9. Unconscious Survivor Recovery. If it is determined that the victim is unresponsive or unable to employ the rescue device, lower someone trained in hoist operations to aid the injured or unresponsive survivor. The deployed crew member will secure the survivor for hoisting and give a thumbs up visual signal to indicate that the survivor is ready for pickup.

9.3.7. Rappelling. **WARNING:** Failure to ensure that the ropes are on the ground and maintain contact with the ground prior to personnel deployment will result in aircraft damage, injury, and/or death. **WARNING:** Upon encountering unsafe conditions, stop any additional team members deploying from the aircraft. Do not attempt to physically stop a person in the act of deploying as this may cause the person to lose grip of the rope and increase the probability of injury to the team member.

9.3.7.1. Aircraft commanders will ensure all crew members are aware of rope length being used. **(T-3)**.

9.3.7.2. Maximum rappelling altitude for training is 150 ft. **(T-3)**.

9.3.7.3. Do not deploy ropes until the aircraft is in a stable hover over the intended deployment area.

9.3.8. Fast Rope. **WARNING:** Failure to ensure that the ropes are on the ground and maintain contact with the ground prior to personnel deployment will result in aircraft damage, injury, and/or death. **WARNING:** Failure to ensure all personnel are clear below the aircraft before releasing the rope may result in injury and/or death. **WARNING:** Fast rope will be coiled toe to head.

9.3.8.1. The aircraft commander is responsible for ensuring that all crew members are aware of the length of the ropes. **(T-3)**.

9.3.8.1.1. The aircrew will install ropes and inspect attaching points. **(T-3)**.

9.3.8.2. Configure handrails down the sides of the cabin as described in A1-V22AB-CLG-000/1V-22(C)B-9, *Cargo Handling Manual V-22 Tiltrotor*.

9.3.8.3. Water Fast Rope Operations. Deploy the fast rope upon entering the insertion zone. A 2-4 knot forward drift will assist in deployment of teams and prevent them from landing on each other and possible injuries. Once personnel are deployed, slowly climb and accelerate to allow recovery of the rope prior to high-speed flight (if not released).

9.3.9. Belay Operations. The aircrew will ensure: **WARNING:** All loose rope will be in a weighted bag to avoid fouling, entanglement, damage to aircraft, and injury and/or death to personnel. **WARNING:** Upon encountering unsafe conditions, such as loss of control by person belaying, stop belaying operations until the unsafe condition is corrected.

9.3.9.1. Do not deploy the belay equipment until established in a stable hover over the deployment area.

9.3.9.2. All participating personnel will be secured to the aircraft. **(T-3)**.

9.3.9.3. Fast rope and belaying operations will not occur simultaneously off the ramp. **(T-3)**. **WARNING:** When belaying equipment between 400 and 1,000 pounds from the ramp, give consideration to a possible rapid shift in aircraft CG. Equipment entanglement and team members crowding on the ramp area could make a CG shift more profound.

9.3.10. Helocast Operations. **NOTE:** Utilize the BEFORE LANDING checklist with gear up to prepare the aircraft for a water approach. **CAUTION:** Use extreme caution when silencing the landing gear warning horn to ensure the emergency blow down switch is not activated.

9.3.10.1. Safety Requirements. The preferred coverage is with a safety boat present in the water operations area. The safety boat should be clearly marked (such as an IR strobe) and in communication prior to helocast operations. Safety boat location and communications plan must be coordinated prior to conducting the first low and slow. Positive communication with the cover ship and/or safety boat is required.

9.3.10.2. Aircraft will call ON THE APPROACH and OUT OF THE SPRAY on interplane and safety boat frequencies.

9.3.10.3. All helocast approaches and live water hoists require a safety boat or a hoist capable cover ship in radio contact, with a life raft, 1 hour of loiter fuel, and within a 10

minute response time. **(T-3)**. Additional life rafts may be installed at the discretion of the unit commander.

9.3.10.4. Helocast deployments will be conducted at a maximum of 10 ft above water level (AWL) and 10 Knots Ground Speed (KGS). **(T-3)**.

9.3.10.5. Personnel will exit the aircraft from the ramp.

9.3.10.6. The aircraft will have an operable radar altimeter and hover symbology prior to helocast operations. **(T-3)**.

9.3.10.7. Prepare the rescue hoist for extraction to the max extent possible prior to personnel deployment in the event an injury occurs to the departing team.

9.3.10.8. Boat Deployment. **WARNING:** Failure to ensure adequate distribution of the team's equipment may result in an aft CG causing the craft to become near vertical during deployment. Securely attach equipment and gear inside the boat.

9.3.10.8.1. Aircraft commanders will ensure Combat rubber raiding craft (CRRC) center of gravity limitations will be discussed during both team and aircrew briefings. **(T-3)**.

9.3.10.8.2. Reference USSOCOM MAN 350-6, *Special Operations Forces Infiltration/Exfiltration Techniques*, Chapters 9 and 10, for maritime operations and USSOCOM MAN 350-4, Vol 2, *Combat Rubber Raiding Craft Operations*, for approved boats.

9.3.10.8.3. Army or Navy personnel and boat deployment limit is Sea State 4 (17-21 knots/3.8-5.0 average wave height). Reference USSOCOM MAN 350-4, Vol 2, Sea State Chart, Appendix D.

9.3.10.8.4. Boat/Raft configuration. The crafts may be laced to plywood or suitable material that will roll easily on the aircraft rollers. Many boat types must be partially deflated and strapped to fit within the cabin width. Compressed air may be configured to completely inflate the boat after deployment.

