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This instruction implements AFPD 11-2, *Aircraft Rules and Procedures*, by prescribing general flight rules that govern the operation of USAF aircraft (manned and unmanned) flown by USAF

pilots, pilots of other services, foreign pilots, and civilian pilots. This instruction applies to Air Force activities operating aircraft on loan or lease, to the extent stipulated in the loan or lease agreement; Air Force Reserve Command (AFRC) units; and to Air National Guard (ANG) units. Air Force Instruction (AFI) 11-2 Mission Design Series (MDS) Specific, Volume 3 instructions (e.g., AFI 11-2C-5, Volume 3) may contain specific operational guidance unique to individual aircraft and crew positions. MDS Specific, Volume 3 instructions will not be less restrictive than this instruction. Address questions concerning this instruction to Headquarters Air Force Flight Standards Agency (HQ AFFSA) at HQ AFFSA/A3OF (AJW31AF), Building 4, Room 124, 6500 South MacArthur Blvd, Oklahoma City, OK 73169, DSN 339-9637 or 339-9783. See Attachment 1 for a list of terms and abbreviations. 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. **Improvement Recommendations:** Use AF Form 847, *Recommendation for Change of Publication (Flight Publications)*, to recommend changes to this instruction IAW AFI 11-215, *Flight Manuals Program (FMP).*

Note: The reports in this directive are exempt from licensing according to AFI 33-324, *Controlling Internal, Public, and Interagency Air Force Information Collections.* All records created as a result of processes prescribed in this publication will be maintained in accordance with AFMAN 33-363, *Management of Records*, and disposed of accordance with the Air Force Records Disposition Schedule (RDS) located at **https://www.my.af.mil/afrims/afrims/afrims/rims.cfm**.

(USAFE) This supplement implements and extends the guidance of Air Force Instruction (AFI) 11-202, Vol 3. This supplement provides guidance on procedures applicable to all USAFE units and units under USAFE oversight. This supplement does not apply to Air Force Reserve Command (AFRC) or the Air National Guard (ANG) when not operating under USAFE oversight.

Refer recommended changes to this supplement to the Office of Primary Responsibility (OPR) using the AF Form 847, *Recommendation for Change of Publication*; route AF Forms 847 IAW AFI 11-215 and this volume. This publication may be supplemented by all USAFE units. Supplements must be routed to HQ USAFE/A3TV for coordination prior to certification and approval.

Ensure that all records created as a result of processes prescribed in this publication are maintained in accordance with AFMAN 33-363, *Management of Records*, and disposed of in accordance with the Air Force Records Disposition Schedule (RDS) located in Air Force Records Information Management System (AFRIMS) on the AF Portal: **https://www.my.af.mil/afrims/afrims/afrims/rims.cfm** .

(SPANGDAHLEMAB) Air Force Instruction (AFI) 11-202V3_USAFESUP, *General Flight Rules*, is supplemented as follows. This supplement defines policies and procedures relating to the Functional Check Flight (FCF)/Operational Check Flight (OCF) program of the 52d Fighter Wing (52 FW) and applies to all units assigned to the 52 FW (and 52 FW-gained units operating Unites States Air Forces in Europe (USAFE) owned, managed, and/or controlled aircraft). The 52 FW Commander (52 FW/CC) delegates waiver authority of this supplement to the 52d Operations Group Commander (52 OG/CC). The Chief of 52 OG Standard and Evaluation (52O/OGV) will review this supplement annually or whenever a change to an applicable regulation and/or publication occurs, and

update as required. Ensure that all records created as a result of processes prescribed in this publication are maintained in accordance with Air Force Manual (AFMAN) 33-363, *Management of Records*, and disposed of in accordance with (IAW) the Air Force Records Disposition Schedule (RDS) located at **https://www.my.af.mil/afrims/afrims/afrims/rds/rds_series.cfm**. Refer recommended changes and questions about this publication to the Office of Primary Responsibility (OPR) using the AF 847, *Recommendation for Change of Publication*; route AF Forms 847 through appropriate chain of command to the publications manager.

SUMMARY OF CHANGES

This document has been substantially revised and must be thoroughly reviewed. Major changes include a change to the waiver authority and processes, paragraph renumbering, substantial reorganization of material, new attachments summarizing filing and IFR departure options and fuel planning procedures and requirements. Flying Major Commands (and associated responsibilities) are better defined, including Air Force Global Strike Command (AFGSC). Also included are revised Bird Watch Condition rules, IFR departure/destination/alternate minima, revised aircrew oxygen, crew rest, and medications requirements, revised RVR requirements, EFB and electronic publications guidance, paperless cockpit restrictions/processes, VFR and IFR departure rules and procedures, additional guidance on waivers and authorities, new definitions of numerous terms including: tactical operations, mountainous terrain, day, night, twilight, critical phases of flight, and numerous terms involving aircraft certification and Communications, Navigation Systems, and Air Traffic Management (CNS/ATM). Incorporated Dec 2008 FAA revised speed authorization memorandum. Incorporated guidance on Self-Contained Approach procedures. Incorporated numerous rules and procedures specific to Remotely Piloted Aircraft (RPA)/Unmanned Aerial System (UAS).

(USAFE) This publication has been substantially revised and must be completely reviewed. Major changes include: waiver guidance clarification (1.6.1.4.); adds WG/CC approval for release of aircrew details to foreign agencies (1.8.1.); adds reference to UK Royal Flights & contact info (2.1.2.); adds guidance on Jeppesen, ASRR and HN FLIP access (2.2.2.); adds expired FLIP guidance (2.3.); revises low-fly chart highlighting criteria (2.3.2.1.); adds guidance on FLIP photocopies (2.3.3.); revises HN Special Aeronautical Chart usage (2.3.4.); clarifies Extended Ops guidance (2.4.5.); clarifies camera used during Air Defense missions and for personal use (2.9.3.); clarifies portable GPS use in flight (2.16.4.1.); clarifies mountainous terrain definition (2.11.); adds aircrew RVSM and RNP evaluation guidance (2.16.6); authorizes EFB use and paperless-cockpits (2.17.2.); clarifies supervision requirement and IFR clearance authority for pilots not instrument qualified (4.2.); clarifies authorized instrument rating (4.4.9.); authorizes filling to/landing at HN civil airfields (4.5.2.); defines unauthorized or impromptu flight demonstrations (5.1.3.); authorizes use of ACE Manual 75-2-1 (Fighting Edge); adds guidance on dissimilar formation flights (5.6.3.); clarifies Mode 3,4 and S usage (5.8.1.); clarifies HN large scale exercise agreement usage (5.10.); clarifies ICAO taxi clearance rules (5.11.3.); authorizes SMGCS training/certification (5.11.3.1.); authorizes unlit runway/LZ ops (5.12.1.2.); clarifies Emergency Landing Patterns and Simulated Flame Out guidance (5.17.2.); clarifies fuel jettison definition (5.19); authorizes reduced/light out ops IAW HN rules (5.20.1.); adds LASER activity reporting guidance (5.25.2.); authorizes flight in severe weather conditions for contingency missions (5.26.); clarifies guidance on flights in the vicinity of thunderstorms (5.26.2.); adds NVD training authorization (6.3.5.); authorizes unpressurized ops above 10k

MSL IAW 11-2MDSV3 (6.4.1.); incorporates AFFSA waiver for USAFE C-37 high altitude operations (6.4.2.1.); adds guidance for multi engine aircraft to depart VFR with One Engine Inop while unable to clear IFR obstacles; clarifies TERPS request procedures (8.4.5.4.); clarifies filing to an airfield with poor steady state and TEMPO conditions (8.6.1.); adds authorization to use 1000/2 ceilings/vis without declaring an alternate (8.7.1.1.1.); incorporates AFFSA waiver governing Icelandic operations (8.7.4.); clarifies MIA determination and use; incorporates AFFSA Dual Alternate waiver (8.8.3.); adds MAJCOM authorization/guidance to use radar required airfields as alternates (8.9.1.); clarifies use of TPP (8.10.); clarifies CAF Pilot Weather Categories; Adds guidance on Visual Climbs Over Airport training (8.12.4.1.); adds limited OG/CC authority for IFR departures in VMC while unable to comply with published climb gradients (8.12.10.5.1.); defines Mission Execution Authority; defines Operationally Necessary; authorizes SDP use IAW 11-2MDSV3 for operationally necessary missions (8.12.11.4.); clarifies IFR off-route obstacle clearance calculation and RAA (8.13.2.3.); clarifies HN IFR clearance in IMC at Min Vectoring Altitude (8.13.4.1.); clarifies restrictions on IMC descents to low-level (8.13.2.4.1.1.); incorporates AFFSA waiver of requirement to fix position for a radar required field (8.17.4.); clarifies cold weather altitude adjustments; moves CAF pilot Weather Category to attachment; adds crew rest and FDP waiver authority guidance (9.2.1.); moves Air Defense Alert procedures to attachment; defines active participation for crew rest guidance (9.9.); clarifies crew rest requirement for multiple time zone transitions and for consecutive FDP > 16 hrs (9.11.4.); adds multiple attachments outlining PWC determination and use, control of fighter aircraft for off-station, USAFE alert guidance, FCF/OCF guidance, operations near volcanic activity, and USAFE Mode S operations and address management.

(SPANGDAHLEMAB) Attachment 7 has been changed to reflect changes and updates to check flight procedures.

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Chapter 1

GENERAL INFORMATION

1.1. General.

1.1.1. **Pilot in Command Authority.** The Pilot in Command (PIC) is responsible for, and is the final authority as to, the operation of the aircraft.

1.1.2. This instruction is a common source of flight directives that includes:

1.1.2.1. Air Force-specific guidance, and

1.1.2.2. Title 14 Code of Federal Regulations (CFRs) (formerly the Federal Aviation Regulations), the Aeronautical Information Manual (AIM), and

1.1.2.3. International Civil Aviation Organization (ICAO) Standards and Recommended Practices (SARPs).

1.1.3. This AFI provides necessarily broad guidance and cannot address every conceivable circumstance. PICs will use their orders and best judgment to safely conduct the flight.

1.1.4. Unmanned Aircraft System (UAS) or Remotely Piloted Aircraft (RPA) Applicability. With respect to compliance with flight rules, the USAF considers UAS/RPA to be no different than manned aircraft. Groups 4 and 5 RPA operations shall follow this AFI, while Groups 1-3 ("Small") UAS shall be governed by AFPD 11-5, *Small Unmanned Aircraft Systems Rules, Procedures, and Service,* and its derivative instructions.

1.2. Compliance. The PIC will ensure compliance with this AFI and the following:

1.2.1. MAJCOM guidance and MDS-specific instructions, manuals and supplements.

1.2.2. The specific rules of each individual nation as published in Flight Information Publications (FLIP) planning documents and the Foreign Clearance Guide (FCG). Theater commanders must ensure the contents of FLIP accurately indicate the rules of each nation within their area of responsibility that differ from this instruction.

1.2.3. Procedures and special notices in FLIP, Notices to Airmen (NOTAMs), aircraft technical orders, Air Force directives, MAJCOM directives, and Air Traffic Control (ATC) instructions. (See Attachment 1 for related publications.)