9.3.10.8.4.1. The boat may be loaded bow or stern first. Secure with at least two cargo tie-down straps per boat, with a short bow or stern line attached to the aircraft.

9.3.10.8.4.2. During the approach, after completing conversion, team members and crew members will prepare the boat for drop by removing the primary cargo tie-down straps. The bow or stern line will remain attached until pilot flying indicates the aircraft is within parameters for deployment.

9.4. Aerial Delivery.

9.4.1. Personnel Parachute Delivery. Personnel will exit the aircraft on the command of a qualified jumpmaster after clearance is received from the aircraft commander. **(T-3)**. Reference USSOCOM Manual 350-3, *Airborne Operations (Parachuting)*. Airdrop procedures are contained in AFI 11-231, *Computed Air Release Point Procedures* and AFTTP 3-3.CV-22. **NOTE:** The user accepts all responsibility for airdrop accuracy and damage to equipment or injury to personnel.

9.4.2. Bundles. Bundles associated with Personnel Parachute Delivery are authorized in accordance with Military Free Fall instructions.

9.5. Vehicles, Motorcycles, and All Terrain Vehicles (ATV). Refer to A1-V22AB-CLG-000, *Cargo Handling Manual V-22 Tiltrotor*, when loading any vehicle. When loading and unloading vehicles, use marshaling signals in accordance with AFMAN 11-218 and AFMAN 11-2CV-22, Vol 3, CL 1.

9.6. Weapons Employment. In accordance with applicable rules of engagement, test fire aircraft weapons prior to any potential engagement. Avoid inhabited areas. When in formation, flight lead will brief and coordinate test firing procedures.

9.7. Peacetime Search and Rescue (SAR) On-Scene Procedures.

9.7.1. Human Remains. Aircrews will abide by the procedures outlined in the following: JP 3-50, Personnel Recovery. AFSOC and AETC crews do not remove human remains from crash or incident sites except as provided in the subparagraph below. Do not commit resources to body removal until the mission approving or releasing authority has been informed of the request and the attendant circumstances, and has authorized the removal of the remains.

9.7.1.1. Military Personnel. If the crash or incident site is on a military reservation or within military jurisdiction, the remains of military personnel shall be removed only with the approval of a medical officer. **(T-3)**. In the absence of a medical officer at the crash or incident site, approval must be obtained from the proper military medical authority prior to removal of remains. **(T-3)**. If the crash or incident site is not within military control, jurisdiction over the remains rests with the civil authorities. In such cases, do not remove remains unless authorized by the appropriate civil official (usually the local coroner or medical examiner).

9.7.1.2. Civilian Personnel. The remains of civilian personnel employed by the military are recovered as stated above. Remains of other civilians may be removed in accordance with applicable laws of the jurisdiction, after authority has been obtained.

9.7.1.3. Exceptional Cases. Within the United States and in extreme situations where time is critical and communications are impossible, the aircraft commander may, with the approval of the appropriate civil official, remove remains and deliver them to the proper civil authorities. This procedure is authorized only if conditions already make it impossible to obtain timely approval from the mission approving or releasing authority. Whenever this procedure is employed, the aircraft commander should comply with any state or local laws or regulations affecting the transport of human remains.

9.7.2. Civil Appointments. AFSOC personnel will not, at any time, accept appointments as deputy coroner. **(T-2)**.

9.7.3. International Aspects. A mission requiring the removal of human remains, military or civilian, across international borders, will involve national as well as local law. **(T-2)**. Prior to such operations, consult the United States diplomatic officials to the concerned countries to obtain necessary clearances for the operation.

9.7.4. Safeguarding Aircraft Wreckage. Reference DAFI 91-204, *Safety Investigations and Reports*. If first on the scene, establish security until properly relieved. Guard classified matter until competent authority assumes control. Do not disturb personal effects on survivors or

deceased. Inventory and store personal effects found in the crash area. Obtain receipts from personnel who assume custody, and retain them with inventories in the unit.

9.7.5. Permission to Enter Private Property within the United States. Obtain written permission from the owner or person in control prior to entering private property. However, trespass by SAR personnel is justifiable when it is necessary to save life or limb.

9.7.6. Marking Aircraft Wreckage. Obliterating or marking abandoned USAF aircraft wreckage is the responsibility of base commanders (reference DAFI 91-204). However, this function may be delegated to an AFSOC unit. Use the following procedures:

9.7.6.1. USAF Aircraft. Mark wreckage with a yellow cross as large as the condition of the wreckage permits. When condition of wreckage prevents a marking easily visible from the air, appropriately mark logs, rocks, and other material in the immediate area.

9.7.6.2. Non-USAF Wreckage. Do not mark or obliterate non-USAF aircraft to guard against possible damage claims against USAF. Paint a yellow cross on material other than aircraft parts.

9.7.6.3. Recording Data on Wreckage. To assist aircraft accident investigations, the recovery team will prepare a written description of the aircraft remnants and their location; the location, attire, and appearance of victims and survivors; evidence of accident cause, including instrument readings, control settings, condition and attitudes of control surfaces and landing gear; and such other data that may assist in analyzing the accident. Make every effort to preserve all aircraft papers, including flight records, charts, maintenance forms, radio logs, etc.

9.7.7. IFF. CV-22 aircraft are authorized to use Mode 3, Code 1277, and call sign, (AF Rescue XXX {tail number}), when operating under VFR in CONUS airspace and:

9.7.7.1. On an official SAR mission.

9.7.7.2. En route to or from or within a designated search area.

9.7.7.3. For SAR operations OCONUS, crews will follow host nation and local guidance.

9.8. Non-Tactical Shipboard Operations.

9.8.1. Aircrews will abide by the procedures outlined in the following: AFTTP 3-2.4, *Multi-Service Tactics, Techniques, and Procedures for Shipboard Helicopter and Tiltrotor Aircraft Operations*, NATOPS A1-V22AC-AFM-000, NATOPS 00-80T series, applicable Interim Flight Clearances (IFCs), and NATO HOSTAC MPP-02 series.

9.8.2. Qualification and Currency. Aircrew will conduct shipboard operations training in accordance with ATFFP 3-2.4 figure 2-4. AFTTP 3-2.4, Appendix C contains guidance for currency waivers. Refer to AFMAN 11-2CV-22, Vol 1, for all training requirements.

Chapter 10

LOCAL OPERATING PROCEDURES

10.1. General.

10.1.1. Units may publish local and unique unit operating procedures as required. This chapter is strictly for local area procedures not covered in the SOP document. If changes to the SOP are required, submit changes through squadron Stan/Eval channels for incorporation during CV-22-wide SOP re-writes.

10.1.2. These procedures may be solely contained in a unit in-flight guide or in this chapter but will not be less restrictive than items contained in this AFMAN or other Air Force Instructions. Items may include, but are not limited to the following:

10.1.2.1. Local terrain and weather rules.

10.1.2.2. Local area flying procedures.

10.1.2.3. Gunnery/ECM range procedures.

10.1.2.4. Taxi, hot gun, hot brake, hung flare or parking plans, etc.

10.1.2.5. Evacuation or dispersal plans.

10.1.2.6. Training or operational landing/AIE sites.

10.1.2.7. Noise abatement procedures.

10.1.2.8. Standard briefing items and terminology.

10.1.2.9. Standard mission folder/kneeboard items.

10.1.2.10. Mission planning factors.

10.1.2.11. Master waypoint list.

10.1.2.12. Copies of these local area procedures will be distributed to all affected aircrew members. **(T-2)**. Forward a copy of these procedures to MAJCOM Stan/Eval. It is the unit's responsibility to ensure procedures are current and relative to the scope of this publication.

Chapter 11

OPERATIONAL REPORTS, FORMS

11.1. General. This chapter contains a description of applicable reports and forms. For assistance in completing safety forms contact the wing, group, unit, or local flight safety officer.

11.2. AFSOC Form 97, AFSOC Aircraft Incident Report. Refer to DAFI 91-204. Notify MAJCOM/SE of the following high interest items: off drop zone (DZ) drops, insertion injuries, IFR/Aerial Refueling (AR) incidents, dropped objects, or any other incident which, in the judgment of the flight safety officer (FSO), needs to be reported. DAFI 91-204 provides directive guidance that is common to investigating and reporting all US Air Force mishaps. Conduct safety investigations and write reports solely to prevent future mishaps. Safety investigations take priority over any corresponding legal investigations, except in the case of friendly fire mishaps or criminal investigations.

11.3. AF Form 457, USAF Hazard Report. Refer to AFI 91-202, *The US Air Force Mishap Prevention Program*. The USAF hazard reporting system provides a means for Air Force personnel to alert supervisors and commanders to hazardous conditions requiring prompt corrective action. A hazard is any condition, act, or circumstance that jeopardizes or may jeopardize the health and wellbeing of personnel or which may result in loss, damage, or destruction of any weapons system, equipment, facility, or material resource.

11.4. AF Form 651, Hazardous Air Traffic Report (HATR). Refer to AFI 91-202.

11.4.1. The Air Force HATR program provides a means for personnel to report all near midair collisions and alleged hazardous air traffic conditions. Use information in HATR reports only for mishap prevention. AFI 91-202 lists reportable incidents.

11.4.2. Procedures: Make an airborne report of the hazardous condition to the nearest ATC agency (e.g., center, flight service station, control tower, or aeronautical radio station), and give the following information as appropriate:

11.4.2.1. Identification or call sign.

11.4.2.2. Time and place (radial/ DME, position relative to the airfield, etc.).

11.4.2.3. Altitude or flight level.

11.4.2.4. Description of the other aircraft or vehicle.

11.4.2.5. Include a verbal statement as soon as possible after occurrence that a written HATR report will be filed upon landing. **Note:** ATC agencies (e.g., FAA, etc.) must know if an official report is being filed.

11.4.2.6. File the HATR as soon as possible (within 24 hours) using any available means of communication. Normally, it should be filed at the base operations office at the landing airport. If this is impractical and if communications permit, notify the safety office of the Air Force base where the condition occurred, the safety office at the home station, or as prescribed by the overseas MAJCOM. In any case, provide the safety office with all available information needed to prepare AF Form 651. Turn in a completed copy of AF Form 651 to the wing/group safety office. **Note:** HATR reports are not privileged information and may be released outside the USAF.

11.4.3. Individuals submitting a HATR are granted immunity from disciplinary action provided:

- 11.4.3.1. Their violation was not deliberate.
- 11.4.3.2. They committed no criminal offense.
- 11.4.3.3. No mishap occurred.
- 11.4.3.4. They properly reported the incident using the above procedures.