1.2.4. Combatant Commander's Special Instructions (SPINS), theater operational procedures, Air Tasking Orders, Airspace Control Orders, Air Operations Center instructions, and other associated directives IAW the Air Component Commander's objectives.

1.3. Operational Prerogative of Military Aircraft. In international airspace, when operationally necessary, PIC's are authorized to conduct military flight operations with due regard for the safety of navigation of civil traffic in accordance with (IAW) FLIP GP "Operations and Firings over the High Seas." Except for pre-planned missions, PIC's shall consider such operations, in peacetime, as a flight rule deviation and will comply with the reporting requirements in paragraph 1.7. MAJCOMs may authorize tactical operations for training and to comply with paragraph 1.2.4.

1.3. (USAFE)Operational Prerogative of Military Aircraft. USAFE authorizes tactical operations for training and to comply with **paragraph 1.2.4** during Due Regard IAW AFI 11-2MDSV3 and local guidance or MDS-specific AFTTPs.

1.4. MAJCOM Supplements and Command Relationships. The following restrictions apply to MAJCOM supplements and MDS Specific, Volume 3 instructions subordinate to this AFI.

1.4.1. MAJCOM guidance, in any form, unless specifically permitted, shall not be less restrictive than this instruction.

1.4.2. Items in this AFI delineating MAJCOM responsibilities will be addressed in a MAJCOM supplement, the lead command-authored AFI 11-2*MDS* Volume 3, *MDS Operations Procedures*, or other published MAJCOM guidance.

1.4.3. Lead and user MAJCOMs are not bound by, or authorized to operate under, the other's waivers or exemptions.

1.4.4. MAJCOM supplements to this instruction and MDS Specific, Volume 3 instructions must be coordinated through HQ AFFSA for USAF/A3O approval prior to publication IAW AFPD 11-2. Submit supplements for coordination to: HQ AFFSA/A3OF (AJW31AF), Building 4, Room 124, 6500 South MacArthur Blvd, Oklahoma City, OK 73169, (405) 739-9637, DSN 339-9637, email: **hqaffsa.a3of@tinker.af.mil.**

1.4.4. **(USAFE)** Unit supplements to include supplements to AFI 11-2MDSV3, must be coordinated with HQ USAFE/A3TV prior to publication. Forward all request for coordination to the "USAFE/A3TV (Workflow)" organizational (org) account NLT one month prior to desired suspense date.

1.5. Title 14 CFR Exemptions and FAA Authorizations. MAJCOMs will obtain FAA exemptions or authorizations only through HQ USAF/A3O by contacting HQ AFFSA and following the waiver guidance below. MAJCOMs should submit their CFR Exemption requests a minimum of six months prior to execution for original requests and exemption renewals. EXCEPTION: IAW AFI 13-201, *Airspace Management*, waivers for airshow issues (speed, minimum safe altitudes, parachute jumping, etc.) should be submitted directly to the local Flight Standards District Office. Operations of UAS in the U.S. National Airspace System (NAS) outside of Warning and Restricted Areas require an FAA Certificate of Authorization or Waiver (COA), to be obtained by the user unit through their MAJCOM.

1.6. Waivers. HQ USAF/A3O will provide waivers to this instruction only upon an official MAJCOM request when an essential requirement makes a waiver necessary or compliance with a flight rule creates a hazard.

1.6.1. **Waiver Process.** HQ USAF/A3O will provide only written waivers with an expiration date. Revisions to this AFI do not automatically invalidate current waivers with respect to paragraph numbering, etc. Upon publication of a revision, HQ AFFSA shall coordinate with each MAJCOM to convert, rescind, or issue new waivers (when appropriate) resulting from revisions to this AFI. Units requiring a waiver to this AFI will follow this procedure:

1.6.1.1. Units will forward their written request for a waiver to this instruction through their chain of command to the MAJCOM/A3. The unit's detailed waiver request must

clearly delineate if a FAA exemption is required, the operational requirement for the waiver and risk mitigation measures to be undertaken during operations under the waiver.

1.6.1.2. MAJCOMs will review the request. If approved, the MAJCOM/A3 will endorse the request and forward it in memo or message format to HQ USAF/A3O, with a copy to HQ AFFSA/A3O, at least 30 days prior to the waiver requirement (if waiver also requires FAA exemption, see paragraph 1.5). Submit waiver requests to: **afa3o.workflow@pentagon.af.mil** (copy to: **hqaffsa.a3of@tinker.af.mil**). If approved, HQ USAF/A3O will send an approved waiver memo to the MAJCOM/A3. HQ USAF/A3O will review and respond in writing to all MAJCOM waiver requests.

1.6.1.3. MAJCOMs shall track the currency of all approved waivers to ensure renewals, if required, are validated and then requested using the process above at least 15 days prior to the expiration date. HQ AFFSA retains renewal authority for existing waivers. Renewals should be requested by the MAJCOM Stan/Eval function.

1.6.1.4. **(Added-USAFE)** For USAFE waiver information reference the ***Aircrew Stan/Eval Waiver Standards and Expectations*** memorandum posted under the "*Waivers*" folder on the USAFE/A3TV Information Collaborative Environment (ICE) site (**https://ice.usafe.af.mil/sites/A3/A3T/A3TV_External/default.aspx**). USAFE users may request access directly from the ICE page upon their first access attempt. Non-USAFE users may request access by sending an email to the "USAFE/A3TV (Workflow)" organizational email account with name, rank, organization, and reason for access.

1.6.1.5. **(Added-USAFE)** For the most current waiver request templates, reference the "*Waivers*" folder on the USAFE/A3TV ICE. Do not "recycle" previously approved waivers unless the currency of the template has been checked against the ICE waiver template.

1.6.1.6. **(Added-USAFE) Written Approval**.

1.6.1.6.1. **(Added-USAFE) USAFE/A3T and higher waiver authority**. Process waivers through local stan/eval channels through the OG/CC (for USAFE/A3T approval) or the WG/CC (for USAFE/A3 or higher approval) then send to the "USAFE/A3T (Workflow)" organizational email account (info to "USAFE/A3TV (Workflow)").

1.6.1.6.2. **(Added-USAFE) USAFE/A3TV waiver authority**. Process waivers through local Stan/Eval channels to OGV, then send directly to the "USAFE/A3TV (Workflow)" organization email account.

1.6.1.6.3. **(Added-USAFE)** As much as practical, staff waiver requests so as to arrive at USAFE/A3T (for A3T or higher approval) or USAFE/A3TV (for A3TV approval) at least 10 business days prior to when the waiver is needed.

1.6.1.7. **(Added-USAFE) Verbal Approval**. Reference the "***Aircrew Stan/Eval Waiver Standards and Expectations***" memorandum posted under the "*Waivers*" folder on the USAFE/A3TV ICE.

1.6.2. **MAJCOM Commander Waiver Authority.**

1.6.2.1. MAJCOM commanders may unilaterally authorize any deviation from air traffic rules (this instruction, the CFRs, etc.), without prior approval from HQ USAF/A3O or the FAA, if doing so is "essential to the defense of the United States" because of a military emergency or an urgent military necessity, and there is no time to obtain prior approval from HQ USAF/A3O or the FAA. Time permitting, the MAJCOM will notify HQ USAF/A3O (copy to HQ AFFSA) and the FAA (through HQ AFFSA) of its military intentions prior to deviating from the flight rules. MAJCOM commanders will notify HQ USAF/A3O within 72 hours of authorizing any waiver or deviation following the process in paragraph 1.6.1.2. Notification must include details of the waiver action to include expected date of return to normal operations.

1.6.2.1. **(USAFE)** Units will obtain COMUSAFE approval for waivers IAW the following guidance (reference **paragraph 1.6.1.4 (Added)**):

1.6.2.1.1. **(Added-USAFE) Written approval**. If time and conditions permit submit request IAW **paragraph 1.6.1.6.1** As much as practical, staff waiver requests so as to arrive at USAFE/A3T at least 10 business days prior to when the waiver is needed.

1.6.2.1.2. **(Added-USAFE) Verbal Approval**. Reference the "***Aircrew Stan/Eval Waiver Standards and Expectations***" memorandum posted under the "*Waivers*" folder on the USAFE/A3TV ICE.

1.6.2.2. The MAJCOM/A3 is the waiver authority for operational procedure requirements in the MAJCOM supplement to this instruction and in the appropriate MDS Specific, Volume 3. Further delegation of waiver authority is at MAJCOM discretion and will be addressed in the relevant instruction.

1.6.2.3. For the purposes of this instruction, flying MAJCOMS are: ACC, AETC, AFGSC, AFMC, AFRC, AFSPC, AFSOC, AMC, NGB, PACAF and USAFE. COMMAFFORs in the grade of O-9 or O-10 in Combatant Commands are considered MAJCOM commanders only for forces under their operational control.

1.7. Deviations. An ATC clearance is not authority to deviate from this instruction. A PIC may only deviate from any flight rule or ATC clearance to protect life, for safety of flight or when an in-flight emergency requires immediate action.

1.7.1. **Notification.** When deviating from an ATC clearance, the PIC will notify ATC of the action taken as soon as possible.

1.7.2. **Post-Flight Actions.** The following post-flight actions shall be taken in the event of a deviation from a flight rule and/or when given traffic priority by ATC in an emergency:

1.7.2.1. The PIC will verbally report the incident to a supervisor and commander within 24 hours of the incident, and shall make a detailed written record.

1.7.2.2. The unit will keep a copy of that record for a minimum of 1 year from the date of the incident and be prepared to provide that record to the appropriate investigating authority.

1.8. Violations. A violation may result when a USAF aircraft deviates from flight rules. FAA ATC facility deviation reports involving a USAF aircraft are processed IAW AFI 13-201. Air Force air traffic control facility deviation reports involving USAF aircraft are processed IAW

AFI 91-202, *The US Air Force Mishap Prevention Program*. Violations that occur in the airspace of foreign nations are handled IAW the procedures of that nation.

1.8.1. The names of the crew will not be released to non-USAF agencies without the permission of the Air Force Representative to the FAA (AFREP), in coordination with MAJCOM/A3s or HQ USAF/A3O.

1.8.1. **(USAFE)** Names of aircrew will not be released to foreign agencies without the permission of the WG/CC in coordination with the individual's flying chain of command.

1.9. Dimensional Units. Visibility distances are in statute miles (SM). All other distances referred to in this instruction are in nautical miles (NM) unless otherwise specified.

1.9. (USAFE)Dimensional Units. Visibilities used in this supplement are in kilometers (KM) and meters (M). Reference **Table 1.1** **(Added)** for conversions from SM to KM/M.

Table 1.1. (Added) USAFE Visibility Conversion Guide.

Statute Mile (SM)	KM/M
0.5	0.8 / 800
1.0	1.6 / 1600
1.5	2.4 / 2400
2.0	3.2 / 3200
3.0	5.0 / 5000
5.0	8.0 / 8000
NOTE: Although 3.0 SM actually equates to 4.8KM, 5.0KM is used as a standard fixed wing rule of thumb for VFR minimum visibility in Europe. Any reference to 3 SM in the basic instruction will be converted to 5.0KM.	