11.5. AF Form 711B, USAF Mishap Report. Refer to DAFI 91-204, *Safety Investigations and Reports*.

11.5.1. Responsibilities: Notify the appropriate authorities of any mishap involving aircraft or crew. When notified, AFSOC units will initiate investigative and reporting actions in accordance with DAFI 91-204. **Note:** Do not attempt to classify a mishap.

11.5.2. Reportable Mishaps. Aircraft commanders will:

11.5.2.1. Report damage to the aircraft, or injury to the crew or passengers: as well as any damage or injury to another organization's equipment or personnel resulting from the movements or actions of an aircraft or crew.

11.5.2.2. Aircraft commanders will report the following occurrences:

11.5.2.2.1. A physiological episode. A physiological reaction, near accident, or hazard in-flight due to medical or physiological reasons. **Note:** In the event of a physiological episode, all crew members and passengers involved will report to a flight surgeon as soon as practical and request that an applicable MAJCOM mishap/incident report form be accomplished. **(T-3)**. This includes:

- 11.5.2.2.1.1. Proven or suspected case of hypoxia.
- 11.5.2.2.1.2. Carbon monoxide poisoning, or other toxic exposure.
- 11.5.2.2.1.3. Decompression sickness due to evolved gas (bends, chokes, neurocirculatory collapse), or severe reaction to trapped gas resulting in incapacitation.
- 11.5.2.2.1.4. Hyperventilation.
- 11.5.2.2.1.5. Spatial disorientation or distraction resulting in an unusual attitude.
- 11.5.2.2.1.6. Loss of consciousness from any cause.
- 11.5.2.2.1.7. Death by natural causes of any crew member in-flight.
- 11.5.2.2.1.8. Alcohol intoxication and hangover (crew only).
- 11.5.2.2.1.9. Illness (both acute and pre-existing), including food poisoning, dehydration, myocardial infarction, seizure, and so forth.
- 11.5.2.2.1.10. Exposure to toxic, noxious, or irritating materials such as smoke, fumes, or liquids.

11.5.2.2.2. In-flight flameout, engine failure, required engine shutdown, suspected engine power loss, or loss of thrust sufficient to preclude maintaining level flight above

minimum en route altitude (MEA). **Note:** Report failure to restart, using the criteria above.

11.5.2.2.3. Flight control malfunction resulting in an unexpected or hazardous change of flight attitude, altitude, or heading.

11.5.2.2.4. Malfunction of landing gear when difficulty is experienced using emergency system or procedures.

11.5.2.2.5. In-flight loss of all pitot-static instrument indications or all attitude or directional indications.

11.5.2.2.6. Spillage or leakage of radioactive, toxic, corrosive, or flammable material from aircraft stores or cargo.

11.5.2.2.7. All cases of departure from intended takeoff or landing surface onto adjacent surfaces.

11.5.2.2.8. Any incident which does not meet the established criteria for a reportable mishap but, in the judgment of the aircraft commander, needs to be emphasized in the interest of flight safety.

11.6. Reports of Violations/Unusual Events or Circumstances. Violations identified in AFMAN 11-202, Vol 3, MAJCOMSUP, and navigation errors (including overwater position errors exceeding 24 nm, border and ATC violations) will be reported.

11.6.1. Include the following: factual circumstances, investigation and analysis, findings and conclusions, recommendations, and actions taken.

11.6.2. Attachments should include; notification of incident, crew orders, statement of crew members (if applicable), and documenting evidence (logs, charts, etc.).

11.6.3. In addition to the information listed, the historical flight plan will be downloaded onto a floppy disk and turned in to the C2 center or owning standardization and evaluation office.

11.6.4. Send the original investigation report within 45 days to MAJCOM/IG. Air Force Reserve units receiving alleged violations will send the original investigation through channels to arrive at Air Force Reserve Command, Inspector General (AFRC/IG) within 35 days. AFRC/IG will send the investigation report to MAJCOM/IG within 45 days.

11.6.5. The Operational Report (OPREP)-3, Event or Incident Report, reporting procedures for all aircraft notified of navigational errors exceeding 24 nm will be reported under AFMAN 10-206, *Operational Reporting*.

11.6.5.1. On notification of a navigational position error, the aircraft commander (or agency receiving notification) documents the circumstances surrounding the incident (report content below) and ensures submission of an OPREP-3 report through C2 channels.

11.6.5.2. The aircraft commander (or agency receiving notification) will include the following:

11.6.5.2.1. Name and location of unit submitting report, mission identification number, reference to related OPREPs-3, type of event (e.g., state navigation position error), date, time (Zulu), and location (e.g., Air Route Traffic Control Center (ARTCC) area).

11.6.5.2.2. Description of facts and circumstances. Include aircraft type and tail number, unit (wing/group or squadron assignment of crew), home base, route of flight, point of alleged deviation, and miles off course.

11.6.6. The aircraft commander must keep the appropriate agencies apprised of any unusual events or circumstances impacting their missions. **(T-3)**. Examples of reportable events include meaconing, jamming, intrusion, interception, fuel dumping, loss of multiple engines, hostile fire, injury to passengers or crew members, etc. This list is not exhaustive. Some events may require the C2 agency to forward OPREP reports to higher headquarters. The old adage, when in doubt, report it, applies.

Chapter 12

FLIGHT ENGINEER PROCEDURES AND FORMS

12.1. General. In addition to the duties listed in the flight manual, other applicable technical orders, and this AFI, the aircraft commander may assign other duties to the FE, as necessary. Except for ferry flights and hostile environment repair, these items need not be briefed and will be performed as normal procedures. Training requirement will be in accordance with AFMAN 11-2CV-22, Vol 1. **(T-3)**.