Chapter 2

PREFLIGHT REQUIREMENTS

2.1. Preflight Planning. Before takeoff, the PIC will ensure the entire mission is planned to its final destination in the greatest detail possible for each leg of the flight. For multi-leg flights, before each departure, the PIC will obtain the latest weather and NOTAM information available for the departure airfield, intended route, destination and alternate. The PIC will ensure aircrew members know the appropriate procedures and have applicable information available to them for the intended operation. These shall include, but are not limited to:

2.1.1. Appropriate sections of the aircraft technical order (T.O.).

2.1.2. NOTAMs (including Global Positioning Satellite (GPS) NOTAMs, and navigation database NOTAMS (e.g. Jeppesen NAVDATA), if applicable) and Temporary Flight Restrictions (TFRs).

2.1.2. **(USAFE)** Prior to all flights within the USAFE AOR and when operating from locations not having a DoD NOTAM service, aircrew will reference the applicable HN NOTAM service to include low-level NOTAMs if provided. If the HN does not provide a NOTAM service, obtain required NOTAM information by whatever means available. For UK-specific low-level operations, aircrew will also ensure they are familiar with any affecting UK "Royal" Flights (contact 48 OSS/OSO, **48oss.oso@lakenheath.af.mil**, DSN 314-226-3682).

2.1.3. FLIP including appropriate sectional aeronautical charts, oceanic plotting charts or Portable Flight Planning System (PFPS)/Falcon View charts with FAA/ICAO airspace displayed for flight under Visual Flight Rules (VFR).

2.1.4. Airfield Suitability and Restrictions Report (ASRR) including Supplemental Theater Information File (STIF), Special Departure Procedure (SDP) information and approved private vendor flight publications information IAW paragraph 2.2.

2.1.5. Alternatives available if the flight cannot be completed as planned.

2.1.6. Departure, en route, destination, and alternate weather observations and forecasts.

2.1.7. Fuel requirements.

2.1.8. Minimum safe altitudes and terrain type for the planned route and terminal areas.

2.1.9. Takeoff and landing limitations, including low-visibility operations.

2.1.10. AFI 11-2MDS-Specific, Volume 3, *MDS Operations Procedures.*

2.1.11. Applicable MAJCOM mission-specific guidance (e.g. FCIF and FCBs).

2.1.12. Spatial Disorientation and Alertness management strategies IAW Chapter 9 and MAJCOM guidance.

2.1.12. **(USAFE)** Spatial Disorientation and Alertness management strategies will be IAW AFI 11-2MDS guidance, AFMAN 11-217V1, and MDS-specific AFTTPs.

2.1.13. Bird advisories and hazard information. See also paragraph 5.26.

2.1.14. Receiver Autonomous Integrity Monitoring (RAIM) if any portion of the flight is to be conducted using GPS as primary source of navigation. See also paragraph 2.16.

2.2. Airfield Suitability.

2.2.1. Each MAJCOM will establish MDS-specific guidance on how aircrews, mission planners and other personnel will access, use and employ ASRR/STIF, SDP and Jeppesen Military Chart Service information.

2.2.1.1. **(Added-USAFE)** Aircrews will comply with the ASRR/STIF. Current ASRR information is available on GDSS2 (**https://gdss2.c2.amc.af.mil**/) and supersedes FLIP data (see **paragraph 2.2.2** for guidance on gaining access to the ASRR). Additional information for an airfield may be added/deleted to the STIF by contacting HQ USAFE/A3TV (**usafe.a3tv@ramstein.af.mil**). IAW ASRR general guidance, USAFE/A3TV will work with the HQ AMC Airfield Suitability office to modify STIF information as needed.

2.2.1.2. **(Added-USAFE)** USAFE fixed-wing aircraft may operate only at airfields that are listed as suitable in the ASRR/GDSS airfield data base. Aircraft that are not specifically mentioned will comply with non-aircraft specific restrictions (e.g. "Day Only"). HQ USAFE/A3T is the waiver authority for ASRR restrictions (see **paragraph 1.6.1.4 (Added)**).

2.2.1.3. **(Added-USAFE)** Airfields not contained in the ASRR/GDSS airfield database are considered unsuitable for aircraft operating USAFE missions. *Exception*: USAFE and USAFE-gained C-130 missions may operate at unimproved landing zones not contained in the ASRR/GDSS airfield database IAW AFI 11-2C130JV3 and Zone Availability Report (ZAR) guidance.

2.2.1.3.1. **(Added-USAFE)** If mission requirements dictate operating into an airfield not contained in the ASRR/GDSS airfield database, the mission planning agency will contact the HQ AMC Airfield Suitability Office (see **paragraph 2.2.2**) to request a suitability determination. The airfield will be added to the ASRR/GDSS airfield database once HQ AMC completes the requested review.

2.2.2. SDP and Jeppesen Military Chart Service (or other approved private vendor) information are available at commercial websites. The MAJCOM Standardization and Evaluation office may obtain usernames and passwords from HQ AFFSA/A3OF. Contact AMC Airfield Suitability office (DSN 779-3112 or **airfield.helpdesk@amc.af.mil**) for access to the ASRR.

2.2.2. **(USAFE)** Individual aircrew will contact their OGVs who will, in turn, request assistance as required from HQ USAFE/A3TV to meet AFI 11-2MDSV3 SDP and Jeppesen Military Chart Service information requirements.

2.2.2.1. **(Added-USAFE)** HN/foreign IAPs that have been reviewed by TERPS may be found at the following link: **https://private.amc.af.mil/a3/a36a/web/procedures.htm**. For all other HN/foreign IAPs, aircrew MUST ensure the procedure has a current TERPS review prior to use (see **paragraph 8.4.5.4 (Added)**).

2.3. Publications. Operational commanders are responsible for providing their crews with access to appropriate flight publications. Aircrew members shall not be provided with, nor use,

any publication in-flight which is out of date, incomplete, illegible or contains unfamiliar procedures or a language barrier.

2.3. (USAFE) Publications. Units may use out of date FLIP for ground training/testing only (e.g. IRC). For simulators, units will ensure the most current FLIP is used based on the software loaded in the SIM (e.g. if new FLIP contains a procedure that is not supported by the current sim software, the most current version of FLIP that is supported will be used). In all cases out-of-date publications must be clearly marked "For Ground Training Use Only" or "For Training Use Only".

2.3.1. The PIC will ensure current copies (electronic and/or paper) of the appropriate FLIP en route supplement, en route, oceanic plotting and/or terrain charts, Flight Information Handbook, and appropriate arrival, approach and departure procedures are on board the aircraft or immediately available in the UAS control station. If an electronic navigation system database is used, the PIC will ensure it is current. For Electronic Flight Bag (EFB) and paperless cockpit restrictions, see paragraph 2.17.

2.3.2. Printed forms, charts or terminal procedures, used for en route or off-station navigation, must be printed in the original scale and in color (if appropriate), and be current with the latest Digital Aeronautical Information File (DAFIF) and Electronic Chart Update Manual (ECHUM). MAJCOMs may permit additional chart configurations to meet mission-specific needs.

2.3.2. **(USAFE)** Obtaining ECHUM for HN chart updating will be accomplished using the Chart Amendment Document (CHAD), UK Chart Amendment Low Fly (CALF), Manual Boat (Low Flying Manual Italy), or HN-equivalent that provides chart update information.

2.3.2.1. **(Added-USAFE)** Unless otherwise stipulated in AFI 11-2MDSV3, all obstacles within 200 feet of the lowest planned altitude inside the planned low-level/VFR-navigation route/area will be updated and highlighted.

2.3.2.2. **(Added-USAFE)** Charts will also be updated with current applicable HN low-level NOTAM info (see **paragraph 2.1.2 (USAFE)**). *NOTE:* German CHUM (CHAD-GER) does not account for wind power plants (i.e. windmills) below 100m (approx 328 feet). The location and elevation of these obstructions can usually be found in the Flight Safety NOTAMs for the applicable Flight Information Region (FIR). However, if a German military aerodrome owns the obstruction, the location and elevation of the obstruction may be found in the Flight Safety NOTAMs for that aerodrome.

2.3.3. Aircrews will obtain FLIP and aeronautical navigation data (including charts) only from US Government sources. National Geospatial-Intelligence Agency (NGA) data may be obtained at **https://www.extranet.nga.mil**. US Government Terminal Procedures Publications (approach, departure charts and airfield diagrams, etc.) and an Aeronautical Chart Users Guide are available at: **http://www.naco.faa.gov**. See paragraph 8.4.5. for non-US Government procedure use rules.

2.3.3. **(USAFE)** Products printed directly from the NGA and NACO websites automatically have a "Valid Through" date included. If FLIP is reproduced and does not include a "Valid Through" date, one will be included on every product used in-flight.

2.3.4. **(Added-USAFE)** Aircrew will use HN Special Aeronautical Charts (SAC) as the primary source of planning and in-flight information for low altitude navigation where SAC coverage exists (SACs included both LFCs [1:500,000] and TFCs [1:250,000]). For all low-level missions executed in the USAFE AOR, a hard copy version of the LFC and/or TFC will be available during flight IAW AFI 11-2MDSV3 low-level navigation guidance. The hard-copy chart must be one of the following:

2.3.4.1. **(Added-USAFE)** An original or copy of a HN LFC/TFC.

2.3.4.2. **(Added-USAFE)** A HN LFC/TFC printed from AFI 11-2MDSV3-approved mission planning software or the NGA "Mission Planning" website (**https://dbgia.geointel.nga.mil/index.cfm**).

2.4. Fuel Requirements. The PIC will ensure sufficient fuel is available on board the aircraft to comply with the requirements of this instruction and safely conduct the flight. PICs shall use MAJCOM-approved fuel-efficiency techniques and procedures to the maximum extent practical. Before takeoff or immediately after in-flight refueling, the aircraft must have enough usable fuel aboard to complete the flight:

2.4. (USAFE) Fuel Requirements. Aircrew will use the fuel-efficiency techniques as published in AFI 11-2MDSV3 and local guidance.

2.4.1. To a final landing, either at the destination airport or alternate airport (if one is required), plus the fuel reserves.

2.4.2. To or between Air Refueling Control Points (ARCPs) and then to land at the destination (or a recovery base, if refueling is not successful), plus the fuel reserve.

2.4.3. **Alternate Airport Required.** When an alternate is required, the weather conditions at the original destination govern the preflight fuel computation.

2.4.3.1. Fuel required for an approach and missed approach must be included in the total flight plan fuel if visibility-only weather criteria (paragraph 8.6.3.2.) is used to determine the suitability of the original destination.

2.4.3.2. Fuel required for an approach and missed approach is not required if the ceiling and visibility criteria is used to determine the suitability of the original destination.

2.4.3.2. **(USAFE)** Fighter aircraft fuel requirements must include the fuel needed for an approach and missed approach at the original destination, even if ceiling and visibility criteria are used to determine suitability of the original destination.

2.4.3.3. **(Added-USAFE)** See **paragraph 8.8.3 (Added)** for fuel requirements when operating under the dual alternate concept.

2.4.4. **Fuel Reserve.** The PIC must ensure the aircraft is carrying enough usable fuel on each flight to increase the total planned flight time between refueling points by 10 percent (up to a maximum of 45 minutes for fixed-wing or 30 minutes for helicopters) or 20 minutes, whichever is greater. Compute fuel reserves using MAJCOM-defined consumption rates for normal cruising speeds or the following:

2.4.4.1. For reciprocating engine aircraft and helicopters, use fuel consumption rates for normal cruising altitudes.

2.4.4.2. For turbine-powered aircraft use fuel consumption rates that provide maximum endurance at 10,000 ft. Mean Sea Level (MSL).

2.4.4.3. If the MAJCOM authorizes holding (instead of an alternate airport) for a remote or island destination, do not consider the prescribed holding time as part of the total planned flight time for computing fuel reserve.

2.4.4.3. **(USAFE)** Reference **paragraph 8.7.3** for USAFE guidance on holding-in-lieu-of-alternate for remote/island destinations.

2.4.5. **Extended Operations (ETOPS).** In the absence of MDS-specific guidance, PICs of USAF multi-engine aircraft operated for extended periods over large bodies of water (outside gliding distance to a suitable landing site) or desolate land areas shall, during preflight planning, calculate and plot on the appropriate navigational chart, an Equal Time Point (ETP) to a suitable alternate for that mission leg, and specifically plan contingency fuel requirements (e.g.: engine-out depressurized flight at an appropriate altitude from ETP to the suitable landing site).

2.4.5. **(USAFE) Extended Operations (ETOPS).** ETOPS guidance does not apply to tactical operations conducted over open water where fuel planning for a return to the primary recovery base or recovery at an alternate (if necessary) is already factored into the mission.

2.4.5.1. **(Added-USAFE) MAF**. Follow AFI 11-2MDSV3 guidance on ETP calculations (reference also AFMAN 11-217V1).

2.4.5.2. **(Added-USAFE) CAF**. For ACC/AOS-controlled flights (e.g. CORONET), the preflight planning and products produced by the applicable AOS suffice for the requirements listed above. When not under AOS control, follow MDS and local standards for maintaining awareness of divert options while on extended-duration flights (see also **paragraph 8.7.2.5 (Added)**). Reference AFMAN 11-217V3 for further information on calculating ETPs.

2.4.6. **Minimum/Emergency Fuel Advisory.** Pilots will declare minimum/emergency fuel to the appropriate controlling agency when in their judgment the aircraft may land at the intended destination with less than the minimum/emergency fuel reserve.

2.5. Flight Logs. When required by the MAJCOM, PIC's will ensure the flight log documents appropriate air navigation, oceanic crossing, and fuel planning information. The lead command will approve flight-planning software to meet MDS training and operational requirements. Approved flight logs include: AF Form 70, *Pilot's Flight Plan and Flight Log*, Navigator's flight log, a MAJCOM-approved computer-generated flight log or form, or flight planning computations annotated on a navigation chart.

2.5. (USAFE) Flight Logs. Flight log documentation will be IAW AFI 11-2MDSV3 and local guidance.

2.6. Weather. For authorized weather sources, refer to AFH 11-203V2, *Weather for Aircrews*, the Flight Information Handbook (FIH) or use a published MAJCOM-approved source. If unable to obtain weather information, pilots may fly in VMC to a point where contact may be established with an authorized weather source.

2.6. (USAFE) Weather. In addition to the above resources, for official pre-flight weather planning, USAFE aircrew may use the following sources, all other sources will be for reference

only (to the max extent practical, reference the servicing OWA's information first). Units will publish guidance on the documentation of weather brief completion.

2.6.1. **(Added-USAFE)** HN weather sources as endorsed by the home base US military weather office or servicing Operational Weather Squadron (OWS).

2.6.2. **(Added-USAFE)** All sources as specifically stated in MDS-specific and local guidance.

2.7. Briefings. Prior to flight, the PIC must ensure each crewmember and passenger is briefed on items affecting safety or mission completion. At a minimum, briefings will include:

2.7.1. Emergency procedures.

2.7.2. Aircrew and Passenger flight equipment/systems usage information (see para. 6.2.).

2.7.3. Safety precautions and restrictions (including electronic device prohibitions).

2.7.4. Special procedures and instructions for use during training, formation, or operational missions.

2.8. Printed Information Guides. Lead commands will supplement verbal briefings with printed information guides for passenger use according to DoD 4515.13-R on all aircraft designated as passenger-carrying. Printed guides do not substitute for verbal briefings. MAJCOMs may exempt aircraft from this requirement if the printed guides create a safety hazard.

2.8. (USAFE) Printed Information Guides. Units operating passenger-carrying aircraft will provide passenger information cards IAW AFI 11-2MDSV3. If no guidance exists, use the following:

2.8.1. **(Added-USAFE)** Provide passenger-information cards for each forward or rear facing passenger seat and one passenger information card for every five aisle facing passenger seats. C-130 and HH-60 aircraft are exempted from this guidance.

2.9. Electronic Devices. The PIC will prohibit the use of any device suspected of creating interference with any system on the aircraft. Devices that transmit through an antenna are prohibited from use during all phases of flight except as noted below. For the purposes of this AFI, characteristics of "portable" devices include items that: cannot be installed as standard equipment, are carried/loaded onto the aircraft prior to flight, are removed after the flight is completed, and the extent of the electrical interface with the aircraft is at most electrical power and a data interface port (such as RJ-45). Lead or user MAJCOMs shall ensure that required testing is conducted IAW MIL-STD 464 and MIL HANDBOOK 516. The following prohibitions apply to each passenger and crewmember aboard a USAF aircraft or UAS control station:

2.9.1. **Cellular Phones.** The PIC will ensure that cellular phones, pagers, wireless internet capable devices and similar cell phone technology devices are turned off and stowed from the time the aircraft leaves its parking spot for departure until clear of the runway after landing.

2.9.2. **Medical Equipment**. Normally, only medical equipment referenced in the aircraft flight manual or AFI 11-2MDS series is permitted. The 77 AESG/TFL Aeromedical Test Branch is responsible for certifying medical equipment for flight from both aircraft and

patient safety standpoints. Their contact information is as follows: 77 AESG/TFL, 7980 Lindberg Landing, Brooks-City Base TX 78235-5104, DSN 240-1187.

2.9.3. **Portable Non-transmitting Devices Authorized Anytime.** The following devices that do not transmit a signal through an antenna may be used at any time: hearing aids, heart pacemakers, watches, hand-held calculators, electric shavers, and equipment certified IAW paragraph 2.9.6. Personal camera use is prohibited during solo flight.

2.9.3. **(USAFE) Portable Non-transmitting Devices Authorized Anytime.** This guidance does not preclude the use of *issued* cameras by fighter aircrew during operational air defense missions in support of NATO Air Policing. Under these circumstances, fighter aircrew will only use *issued* cameras for mission-essential tasks.

2.9.3.1. **(Added-USAFE)** Only qualified aircrew, combat camera personnel, and WG/CC-approved news media representatives will be permitted to carry personal cameras in the cockpit of fighter aircraft.

2.9.3.2. **(Added-USAFE)** In addition to the above guidance, aircrew may use personal cameras in flight subject to the following constraints:

2.9.3.2.1. **(Added-USAFE)** The pilot flying the aircraft must be current and qualified in that aircraft and crew position.

2.9.3.2.2. **(Added-USAFE)** The individual using the camera will not also be actively flying the aircraft.

2.9.3.2.3. **(Added-USAFE)** While cameras are in use, only formation positions IAW AFI11-2MDSV3 and MDS-specific AFTTP guidance are permitted.

2.9.4. **Instrument Meteorological Conditions (IMC).** The following conditions apply to the use of electronic devices other than cellular phones during flight in IMC:

2.9.4.1. **Portable Transmitting Devices.** Portable transmitting devices such as hand-held radios and satellite phones not certified as part of the aircraft equipment shall not be operated at any time when in IMC.

2.9.4.2. **Portable Non-transmitting Devices above 10,000 ft. Above Ground Level (AGL).** The PIC may authorize the use of: audio-visual recorders, digital cameras, computers and their peripherals, electronic entertainment devices, and antenna-connected receivers.

2.9.4.3. **Portable Non-Transmitting Devices below 10,000 ft. AGL.** All devices that do not transmit through an antenna may be operated below 10,000 foot AGL when in IMC only when they have been certified as safe-to-fly IAW 2.9.6. The responsible AFMC aircraft program office must authorize the use of devices under this paragraph through the AF Form 1067 submittal process for flight authorization.

2.9.5. **Visual Meteorological Conditions (VMC).** MAJCOMs may approve the use of portable transmitting devices (other than cell phones) such as hand-held radios and satellite phones during flights in VMC if there is a valid operational need that cannot be met by any other means. MAJCOMs shall ensure that testing is conducted IAW MIL-STD 464 and MIL HANDBOOK 516 and will advise HQ AFFSA/A3O of any authorization provided under this paragraph. During VMC flight (other than takeoff or landing) the PIC may authorize the use

of the following non-transmitting devices: audio-visual recorders, digital cameras, computers and their peripherals, electronic entertainment devices, and antenna-connected receivers.

2.9.5. **(USAFE) Visual Meteorological Conditions (VMC).** During VMC operations, portable transmitting device use (other than cell phones) will be IAW AFI 11-2MDSV3. Portable GPS devices that do not have a radio transmit capability are considered "antenna-connected receivers" and may be used IAW **paragraph 2.9.5**.

2.9.6. **Testing Requirements.** Devices that are not authorized for flight in the above paragraphs must be tested in accordance with MIL-STD-461F, "Requirements for the Control of Electromagnetic Interference Characteristics of Subsystems and Equipment," to determine their suitability for use in flight. Technical guidance, advice on testing capabilities, and assessment of test results are the responsibility ASC/ENAD, 2530 Loop Road West, Wright-Patterson AFB OH 45433-7101, DSN 785-8928 or 785-2860, email: **afi11-202.emi.cert@wpafb.af.mil.** ASC/ENAD maintains a General Certification Letter that lists devices of general interest that have been evaluated for flight. This letter is available at: **https://afkm.wpafb.af.mil/ASPs/CoP/EntryCoP.asp?Filter=OO-EN-AS-14**

2.10. International Destinations. The PIC will comply with international procedures in FLIP GP, Area Planning (AP), and the FCG. See paragraph 2.16 and AFMAN 11-217, Volume 3, for supplemental information on oceanic flight.

2.10. (USAFE) International Destinations. For oceanic flight, in addition to referencing information and checklists in AFMAN 11-217V3, Chapter 13, aircrew will reference the Minimum Navigation Performance Specifications (MNPS) manual and checklists found on the DINS NOTAMS website (**https://www.notams.jcs.mil**) under the ICAO links on the right hand side of the page. As a rule, whenever the MNPS manual uses "should", USAFE crews will interpret this as "shall." Reference **paragraph 2.16.5** for more MNPS guidance.

2.10.1. The PIC shall enhance pre- and post-flight aircraft checks on all flights with a destination other than the country of departure. Checks will include the manifest of all personnel, cargo and likely areas aboard the aircraft where drugs, contraband, stowaways or other illegal substances may be concealed.