12.2. Unscheduled Maintenance. FEs are not normally required to perform unscheduled maintenance actions. However, in the absence of qualified maintenance personnel the FE may obtain authorization to perform the following actions (in coordination with maintenance personnel when available) utilizing portable electronic display device (PEDD) guidance:

12.2.1. Chip detector removal, replacement and inspection.

12.2.2. Batteries.

12.2.3. Clearing of yellow and red blade fold wing stow (BFWS) halts.

12.3. Authority to Clear a Red X. At en route stations, FEs are authorized to clear Red X symbols for intake and exhaust inspections, dust covers and plugs installed, and aircraft panels removed and installed to facilitate other maintenance. In other situations where the aircraft is on a Red X and qualified maintenance personnel are unavailable, the FE may obtain authorization to clear the Red X from the maintenance group commander, OG/CC (or designated representative), or chief of maintenance, in accordance with TO 00-20-1.

12.4. In-Process Inspections. All FEs must be aware of their responsibility to perform in-process inspections when clearing Red X symbols. During the assembly or reassembly of an item at those stages where further assembly will prevent the required inspection of the item, perform an in-process inspection. Document the in-process inspection (Refer to TO 00-20-1). Additionally, FEs may be required to complete the following inspections: Maintenance Preflight Inspections.

12.5. Refueling/Defueling. FEs are normally not required to refuel, defuel, or service the aircraft; however, the FE is qualified and authorized to accomplish these duties when maintenance personnel are not available. Servicing may include hydraulic systems, oils systems, and nitrogen systems. Use the appropriate checklist during all refueling and defueling operations. If ground support personnel are not available, the aircraft commander will designate other crew members to assist the FE. **(T-3)**.

12.6. Aircraft Configuration. FEs are normally not required to configure aircraft mission equipment; however, the FE is qualified and authorized to reconfigure aircraft mission equipment, as required, to accomplish the mission. Aircraft mission equipment is defined as litters, seats, RMWS components, etc.

12.7. Forms Management. In addition to the procedures in TO 00-20-1 and DAFMAN 11-401, the FE will assist the aircraft commander in maintaining the AFTO Form 781. Verify the exceptional release is signed before starting engines and resigned, if necessary, at en route stops. After each flight, ensure the number of discrepancies (if any), landings, and flight duration time(s), etc., are entered on the AFTO Form 781H. Review all AFTO Form 781A discrepancies and ensure clear, detailed entries are made, symbols, date discovered, and when discovered codes are entered

for each discrepancy and the discovered blocks are signed. In accordance with AFI 11-253, *Managing Purchases of Aviation Fuel and Ground Services*, log all off-station fuel purchases (to include FARP and in-flight refueling) on AF Form 664, *Aircraft Fuels Documentation Log*.

JOSEPH T. GUASTELLA Jr., Lt Gen, USAF
Deputy Chief of Staff, Operations

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

A1-V22AC-AFM-000/1V-22(C) B-1, *NATOPS Flight Manual, CV-22 Tiltrotor*, 15 December 2019

A1-V22AB-CLG-000/1V-22(C) B-9, *Cargo Handling Manual V-22 Tiltrotor*, 1 August 2015

AFI 10-801, *Defense Support of Civil Authorities*, 29 January 2020

AFI 11-200, *Aircrew Training, Standardization/Evaluation, and General Operations Structure*, 21 September 2018

AFI 11-202, Vol 2, *Aircrew Standardization and Evaluation Program*, 6 December 2018

AFI 11-231, *Computed Air Release Point Procedures*, 12 December 2019

AFI 11-235, *Specialized Fueling Operations*, 31 May 2019

AFI 11-253, *Managing Purchases of Aviation Fuel and Ground Services*, 17 May 2021

AFI 11-301, Vol 1, *Aircrew Flight Equipment (AFE) Program*, 10 October 2017

AFI 11-401_AFSOCSUP, *Aviation Management*, 18 April 2019

AFI 13-207-O, *Preventing and Resisting Aircraft Piracy (Hijacking)*, 4 February 2019

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

AFI 35-101, *Public Affairs Operations*, 20 November 2020

AFI 36-2903, *Dress and Personal Appearance of Air Force Personnel*, 15 March 2021

AFI 91-202, *The US Air Force Mishap Prevention Program*, 11 March 2020

AFMAN 10-206, *Operational Reporting*, 18 June 2018

AFMAN 11-202, Vol 1, *Aircrew Training*, 27 September 2019

AFMAN 11-202, Vol 3, *Flight Operations*, 15 March 2021

AFMAN 11-202, Vol 3, AFSOCSUP, *Flight Operations*, 15 March 2021

AFMAN 11-2CV-22, Vol 1, *CV-22 Aircrew Training*, 10 March 2020

AFMAN 11-2CV-22, Vol 2, *CV-22 Evaluation Criteria*, 19 November 2018

AFMAN 11-2CV-22, Vol 3, CL-1, *Flight Crew Checklists and Signal Tables*, 18 July 2019

AFMAN 11-218, *Aircraft Operations and Movement on the Ground*, 5 April 2019

AFMAN 11-301, *Aircrew Flight Equipment (AFE) Operations in a Chemical, Biological, Radiological, Nuclear (CBRN) Environment*, 22 July 2016

AFMAN 11-301, Vol 2, *Management and Configuration Requirements for Aircrew Flight Equipment (AFE)*, 13 February 2020

AFMAN 24-206, *Preparing Hazardous Materials for Military Air Shipments*, 09 October 2020