2.10.2. Immediately report any suspected customs, agriculture or immigration violations to the proper authorities.

2.11. Mountainous Terrain. In the absence of other MAJCOM guidance, USAF aircrews shall consider as mountainous: those areas defined in 14 CFR §95.11 for CONUS, Alaska, Hawaii and Puerto Rico. For all other areas of operation, use a 500 ft surface elevation change over a ½ NM distance to define the location of mountainous terrain.

2.11. (USAFE) Mountainous Terrain. For flight operations outside the NAS, USAFE/A3 waives all definitions of "mountainous terrain" in applicable AFI 11-2MDSV3s in lieu of **paragraph 2.11**. When flying within the NAS, aircrew will follow 14 CFR §95.11 (link: CONUS Mountainous Terrain Chart).

2.11.1. **(Added-USAFE)** The "500' over 1/2NM" calculation (which equates to a 10º climb gradient) is based on terrain contour lines as depicted on an approved low-level navigation chart. The "1/2NM" is not from a course line or present aircraft position.

2.11.2. **(Added-USAFE)** Units are permitted to create "mountainous terrain" overlays on approved low-level navigation charts as mission planning aids that depict areas of terrain that fall within the "500' over 1/2NM" definition.

2.12. Hazardous Cargo. The PIC must ensure compliance with AFJI 11-204, *Operational Procedures for Aircraft Carrying Hazardous Materials.*

2.13. Transport of Drugs. The PIC will not allow the transport of narcotics, marijuana, controlled substances or other dangerous drugs on USAF aircraft unless such transport has been pre-approved by a US Military, Federal, or State authority.

2.14. Foreign Object Damage (FOD) Hazards. MAJCOMs will provide guidance for aircrew and passengers to ensure the wearing of jewelry (or other personal accoutrements) aboard the aircraft, in a UAS control station and on the flight line do not create a FOD hazard.

2.14. (USAFE) Foreign Object Damage (FOD) Hazards. FOD prevention for aircrew and passengers is IAW AFI 11-2MDSV3 guidance. Passenger service representatives/aircrew members are responsible for briefing passengers on FOD prevention measures prior to enplaning or deplaning. In the event that any personal items are unaccounted for, refer to local procedures for reporting possible FOD to maintenance personnel.

2.15. Equipment Required for Flight. USAF aircraft cockpits and RPA control stations must always provide full-time attitude, altitude, and airspeed information and the capability to recognize, confirm, and recover from unusual attitudes in all pilot positions.

2.15.1. **Flight Instrumentation.** Lead commands will define display requirements for aircraft not certified or authorized for instrument flight. Displays must always be positioned and arranged in a manner to enable an effective crosscheck. UAS ground stations must provide the pilot equivalent information appropriate to the system's autonomy. HQ USAF/A3O is the final authority and must endorse electronic and single medium displays and standby or emergency instruments as a Primary Flight Reference (PFR) before the instruments are used as a stand-alone reference for instrument flight. HQ AFFSA must evaluate any changes to cockpit instrumentation. The following instrumentation must always be displayed to the pilot (and illuminated during night operations) in USAF cockpits and UAS ground stations:

2.15.1.1. Climb/Dive Angle (or pitch and vertical velocity)

2.15.1.2. Bank Angle

2.15.1.3. Barometric Altitude

2.15.1.4. Indicated or Calibrated Airspeed

2.15.1.5. Prominent Horizon Reference

2.15.1.6. Heading

2.15.1.7. Appropriate fault indications (off flags) for instruments, PFRs and UAS lost communication links must be operative.

2.15.2. **Instrument Meteorological Conditions (IMC).** Flights in IMC also require operational: pitot heat, anti-icing and/or de-icing equipment designed to cope with the type and severity of known or forecast icing conditions. Such equipment is not required for brief

exposures when climbing or descending to an operating altitude above or below the icing condition.

2.15.3. **Night Flight**. (N/A for UAS operations) In addition to the requirements of paragraphs 5.12. and 5.20., a pilot must not operate an aircraft at night unless it is equipped with cockpit lighting sufficient to allow crewmembers to view required instrument panels, controls, and read required charts, FLIP, instrument approach plates and other navigation materials. Each crewmember must have an operable flashlight.

2.15.3.1. Use an authorized weather source, the latest version of the Air Almanac, MAJCOM-approved computer program or US Naval Observatory data to determine and calculate light and moon data. See glossary for definitions of night and civil twilight.

2.15.3.1. **(USAFE)** For official flight planning purposes, aircrew may use programs as allowed in MDS-specific and local guidance/standards. All other sources may be used for reference only.

2.15.4. **Remotely Piloted Aircraft (RPA) Equipment Requirements.** RPAs must meet equipage requirements for the class of airspace for which they intend to operate. If not suitably equipped, the RPA may only be flown in appropriate special-use airspace or under the provisions of a COA.

2.16. Communications, Navigation and Surveillance/Air Traffic Management (CNS/ATM) Systems and Procedures. For flights that operate under instrument flight rules (IFR), the aircraft must have a two-way radio and navigation equipment compatible with the airspace where the operations occur. IAW AFPD 63-13, *CNS/ATM and Navigation Safety Performance for USAF Aircraft*, CNS/ATM and navigation safety systems integrated on USAF aircraft must provide an equivalent level of performance and safety to civil standards. The lead MAJCOM and system developer ensures the aircraft is properly certified and operationally approved before use.

2.16.1. **Certification.** The term "properly certified" indicates that performance of the aircraft systems has been assessed IAW AFI 63-1301, *Assurance of CNS/ATM and Navigation Safety Performance,* to ensure compliance with paragraph 2.15. and this section. Civil standards may be obtained from the HQ AFFSA/A3ON Community of Practice web site at: **https://wwwd.my.af.mil/afknprod/affsa-a3on**, or via aircraft certification matrices maintained by 853 ELSG/NT (**https://igatm.hanscom.af.mil**).

2.16.2. **Operational approval.** Lead MAJCOMs approve operational use of CNS/ATM and navigation safety systems. MAJCOMs shall ensure that required aircrew and maintainer proficiency and training is maintained and documented, and that flight manuals, technical orders, and operating instructions are updated to include appropriate procedures and information on CNS/ATM use and functions. MAJCOMs must provide explicit guidance to aircrews defining what capabilities, qualifications, and restrictions apply to installed CNS/ATM equipment on all applicable MDSs, to include remote/oceanic operations (i.e., GPS primary means, MNPS, RNP 10, RNP 4, etc), RNAV en route, terminal, and approach operations (i.e., Baro-VNAV, RNAV 2, RNAV 5/B-RNAV, RNAV 1/P-RNAV, etc), RVSM, etc. MAJCOMs should provide standard operating procedures for flight in oceanic (or applicable MNPS) airspace, including checklists for inflight use, as necessary.

2.16.2. **(USAFE) Operational approval.** CNS/ATM operations, training, and documentation as directed in **paragraph 2.16.2** shall be IAW AFI 11-2MDSV3.

2.16.3. **Navigation Specification.** Aircraft must meet the navigation specification of the airspace or procedure being flown. Specific performance infrastructure requirements are defined for each navigation specification. An aircraft approved for a RNP or RNAV specification having a stringent accuracy requirement is not automatically approved for a navigation specification having a less stringent requirement (e.g., RNP 0.3 or RNAV 1 does not imply RNP 4 or RNAV 5 compliance) because different navigation specifications have different performance, equipage and infrastructure assumptions.

2.16.4. **GPS/RNAV Equipment.** Air Force GPS/RNAV systems are divided into three basic categories: portable GPS units, mission enhancement systems and systems meeting FAA requirements for IFR use.

2.16.4.1. **Portable GPS Units (PGUs).** PGUs include commercial hand-held GPS receivers, military precision lightweight GPS receivers (PLGRs), and PLGRs coupled with a laptop computer that incorporates moving map displays. They are intended to be used in aircraft as situational awareness tools only. MAJCOMs shall publish guidance on the use of PGUs, approve their software and develop programs to ensure aircrews receive proper training on these systems before permitting their use. PGUs are authorized for use with the following restrictions: PGUs shall not be used for IFR navigation, instrument approaches, or as a primary flight reference and will not be used as a substitute for any required flight equipment. PGUs must be tested IAW requirements of paragraph 2.9.6.

2.16.4.1. **(USAFE) Portable GPS Units (PGUs).** USAFE approves PGU use IAW AFI 11-2MDSV3 guidance; aircrew training and documentation shall be IAW MDS-specific standards.

2.16.4.2. **Mission enhancement systems.** These systems are intended to enhance mission capability when conducting tactical operations such as weapons delivery and airdrop. Systems that do not comply with the minimum standards of Technical Standards Order (TSO) C-129/C-129a will not be used for instrument navigation without specific MAJCOM approval. MAJCOMS that approve the use of these systems for en route navigation must publish specific usage guidance and restrictions. Mission enhancement systems will not be used for terminal operations except when they are part of a navigation system capable of self-contained instrument approaches as outlined in paragraph 8.17.6.

2.16.4.2. **(USAFE) Mission enhancement systems.** USAFE approves use of mission enhancement systems (e.g. Enhanced GPS/INS [EGI]) IAW AFI 11-2MDSV3.

2.16.4.3. **Systems Meeting Civil Requirements For IFR Use.** The following guidance covers those systems that are properly certified and approved for operational use. Comply also with AFMAN 11-217 Volume 1, *Instrument Flight Procedures*, RNAV approach procedures.

2.16.4.3.1. **RAIM Prediction.** Pilots shall always ensure RAIM availability prior to commencing an RNAV procedure (departure, arrival or approach) using any MAJCOM-approved RNAV equipment. If TSO-C129 equipment is used solely to satisfy the RNAV requirement, RAIM availability must be confirmed for the intended route of flight (route and time) using current GPS satellite information. Pilots may choose to monitor the

status of each satellite in its plane/slot position, account for the latest GPS constellation NOTAMs, and compute RAIM availability using model-specific RAIM prediction software, by using an en route and terminal RAIM prediction websites such as: **http://www.raimprediction.net** or **http://augur.ecacnav.com/augur/app/home**, or by contacting a flight service station. Receiver RAIM prediction capability may also be used. In the event of a predicted, continuous loss of RAIM, pilots should delay or re-route where RAIM requirements can be met if GPS is their only means of meeting the required RNAV performance. Pilots must continually assess their navigation capability in case of GPS failure. In the NAS only, if TSO-C145/146 equipment is used to satisfy the RNAV requirement, RAIM prediction need not be accomplished if Wide-Area Augmentation Service (WAAS) coverage is confirmed available along the route of flight.

2.16.4.3.1. **(USAFE) RAIM Prediction.** USAFE authorizes the use of the RNAV equipment specific to each MDS IAW AFI 11-2MDSV3 guidance.

2.16.4.3.2. **Flying RNAV Approaches.** MAJCOMs must approve the use of Flight Mission Computers (FMC) or Flight Management Systems (FMS) guidance to fly approaches with or without "GPS" or "or GPS" in the title. Pilot using suitable RNAV equipment to fly an approach must extract the entire procedure from a current database, and may not alter the extracted procedure.

2.16.4.3.2. **(USAFE) Flying RNAV Approaches.** USAFE approves FMC/FMS use for and during approaches with or without "GPS" or "or GPS" in the title IAW AFI 11-2MDSV3 guidance.

2.16.4.3.3. **RNAV Substitution.** On procedures developed by a US TERPS authority (FAA/USAF/USN), or on WGS-84 compliant procedures reviewed by MAJCOM TERPS, MAJCOM-approved suitable RNAV systems may be used as a substitute means of navigation for a named fix, VOR, TACAN, NDB, DME or compass locator. In such terminal areas, following a successful predictive RAIM check, approved RNAV systems may be substituted for required NAVAIDS or named fixes on arrivals, departures, and non-localizer based instrument procedures. Any such substitution must be extracted from a current database. These operations are allowable even when a facility is explicitly identified as required on a procedure (e.g., "Note ADF required"), but not if the procedure is NOTAM'ed as NA. Pilots using approved RNAV systems as a substitute means of navigation guidance in lieu of an out of service NAVAID should advise ATC of this intent and capability. Pilots will tune, identify, monitor and display the appropriate ground-based NAVAIDs whenever practicable.

2.16.4.3.3. **(USAFE) RNAV Substitution.** USAFE authorizes RNAV substitution operations as stipulated in AFI 11-2MDSV3 guidance.

2.16.4.3.4. **Terminal Area Operations using RNAV Substitution**. Using a MAJCOM-approved suitable RNAV system, pilots may determine aircraft position over or distance from a VOR, TACAN, NDB, compass locator, DME fix; or a named fix defined by a VOR radial, TACAN course, NDB bearing, or compass locator bearing intersecting a VOR or localizer course. Further, pilots may navigate to or from a VOR, TACAN, NDB, or compass locator, or hold over a VOR, TACAN, NDB, compass locator, or DME fix, or fly an arc based upon DME.

2.16.4.3.4. **(USAFE) Terminal Area Operations using RNAV Substitution**. USAFE authorizes Terminal Area Operations using RNAV substitution as stipulated in AFI 11-2MDSV3 guidance.

2.16.4.3.5. **RNAV Prohibitions.** RNAV systems using DME/DME/IRU, without GPS or WAAS position input, may only be used as a substitute means of navigation when specifically authorized by a Notice to Airmen (NOTAM) or other FAA/MAJCOM guidance for a specific procedure, NAVAID, or fix. The NOTAM or other FAA/MAJCOM guidance authorizing the use of DME/DME/IRU systems will also identify any required DME facilities based on an FAA assessment of the DME navigation infrastructure. The following RNAV substitution operations are prohibited:

2.16.4.3.5.1. Substitution of the navigational aid providing lateral guidance for the final approach segment of an instrument procedure without reference to the raw navigational data.

2.16.4.3.5.2. Navigation on any localizer-based course without reference to raw localizer data.

2.16.4.3.5.3. Navigation on procedures that are identified as not authorized ("NA") without exception by a NOTAM. For example, RNAV substitution allowances do not apply to a procedure affected by an expired or unsatisfactory flight inspection, or if a procedure is based upon a recently decommissioned NAVAID.

2.16.4.3.6. **RNAV Navigation Augmentation.** Space-Based Augmentation (SBAS) or Wide-Area Augmentation (WAAS) provide greater fidelity to GPS navigation data solutions. MAJCOMs will approve the use of SBAS/WAAS for en-route and terminal operations. These systems must be "properly certified" IAW TSO-C145A or TSO-C146A and installed IAW AC 20-130A. MAJCOMs must publish MDS-specific guidance and ensure pilots are appropriately trained and/or certified prior to authorizing the use of any augmented RNAV navigation solutions.

2.16.4.3.6. **(USAFE) RNAV Navigation Augmentation.** USAFE authorizes SBAS/WAAS operations as stipulated in AFI 11-2MDSV3 and lead-MAJCOM guidance.

2.16.4.3.6.1. Pilots must check airfield NOTAMs for status and level of service available. When the IAP is annotated with the W symbol, site-specific WAAS UNRELIABLE NOTAMs or Air Traffic advisories are not provided for outages in WAAS Lateral Navigation (LNAV) or Vertical Navigation (VNAV) and Localizer-Performance with Vertical Guidance (LPV) service. In this case, pilots will use LNAV weather minima, or Baro VNAV, if so equipped, for flight planning decisions at these locations.

2.16.4.3.6.1. **(USAFE)** Prior to using any augmented RNAV navigation solutions, aircrew will be trained and certified IAW AFI 11-2MDSV1 and local guidance. Units will document the training IAW MDS and local guidance.

2.16.4.3.6.2. When using augmented avionics as the planned approach at a

required (and otherwise qualified) alternate, pilots will base flight planning decisions on the RNAV (GPS) LNAV minima line. Upon arrival at an alternate, if SBAS/WAAS is available, then pilots may use vertical guidance to complete the approach using the displayed level of service.

2.16.5. **Minimum Navigation Performance Specifications (MNPS) Airspace.** Pilots will not fly in MNPS airspace until their aircraft is properly certified and approved by the lead command.

2.16.5.1. Aircraft meeting the North Atlantic Track (NAT) MNPS requirements meet the Canadian Minimum Navigation Performance Specifications (CMNPS) requirements.

2.16.5.2. Pilots operating aircraft in NAT airspace designated as MNPS must comply with requirements specified in applicable FLIP area planning documents.

2.16.5.3. Pilots operating aircraft in CMNPS airspace must comply with the requirements specified in FLIP AP/1, Chapter 3.

2.16.5.4. HQ USAF/A3O, through HQ AFFSA, must approve waivers to the requirements of NAT MNPS and/or CMNPS airspace.

2.16.6. **Reduced Vertical Separation Minimums (RVSM) Airspace.** Pilots will not fly in RVSM airspace unless their aircraft is properly certified by the lead command or unless ATC provides a clearance allowing entrance of a non-RVSM aircraft into RVSM airspace. Prior to operational approval, MAJCOMs will ensure pilots operating aircraft IAW RVSM criteria comply with requirements specified in FLIP GP and applicable AP guidance.

2.16.6. **(USAFE) Reduced Vertical Separation Minimums (RVSM) Airspace.** In addition to AFI 11-2MDS training and evaluation guidance, units will periodically evaluate aircrew compliance with specific RVSM requirements in FLIP GP and HN-specific AP guidance.

2.16.6.1. Prior to entry into RVSM airspace, the following shall be operating normally:

2.16.6.1.1. Two primary altitude measurement systems,

2.16.6.1.2. One automatic altitude control system (autopilot),

2.16.6.1.3. One altitude alerting device, and

2.16.6.1.4. An operational transponder.

2.16.6.2. The PIC will notify the controlling agency as soon as possible should any of the equipment above fail after entering RVSM airspace.

2.16.7. **Required Navigation Performance (RNP) Airspace**. Pilots will not operate in RNP airspace unless aircraft systems/equipment are certified IAW applicable civil standards and lead commands provide operational approval.

2.16.7.1. MAJCOMs will ensure that crews are aware of any special conditions or limitations associated with operations in each level of RNP airspace.

2.16.7.1. **(USAFE)** In addition to AFI 11-2MDS training and evaluation guidance, units will periodically evaluate aircrew knowledge of the special conditions/limitations

associated with operations in each level of RNP airspace that the unit's aircraft are capable of operating.

2.16.7.2. The applicable RNP level and any equipment conditions or limitations depicted on affected FLIP charts and procedures will be followed.

2.16.7.3. Pilots will advise ATC if an equipment failure or other malfunction results in the loss of aircraft capability to continue operating in the designated RNP airspace.

2.16.7.4. When a specified RNP level cannot be achieved, the pilot should revise the route or delay the operation until appropriate RNP level can be ensured.

2.16.8. **Operations within RNP-10 or Basic Area Navigation (BRNAV) Airspace**. Pilots must ensure their aircraft systems are MAJCOM approved to fly in RNP 10 or RNAV 5/B-RNAV airspace. MAJCOM approval to fly in RNP-10 or BRNAV airspace is restricted to aircraft systems that are "properly certified."

2.16.8. **(USAFE) Operations within RNP-10 or Basic Area Navigation (BRNAV) Airspace**. USAFE approves equipment usage and operations within RNP-10 or BRNAV airspace IAW AFI 11-2MDSV3, local, and TO guidance.

2.17. Electronic Flight Bags (EFB). Any device, installed or portable, used as an EFB must provide an equivalent level of safety and performance to that provided by paper products. For the purpose of this instruction, EFB products include, but are not limited to, laptop computers, tablet PCs, electronic kneeboards, and tethered displays. See also paragraph 2.3. EFB systems must comply with the testing requirements of paragraph 2.9.

2.17.1. **EFB Certification and Authorization.** Prior to authorizing EFB operations, the User MAJCOM will (in coordination with Lead MAJCOM):

2.17.1.1. Ensure EFBs comply with current guidance in FAA Advisory Circular AC 120-76. MAJCOMs should also reference the information stored on the HQ AFFSA CNS/ATM CoP: **https://afkm.wpafb.af.mil/a3on**.

2.17.1.2. Ensure EFB flight manual data (including checklists) is displayed IAW AFI 11-215.

2.17.1.3. Ensure EFB terminal procedure data is displayed identically in format and size to the published paper version. The EFB must not require scroll or zoom to view the Instrument Approach Procedure (IAP). Alternate formats/sizes of IAPs require evaluation of software functionality and human factors by the aircraft program office and endorsement by the user/lead command. Forward endorsement through HQ AFFSA for HQ USAF/A3O approval.

2.17.1.4. Ensure EFBs with moving map software or display of own ship position are not used as a primary means of navigation (applies to both airborne and ground operations). This functionality will only be used as a tool to enhance situational awareness.

2.17.1.5. Establish an aircrew training program to certify crews in use of EFBs, to include procedures for EFB failure in flight.

2.17.1.6. Publish written approval prior to aircrew use of EFBs.

2.17.1.7. Ensure paper publications are carried as a back-up unless paperless cockpit transition is complete.

2.17.1.8. **(Added-USAFE)** USAFE authorizes EFB usage IAW lead MAJCOM authorization as published in AFI 11-2MDSV3 guidance.

2.17.2. **Paperless Cockpit Transition.** Lead and User MAJCOMs transitioning an MDS to a paperless cockpit will develop a process which follows the recommended risk mitigation practices found in AC 120-76. A 6-month evaluation must be accomplished during which back-up paper products must be readily available onboard the aircraft. Following the evaluation period, a final reliability report must be submitted to the lead command for coordination through HQ AFFSA to HQ USAF/A3O for approval of paperless operations.

2.17.2. **(USAFE) Paperless Cockpit Transition.** USAFE aircrew are authorized paperless-cockpit operations IAW lead MAJCOM authorization as published in AFI 11-2MDSV3 guidance.

Chapter 3

FLIGHT PLANS AND PASSENGER MANIFESTS

3.1. Flight Plan Requirements. A flight plan enables search and rescue (SAR) agencies to search for an overdue aircraft. An IFR flight plan communicates the pilot's desires to ATC. Approved flight plans include those listed in FLIP GP, an FAA or ICAO Flight Plan form, or a host nation or MAJCOM-approved form (including computer forms). The PIC will ensure a flight plan is filed for any flight of a USAF aircraft.