AFPD 10-8, *Defense Support of Civil Authorities (DSCA)*, 4 June 2018

AFPD 11-2, *Aircrew Operations*, 31 January 2019

AFPD 11-4, *Aviation Service*, 12 April 2019

AFTTP 3-2.4, *Multi-Service Tactics, Techniques, and Procedures for Shipboard Helicopter and Tiltrotor Aircraft Operations*, March 2019

AFTTP 3-2.6, *JFIRE*, 06 October 2019

AFTTP 3-3.CV-22, *Combat Aircraft Fundamentals*, 26 April 2019

CJCSI 3900.01D, *Position (Point and Area) Reference Procedures*, 14 May 2015

DAFI 33-360, *Publications and Forms Management*, 14 February 2019

DAFI 91-204, *Safety Investigations and Reports*, 10 March 2021

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

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

DAFMAN 13-217, *Drop Zone, Landing Zone, and Helicopter Landing Zone Operations*, 22 April 2021

DoD Flight Information Publication AP/1B, *Area Planning, Military Training Routes, North and South America*, 17 June 2021

DoDI 4515.13, *Air Transport Eligibility*, 23 October 2020

DoDM 5200.48, *Controller Unclassified Information (CUI)*, 6 March 2020

Joint Publication (JP) 3-50, *Personnel Recovery*, 2 October 2015

MIL-STD-461A, *Electromagnetic Interference Characteristics Requirements for Equipment*, 01 August 1968

NATO MPP-02, Volume 1, *Helicopter Operations from Ships other Than Aircraft Carriers (HOSTAC)*, May 2018

SORN F011 AF XO A, *Aviation Resource Management Systems (ARMS)*, March 2011

Title 10 USC, Section 9013, *Title 10-Armed Forces*, 19 August 2021

TO 00-20-1, *Aerospace Equipment Maintenance Inspection, Documentation, Policies, and Procedures*, 1 June 2018

TO 00-25-172, *Ground Servicing of Aircraft and Static Grounding/Bonding*, 6 September 2019

TO 00-25-245, *Operations Instructions Testing and Inspection Procedures for Personnel Safety and Rescue Equipment*, 21 October 2020

TO 1-1B-50, *Aircraft Weight and Balance*, 01 August 2019

TO 13-1-6.5, *Rescue and Survival Equipment*, 1 April 2007

TO 14S6-3-1, *Forest Penetration, Rescue Seat Assembly, PN K26-1000-5,-9 (Kaman)*, 30 August 1995

USSOCOM Manual 350-3, *Airborne Operations (Parachuting)*, 19 October 2018

USSOCOM Manual 350-4, Vol 1, *Combat Swimming/Diving Operations*, 1 May 2015
USSOCOM Manual 350-4, Vol 2, *Combat Rubber Raiding Craft Operations*, 15 August 2005
USSOCOM Manual 350-6, *Special Operations Forces Infiltration/Exfiltration Techniques*, 15 September 2011

Adopted Forms

AF Form 457, *USAF Hazard Report*
AF Form 651, *Hazardous Air Traffic Report (HATR)*
AF Form 664, *Aircraft Fuels Documentation Log*
AF Form 711B, *USAF Mishap Report*
AF Form 847, *Recommendation for Change of Publication*
AF IMT 4303, *Helicopter Landing Zone Survey*
AFSOC Form 97, *AFSOC Aircraft Incident Report*
AFTO Form 46, *Prepositioned Aircrew Flight Equipment*
AFTO Form 781, *ARMS Aircrew/Mission Flight Data Document*
AFTO Form 781A, *Maintenance Discrepancy and Work Document*
AFTO Form 781H, *Aerospace Vehicle Flight Status and Maintenance*
DD Form 175, *Military Flight Plan*
DD Form 365-3, *Chart C - Basic Weight and Balance Record*
DD Form 365-4, *Weight and Balance Clearance Form F-Transport/Tactical*
DD Form 1801, *DoD International Flight Plan*
DD Form 2131, *Passenger Manifest*
Operational Report (OPREP)-3, *Event or Incident Report*

Abbreviations and Acronyms

ACC—Air Combat Command
ACM—Additional Crew Member
AETC—Air Education and Training Command
AFE—Aircrew Flight Equipment
AFI—Air Force Instruction
AFMAN—Air Force Manual
AFPD—Air Force Policy Directive
AFRC—Air Force Reserve Command
AFRIMS—Air Force Records Information Management System

AFSC—Air Force Specialty Code
AFSOAWC—Air Force Special Operations Air Warfare Center
AFSOC—Air Force Special Operations Command
AFSOF—Air Force Special Operations Forces
AFTO—Air Force Technical Order
AFTTP—Air Force Tactics, Techniques, and Procedures
AFMC—Air Force Materiel Command
AGL—Above Ground Level
AHO—Above Highest Obstacle
AIE—Alternate Insertion Extraction
AIP—Aeronautical Information Publication
AIS—Aeronautical Information Service
ALR—Acceptable Level of Risk
AOR—Area of Responsibility
APLN—Airplane
APPR—Approach
AR—Aerial Refueling
ARC—Air Reserve Component
ARMS—Aviation Resource Management Systems
ATC—Air Traffic Control
ATD—Aircrew Training Device
ATO—Air Tasking Order
ATV—All Terrain Vehicles
AWL—Above Water Level/Above Wing Level
BAQ—Basic Aircraft Qualification
BFWS—Blade Fold Wing Stow
BIT—Built in Test
BRNAV—Basic Area Navigation
C2—Command and Control
CC—Commander
CCC—Command and Control Center
CCT—Combat Control Team