3.1. (USAFE) Flight Plan Requirements. IAW AFI 11-401_USAFESUP_I, aircrew may use the AF Form 4327, *ARMS Flight Authorization*, instead of DD Form 1801, *DoD International Flight Plan* for local area flights. Additionally, aircrew may use forms as prescribed in AFI 11-2MDSV3, local, and HN guidance.

3.1.1. **Mission Command and Control (C2).** When at a non-military installation and a Flight Service Station (FSS) or Air Traffic Control (ATC) are not reachable, the pilot will ensure flight following by providing the mission C2 agency the intended route prior to takeoff. Once airborne, the PIC will stay clear of Area Defense Identification Zones (ADIZ), Buffer Zones, and other restricted airspace, fly VFR in controlled airspace (or IFR IAW paragraph 4.6), and file a flight plan with a FSS or ATC facility as soon as practicable.

3.1.2. **Procedures for Units Without a Base Operations**. When a written flight plan form is not processed through base operations, the flying unit must have a written agreement with airfield management outlining the procedures for handling flight movement, messages and identifying the agency responsible for flight following.

3.1.3. **Flight Plan Changes.** The format for making changes to a flight plan is printed on the inside cover of the DoD Flight Supplement. Before takeoff, or while airborne, the PIC may make changes to the original filed flight plan without re-filing provided:

3.1.3.1. The change does not penetrate an ADIZ.

3.1.3.2. The controlling ATC agency approves the change for an IFR flight.

3.1.3.3. The PIC ensures the facility providing flight following is notified of the change. Failure to ensure a FSS (or its overseas equivalent) is aware of the change may result in erroneous SAR efforts or an unannounced arrival at the destination.

3.1.3.4. The change complies with applicable host-nation rules.

3.1.4. **Destination Notification.** If unable to contact the command and control agency, the PIC will contact the FSS or equivalent as soon as practicable. The PIC will request the destination be advised of the departure time for flight following and to prevent an unannounced arrival.

3.1.5. **Closing the Flight Plan.** If operating in the NAS on an IFR flight plan into an airport with a functioning control tower, the flight plan is automatically closed upon landing. In all other cases, the PIC will ensure an activated flight plan is closed through a FSS or ATC facility by any means of communication available. If necessary, call long distance collect.

3.1.6. **(Added-USAFE)** IAW FLIP GP, aircraft that are not 8.33KHz capable but are equipped with UHF radios will insert the letter "M" in field 8, the letter "U" in field 10, and the indicator "STS/EXM833" in field 18 of the filed flight plan.

3.2. Passenger Manifests and Crew Lists. List passengers on a DD Form 2131, *Passenger Manifest*, or a MAJCOM-approved form. File the manifest and crew list with the flight plan, the passenger service facility, or other responsible agency. Notify C2 prior to departure if there is a passenger manifest (or crew list) change. When able, process crew and manifest changes with the original processing facility or with a responsible agency.

3.2. (USAFE) Passenger Manifests and Crew Lists. Aircrew may use forms as prescribed in AFI 11-2MDSV3 and local guidance and computer generated passenger manifests provided by the passenger terminal function at DoD installations.

Chapter 4

FLIGHT AUTHORIZATION, APPROVAL AND CLEARANCE AUTHORITY

4.1. Flight Authorization. Flights in USAF aircraft will be authorized and documented IAW AFI 11-401, *Flight Management*, and MAJCOM guidance.

4.2. Pilot in Command. The PIC must be current and qualified in the aircraft to be flown or under the supervision of a current and qualified instructor pilot. The PIC must hold a current instrument qualification if any portion of the flight will be conducted in IMC or under IFR. *Exception:* Student pilots enrolled in Undergraduate Flying Training courses may act as PIC for syllabus-directed solo flights IAW Joint Order (JO) 7610.4M, *Special Military Operations*.

4.2. (USAFE) Pilot in Command. Upgrading/requalifying pilots of single-pilot aircraft who do not have an instrument qualification may fly under IFR when under the direct supervision (includes flying in formation) of a current/qualified IP as part of a training program leading to instrument (re)qualification (See also AFI 11-202V2, **paragraph 5.2.2**).

4.3. Approval Authority. The individual(s) designated on the Flight Authorization as the PIC is the approval authority for the flight. *Exception:* Flying unit commanders must approve flights by any pilot who does not have approval authority.

4.3.1. Flying unit commanders must approve any flight by fixed-wing aircraft to or from other than established landing surfaces (e.g. highways, pastures, etc.).

4.3.1. **(USAFE)** Reference AFI 13-217, *Drop Zone and Landing Zone Operations*, and associated USAFESUP for further guidance.

4.4. Flight Plan Signature. The PIC will sign the flight plan. This signature, or act of filing by a means that precludes an actual signature (phone, radio, computer, etc.), indicates:

4.4.1. The flight was properly ordered, authorized, and released IAW AFI 11-401.

4.4.2. Current NOTAMs, weather, and other pertinent flight data were obtained.

4.4.3. The flight will be conducted according to all governing directives.

4.4.4. The flight plan has been reviewed for completeness and accuracy.

4.4.5. Foreign clearance briefings have met the minimum requirements of the FCG.

4.4.6. The PIC is responsible for safety of the aircraft (or formation) and its occupants.

4.4.7. The flight complies with ADIZ restrictions published in FLIP and NOTAMs.

4.4.8. The flight complies with the scheduling and coordination procedures specified for Special Use Airspace or Military Training Routes in FLIP.

4.4.9. The Formation Lead ensured each member of the formation flight was briefed on all pertinent aspects of the planned flight, and the PIC of each aircraft in the formation possesses an instrument rating (Army and Navy Special and Instrument Ratings, and FAA Instrument/Airline Transport Pilot Ratings meet this requirement) if any portion of the flight is to be conducted in IMC or under IFR (see paragraph 4.2. above).

4.4.9. **(USAFE)** The only authorized "instrument rating" is achieved by successful completion of an AFI 11-202V2 and AFI 11-2MDSV2 instrument (INSTM) evaluation.

4.4.9.1. **(Added-USAFE)** See **paragraph 4.2** **(USAFE)** for upgrading/requalifying pilots who do not have an instrument qualification.

4.4.10. **(Added-USAFE)** The PIC will sign the aircraft commander's signature block on the AF Form 4327 and/or DD Form 1801 (as applicable). If the pilot does not possess approval authority, the SQ/CC, or designated representative, will sign. A pen and ink signature is not required for electronically generated/transmitted flight plans. During exercises or contingencies, the SQ/CC or designated representative may be the approval authority for pilots under the commander's control.

4.5. Additional Approval and Requirements.

4.5.1. **Use of Military and Joint Use Airports.** Pilots may file to and land at US military and Joint-Use (e.g. MIL/CIV) fields unless restricted by the MAJCOM.

4.5.2. **Use of Civil Airports.** MAJCOMs may authorize filing to or landing at civil airports. Use of civil airports not governed by agreement or law may result in landing fees or use fees charged to the pilot or the military unit.

4.5.2. **(USAFE) Use of Civil Airports.** USAFE authorizes the filing to or landing at civil airports IAW AFI 11-2MDSV3 and local guidance. When filing to/landing at foreign civil fields, aircrew will ensure familiarity with applicable HN guidance and procedures. See also **Attachment 5** **(Added)** ***Control of Fighter Aircraft For Off-Station Sorties/Diverts***.

4.5.3. **Use of Civil P Airports**. Unless restricted by the MAJCOM, pilots may file to or land USAF aircraft at US civil airports (P-coded in the En route Supplement):

4.5.3.1. In an emergency.

4.5.3.2. When flying a helicopter or C-coded aircraft (e.g. C-130, C-12, C-40)

4.5.3.3. When necessary in the recovery of active air defense interceptor aircraft.

4.5.3.4. When this instruction requires an alternate and no other suitable airport is available.

4.5.3.5. When the wing commander or higher authority approves the flight and the airport manager grants permission in advance.

4.5.3.6. When a DoD tenant unit (e.g. ANG) is listed for the airport of intended landing and airport facilities or ground support equipment can support the aircraft concerned.

4.5.4. **UAS Airfields.** MAJCOMs shall approve all airfields authorized for use by UAS. Operations at non-DoD airfields require an approved COA and appropriate Letters of Agreement (LOA) between the employing unit, ATC, and airfield management.

4.5.5. **Volume Training, Airways and Civil Fields**. Flying units shall coordinate with the appropriate ATC agencies and civil airport authorities before conducting volume training at any civil airports or along/through airways.

4.5.5. **(USAFE) Volume Training, Airways and Civil Fields**. USAFE units may conduct training at HN civil airports or in controlled airspace only IAW HN rules and agreements.

4.6. Clearance Authority.

4.6.1. **Uncontrolled Airspace.** The PIC is the clearance authority for IFR or VFR flight in uncontrolled airspace.

4.6.1. **(USAFE) Uncontrolled Airspace.** If the PIC does not possess an instrument qualification, the clearance authority for IFR flight in uncontrolled airspace is the supervising IP (see **paragraph 4.2 (USAFE)**). Units will provide guidance on upgrading aircrew actions if the supervising IP becomes unavailable during flight.

4.6.2. **Controlled Airspace.** The PIC shall obtain ATC clearance before an IFR departure (or as soon as practicable after departure, while maintaining VFR, if contact cannot be established on the ground). The PIC is the clearance authority for VFR flight (if allowed) in controlled airspace.

4.7. UAS Operations within the NAS. For operations outside special use airspace, the mission tasking authority shall coordinate through HQ USAF/A3O to obtain a Certificate of Authorization or Waiver (COA) from the FAA. PICs will verify the COA complies with the requirements of JO 7610.4, Chapter 12, Section 9.

Chapter 5

GENERAL FLIGHT RULES

5.1. Professional Flying Standards.

5.1.1. **Reckless Flying**. The PIC is responsible for ensuring the aircraft is not operated in a careless, reckless or irresponsible manner that could endanger life or property.

5.1.2. **Off-Station Training**. Commanders will ensure that all off-station training flights meet valid training requirements and present a positive image of the Air Force. The PIC shall execute off-station training activities to achieve valid training requirements, present a positive view of the Air Force and shall ensure no appearance of government waste or abuse occurs.

5.1.2. **(USAFE) Off-Station Training**. Except for emergencies and specific USAFE-directed missions, HN airfields planned for use by a USAFE aircraft must meet the requirements outlined in this document. See also **Attachment 5 (Added)**.

5.1.2.1. **Aviation Into-Plane Reimbursement Card (AIR CARD) Responsibilities**. The PIC shall use the AIR CARD only for fuel and required ground services. Refuel at military installations as a first choice, followed by contract fixed base operators (FBOs). Refuel at non-contract FBOs only if mission needs warrant servicing at such locations. Further information, including documentation procedures and updated lists of contract FBOs, is available at: **https://www.airseacard.com**.