CDRUSSOCOM—Commander United States Special Operations Command

CG—Center of Gravity

CHOP—Change of Operational Control

CHUM—Chart Updating Manual

CMR—Combat Mission Ready

CMS—Cockpit Management System

COMAFSOF—Commander Air Force Special Operations Forces

CONUS—Continental United States

CONV—Conversion

CRRC—Combat Rubber Raiding Craft

CSF—Computer Systems Flight

DA—Decision Altitude

DAFM—Department of the Air Force Manual

DEU—Display Electronics Unit

DH—Decision Height

DME—Distance Measuring Equipment

DoD—Department of Defense

DoT—Department of Transportation

DSN—Defense Switched Network

DSO—Direct Support Operator

DSR—Deployed Status Report

DTED—Digital Terrain Elevation Data

DV—Distinguished Visitor

DZ—Drop Zone

ECL—Engine Control Lever

ECM—Electronic Countermeasures

ECS—Environmental Control System

EIA—Enhanced Interrupted Alignment

EMI—Electromagnetic Interference

ENAV—Electronic Navigation

ESA—Emergency Safe Altitude

ETA—Estimated Time of Arrival

ETE—Estimated Time En route

ETP—Equal Time Points

FAA—Federal Aviation Administration

FAF—Final Approach Fix

FARP—Forward Arming and Refueling Point

FCF—Functional Check Flight

FCG—Foreign Clearance Guide

FCIF—Flight Crew Information File

FD—Flight Director

FDP—Flight Duty Period

FE—FE

FL—Flight Level

FLIP—Flight Information Publication

FSO—Flight Safety Officer

FSS—Flight Service Station

FT—feet

GP—General Planning

GPS—Global Positioning System

GRDP—Ground Refuel Defuel Panel

HAA—Height Above Aerodrome

HABD—Helicopter Aircrew Breathing Device

HAT—Height Above Touchdown

HATR—Hazardous Air Traffic Report

HEED—Helicopter Emergency Egress Device

HF—High Frequency

HLZ—Helicopter Landing Zone

HN—Host Nation

HOSTAC—Helicopter Operations from Ships other Than Aircraft Carriers

ICAO—International Civil Aviation Organization

ICS—Intercommunications System

IF—Instructor Flight Engineer

IFC—Interim Flight Clearance

IFE—In-Flight Emergency
IFF—Identification Friend or Foe
IFR—Instrument Flight Rules
IMC—Instrument Meteorological Conditions
IAF—Initial Approach Fix
INS—Inertial Navigation System
IP—Instructor Pilot
IPS—Ice Protection System
IR—Infrared/Instrument Route
JAAAC—Joint Air Apportionment Allocation Conference
JCET—Joint Combined Exchange Training
JSOAC—Joint Special Operations Air Component
KCAS—Knots Calibrated Airspeed
KGS—Knots Ground Speed
LPU—Life Preserver Unit
LRU—Line Replacement Unit
LVA—Low Visibility Approach
LVTO—Low Visibility Take Off
MAF—Mobility Air Forces
MAJCOM—Major Command
MDA—Minimum Descent Altitude
ME—Mission Essential
MEA—Minimum En route Altitude
MFD—Multi-function Display
MGT—Measured Gas Temperature
MIJI—Meaconing, Intrusion, Jamming, and Interference
MOA—Memorandum of Agreement
MPP—Multinational Procedural Publication
MSA—Minimum Safe Altitude
MSL—Mean Sea Level
MUTES—Multiple Threat Emitter System
MR—Mission Ready

MTR—Military Training Route

NATO—North Atlantic Treaty Organization

NATOPS—Naval Air Training and Operating Procedures Standardization

NAVAID—Navigational Aid

NC—Non-Current

NORTHCOM—Northern Command

NOTAM—Notice to Airman

nm—Nautical Mile

NVG—Night Vision Goggles

OAT—Outside Air Temperature

OCF—Operational Check Flight

OCONUS—Outside Continental United States

OEI—One Engine Inoperative

OGE—Out of Ground Effect

OI—Operating Instruction

OPCON—Operational Control

OPR—Office of Primary Responsibility

OPREP—Operational Report

ORM—Operational Risk Management

PAC—Power Assurance Checks

PAX—Passenger

PEDD—Portable Electronic Display Device

PERSCO—Personnel Support for Contingency Operations

PEX—Patriot Excalibur

PFBIT—Pre-Flight Built In Test

PIC—Pilot in Command

PL—Precautionary Landing

PTP—Point to Point

RADALT—Radar Altimeter

RDS—Records Disposition Schedule

RMWS—Ramp Mounted Weapon System

RNAV—Area Navigation

RNP—Required Navigation Performance
SAR—Search and Rescue
SCP—Set Clearance Plane
SEA—Senior Enlisted Aviator
SEL—Senior Enlisted Leader
SFI—Standby Flight Instruments
SI—Spectrum Interference
SID—Standard Instrument Departure
SIRFC—Suite of Integrated Radio Frequency Countermeasures
sm—Statute Mile
SOF—Special Operations Forces
SOFAPPS—Special Operations Forces Applications
SOP—Standard Operating Procedures
SOW—Special Operations Wing
SQ—Squadron
ST—Special Tactics
STAN/EVAL—Standardization/Evaluation
STAR—Standard Terminal Arrival Route
STO—Short Takeoff
STS—Special Tactics Squadron
TA—Terrain Avoidance
TACAN—Tactical Air Navigation System
TCAS—Traffic Alert and Collision Avoidance System
TCSA—Troop Commander Situational Awareness
TDY—Temporary Duty
TF—Terrain Following
TO—Technical Order
TOLD—Take off and Landing Data
TSOC—Theater Special Operations Commands
UHF—Ultrahigh Frequency
UNQ—Unqualified
US—United States

USAF—United States Air Force

USSOCOM—United States Special Operations Command

VCSL—Voice Call Sign Listing

VFR—Visual Flight Rules

VHF—Very High Frequency

VMC—Visual Meteorological Conditions

VOR—VHF Omnidirectional Range

VTOL—Vertical Takeoff and Landing

WIC—Weapons Instructor Course

Terms

Additional Crew Member (ACM)—An additional crew member is one assigned in addition to the normal aircrew complement required for a mission for purposes of performing flight evaluations, supervising, or monitoring in-flight procedures.

Alert Aircraft—An operationally ready aircraft specifically designated to be launched in accordance with timing factors established for the assigned missions with a ready crew available.

Commander, Air Force Special Operations Forces (COMAFSOF)—The commander designated by the Commander United States Special Operations Command (CDRUSSOCOM) for CONUS deployments or by theater SOC/CCs for overseas deployments, who is responsible for management of Air Force Special Operations Forces (AFSOF) within a theater, a geographic area, or a designated operation. The COMAFSOF is responsible to CDRUSSOCOM for management of CONUS-deployed AFSOF or to the respective SOC/CC for management of theater assigned AFSOF and is responsible to COMAFSOF for monitoring and management of AFSOF operating within the specific area of responsibility.

Command And Control—The exercise of authority and direction by a properly designated commander over assigned and attached forces in the accomplishment of the mission. Command and control functions are performed through an arrangement of personnel, equipment, communications, facilities, and procedures employed by a commander in planning, directing, coordinating, and controlling forces and operations in the accomplishment of the mission.

Contingency Mission—A mission operated in direct support of an OPLAN, operation order, disaster, or emergency.

Designated Representative—Individuals authorized in writing by the appropriate command level as having decision-making authority.

Exercise—A military maneuver or simulated wartime operation involving planning, preparation, and execution. It is carried out for the purpose of training or evaluation. It may be combined, joint, or single-service, depending on participating organizations.

Forward Arming and Refueling Point (FARP)—A temporary facility organized, equipped, and deployed by an aviation commander, and normally located in the main battle area. Provides fuel and ammunition necessary for the employment of aviation maneuver units in combat. The forward arming and refueling point permits combat aircraft to rapidly refuel and rearm simultaneously.

Hazardous Cargo Or Materials—Explosive, toxic, caustic, nuclear, combustible or flammable, biologically infectious, or poisonous materials that may directly or indirectly endanger human life or property, particularly if misused, mishandled, or involved in accidents.

Hot Refueling—Hot refueling is the transfer of fuel into an aircraft with one or more aircraft engines operating.

Interfly—Interfly is the exchange and/or substitution of aircrew members from separate MAJCOMs to accomplish flying missions.

Intrafly—Intrafly is the exchange and/or substitution of aircrew members from separate units under the same MAJCOM to accomplish flying missions.

Manifest—Movement record of traffic airlifted on aircraft operated by, for, or under the control of the Air Force.

Night Water Operations—Low and slow, rope ladder, fast rope, CRRC deployment, and hoist operations below 50' AWL over water during hours of darkness.

Operationally Ready Aircraft—An aircraft which is capable of flight with all required equipment operable to carry out the primary assigned mission.

Attachment 2
REQUIRED PUBLICATIONS LISTING

Table A2.1. Required Publications Listing.

PUBLICATION	PILOT	FE	DSO
AFMAN 11-202, Vol 1	I	I	I
AFI 11-202, Vol 2	I/E	I/E	I/E
AFMAN 11-202, Vol 3	X	X	X
AFMAN 11-2CV-22, Vol 1	X	X	X
AFMAN 11-2CV-22, Vol 2	X	X	X
AFMAN 11-2CV-22, Vol 3	X	X	X
AFMAN 11-2CV-22, Vol 3, CL-1	X*	X*	X*
DAFMAN 11-401	I	I	I
FCIS (Note 1)	X	X	X
Interim Flight Clearance	X	X	
AFI 13-207	X	X	X
DAFMAN 13-217	X	X	
ATP 3.3.4.2	X	X	
IV-22(C)B-1	X*	X*	
IV-22(C)B-1-1	X	X*	
IV-22(C)B-1CL-1	X*	X*	
IV-22(C)B-1CL-2	X	X*	
IV-22(C)B-9	X	X*	
IV-22(C)B-5-1	X	X*	
IV-22(C)B-6CL-1	X*	X*	
NTRP 3-22-4-CV-22	X	X	
AFTTP 3-3.CV-22	X	X	
USSOCOM 350-3		X	
USSOCOM 350-4, Vol 1		X	
USSOCOM 350-4, Vol 2		X	
USSOCOM 350-6	X	X	
SOP	X*	X*	

PUBLICATION	PILOT	FE	DSO
<p>I – Instructor, E – Evaluator, X – All.</p> <p>* Required in flight in either paper or electronic format.</p> <p>Note: 1. AETC crews follow guidance contained in 11-202 Vol 3 AETC Supplement, 58 OG Supplement for FCIS requirements.</p>			