5.1.3. **Unauthorized Flight Demonstrations**. Unauthorized or impromptu flight demonstrations, maneuvers, events or "fly-bys" are prohibited. AFI 11-209, *Air Force Participation in Aerial Events,* addresses authorized flight demonstrations.

5.1.3. **(USAFE) Unauthorized Flight Demonstrations**. "Unauthorized or impromptu flight demonstrations, maneuvers, events or "fly-bys" are defined as maneuvers/events conducted with the express purposes of demonstrating the capabilities of USAFE aircraft, but without proper approval IAW AFI 11-209.

5.1.4. **Readiness for Duty.** A person shall not act as a crewmember of an aircraft:

5.1.4.1. While under the influence of alcohol or its after-effects. Aircrew members shall not consume alcoholic beverages within 12 hours of take-off.

5.1.4.2. While using, or while under the influence of, any substance that affects the crewmember's ability to safely perform assigned duties.

5.1.4.3. Anytime physical or psychological condition is suspect or known to be detrimental to the safe performance of flight duty. Consult a flight surgeon at the earliest opportunity.

5.1.4.4. While self-medicating except IAW AFI 48-123, *Medical Examinations and Standards*. Air Force Surgeon General guidance is available at: **https://kx.afms.mil/kxweb/dotmil/kjPage.do?cid=CTB_020686&functionalArea=AerospaceMedicine**.

5.1.4.5. Anytime the crewmember has not obtained the appropriate crew rest IAW Chapter 9.

5.2. Transporting Passengers Under the Influence. The PIC will ensure personnel suspected to be under the influence of intoxicants or narcotics are not allowed to board a USAF aircraft except in an emergency or when authorized by competent authority.

5.3. Crew at Stations. Crewmembers must occupy their assigned duty stations from takeoff to landing, unless absence is normal in the performance of crew duties, or in connection with physiological needs. Pilots shall not leave their duty station unless another qualified pilot establishes control of the aircraft.

5.3.1. While operating outside restricted or warning areas each RPA shall have dedicated pilots controlling/monitoring its flight.

5.4. See and Avoid. Pilots operating in VMC, under IFR or VFR, whether or not under radar control, are always responsible to see and avoid other traffic, terrain, and obstacles.

5.4.1. Standard IFR separation is provided between aircraft operating under IFR in controlled airspace. Within the NAS, ATC provides traffic advisories on VFR aircraft on a time-permitting basis. Outside the NAS, the crew should consult ICAO and country specific guidance outlined in the FCG and FLIP.

5.4.2. For UAS operations to comply with see and avoid requirements, the RPA must have the capability to detect/sense other traffic in sufficient time to perform an avoidance maneuver.

5.4.2.1. UAS operations that do not comply with paragraph 5.4. will be conducted under specific arrangements with appropriate aviation authorities (FAA, host nation, or military control). FAA COAs issued IAW JO 7610.4 (Chapter 12, Section 9) or arrangements with host-nation aviation authorities do not always waive the CFRs nor provide relief from ICAO Rules of the Air. JO 7610.4 outlines an equivalent level of safety comparable to see and avoid requirements for manned aircraft. UAS operations in compliance with an FAA COA, host-nation aviation authorization or in special use airspace are acceptable provided the appropriate equivalent level of safety measures are in place with controlling agencies and other airspace users.

5.5. Proximity of Aircraft. The PIC must not allow the aircraft to be flown so close to another that it creates a collision hazard. Use 500 ft. of separation (well clear) as an approximate guide except for:

5.5.1. Authorized formation flights.

5.5.2. Emergency situations requiring assistance from another aircraft. If an emergency requires visual checks of an aircraft in distress, the PIC must exercise extreme care to ensure this action does not increase the overall hazard. The capabilities of the distressed aircraft and the intentions of the crews involved must be considered before operating near another aircraft in flight.

5.5.3. MAJCOM-approved maneuvers in which participants are aware of the nature of the maneuver and qualified to conduct it safely (i.e., interceptor attack training).

5.5.3. **(USAFE)** In addition to AFI 11-2MDSV3, local, and TO guidance as well as MDS-specific AFTTPs, USAFE authorizes maneuvers IAW Allied Command Europe (ACE) Manual 75-2-1, *Fighting Edge Air-to-Air Training Rules*. Additionally, with concurrence of the PIC, aircrew may accept requests from European controllers for HN aircraft to conduct training intercepts.

5.6. Formation Flight.

5.6.1. **Transponder Operations During Air Refueling or Formation Flight**. Unless otherwise specified in Allied Communications Publication 160, US Supplement 1:

5.6.1.1. Only one aircraft (normally the lead) of a standard formation will squawk the assigned code.

5.6.1.2. Unless otherwise directed by ATC, all aircraft within a non-standard formation flight will squawk the ATC-assigned Mode 3A/C beacon code until established within the assigned altitude block and closed to the proper en route interval. When aircraft interval exceeds 3 NMs, both the formation leader and the last aircraft will squawk the assigned Mode 3A/C beacon code.

5.6.1.3. Unless otherwise directed, receivers squawk standby when <3NMs from the tanker.

5.6.1.4. **(Added-USAFE)** USAFE aircrew will squawk IAW HN rules and agreements or as-directed by HN controllers. In the absence of HN guidance, follow paragraphs above.

5.6.2. **Non-standard Formation Flight**. Non-standard formation flights may be conducted:

5.6.2.1. When approved by ATC, or

5.6.2.1. **(USAFE)** In the UK, ATC approval for non-standard formation is implied when flying under Traffic or Deconfliction Service (reference UK MIL AIP).

5.6.2.2. Operating under VFR in VMC, or

5.6.2.3. Operating within an authorized Altitude Reservation (ALTRV), or

5.6.2.4. Operating under the provisions of a Letter of Agreement (LOA), or

5.6.2.5. Operating in airspace specifically designed for a special activity.

5.6.3. **(Added-USAFE) Dissimilar Formation Flights**

5.6.3.1. **(Added-USAFE) Aerial Events (as defined in AFI 11-209, *Aerial Event Policy and Procedures*).** Reference AFI 11-209 for definitions and guidance on "Dissimilar Formation Flyovers" conducted in support of military or public events (e.g. Air/Trade Shows, etc.) held for community relations or ceremonial purposes. See also **paragraph 5.22**

5.6.3.2. **(Added-USAFE) Multinational Training Deployment Flyovers.** A "dissimilar formation" is defined as a formation made up of aircraft either from different MDSs, different nations, or both. Dissimilar formations recovering from multinational training missions and planning to fly over HN staging bases are considered part of the

overall training mission and do not fall under AFI 11-209 requirements. This applies regardless of media or DV observance of the formation.

5.6.3.2.1. **(Added-USAFE)** Units will notify USAFE/A3 of their intent to conduct a dissimilar formation flyover as part of any multinational training deployments.

5.6.3.2.2. **(Added-USAFE)** To the max extent practical, notification will be via email to HQ USAFE/A3T (info to the "USAFE/A3TO (Workflow)" org account) NLT two weeks prior to the event. By exception, short notice notification via phone call to HQ USAFE/A3T (DSN 314-480-6971) will be accepted.

5.6.3.3. **(Added-USAFE) Dissimilar Aircraft Training**. For all other dissimilar formations and training, USAFE authorizes operations IAW AFI 11-214, 11-2MDSV3, and MDS-specific AFTTP guidance. USAF flight leads will ensure all formation members know and understand applicable HN rules and agreements, and any applicable SPINS and TRs (e.g. ACE 75-2-1, *Fighting Edge Air-to-Air Training Rules*).

5.7. Right-of-Way. Each pilot must take whatever action is necessary to avoid collision, regardless of who has the right-of-way. The yielding aircraft must not pass over, under, abeam, or ahead of the other aircraft until well clear.

5.7.1. **Distress.** Aircraft in distress have the right-of-way over all other air traffic**.**

5.7.2. **Converging.** When converging at approximately the same altitude (except head-on or approximately so), the aircraft to the other's right has the right-of-way. Aircraft of different categories have the right-of-way in the following order of priority: balloons, gliders, aircraft towing or refueling other aircraft, airships, rotary- or fixed-wing aircraft.

5.7.3. **Approaching Head-On**. If aircraft are approaching each other head-on or approximately so, each shall alter course to the right.

5.7.4. **Overtaking Aircraft**. An overtaken aircraft has the right-of-way. The overtaking aircraft must alter course to the right.

5.7.5. **Landing**. An aircraft established on final approach has the right-of-way over other aircraft on the ground or in the air, except when two or more aircraft are approaching to land. In this case, the aircraft at the lower altitude has the right-of-way but it shall not use this advantage to cut in front of or overtake the other.

5.8. Communication in Flight.

5.8.1. **Air Traffic Control Clearances.** The PIC will comply with ATC clearances and instructions unless a deviation is necessary due to an in-flight emergency, to ensure safety of flight or to comply with a Traffic Alert and Collision Avoidance System (TCAS) resolution advisory (RA). Pilots will use standard aviation terminology, in English, from the Pilot-Controller glossary, MAJCOM guidance and FLIP when communicating with ATC.

5.8.1. **(USAFE) Air Traffic Control Clearances.** To the max extent practical, aircrew will use HN English terminology when speaking to HN controllers. In any circumstances where interpretation is in question, aircrew will use plain language to convey their requests/intentions.

5.8.1.1. Maintain two-way radio communications with the proper ATC facility or FSS IAW the procedures appropriate for the class of airspace as outlined in FLIP.

5.8.1.2. If the pilot is unsure of any clearance, immediately obtain ATC clarification.

5.8.2. **Transponder Operations.** The PIC will ensure an operable transponder is used IAW ATC instructions or host nation or MAJCOM directives, SPINS, or for any flight in controlled airspace (including MODE 4 when directed). In the NAS, transponders should be operated any time the aircraft is moving. For aircraft that are equipped with Mode S, the PIC must follow proper usage guidelines as outlined in GP. MAJCOMs will manage assigned codes to ensure no two aircraft are airborne with the same Mode-S address/code. Mode 4 operations are restricted to those necessary, and as outlined in the Flight Information Handbook (See MODE 4 in glossary).

5.8.2.1. **(Added-USAFE) Mode 3A/C.** Aircrew will reference AFI 11-2MDSV3 for further guidance on IFF equipment requirements and required self-tests prior to takeoff.

5.8.2.2. **(Added-USAFE) Mode 4.** Local guidance will clarify Mode 4 usage with respect to HN restrictions (reference applicable MIL AIPs and HN guidance on when to squawk Mode 4 within the boundaries of a specific country). This applies to deployed as well as home station operations.

5.8.2.3. **(Added-USAFE) Mode S.** Reference **Attachment 9 (Added)**.

5.8.2.3.1. **(Added-USAFE) MAF.** Mode S will be on for all flights.

5.8.2.3.2. **(Added-USAFE) CAF**. Dynamic addresses will be used and Mode S will be on anytime Mode 3/A/C is selected or when requested by the controller. If there is any confusion, query the controller using plain language.

5.8.3. **Emergency Frequencies**. If suitably equipped, aircrews will monitor at least one emergency frequency at all times as mission and operational conditions permit. Immediately report distress or ELT transmissions to ATC.

5.8.4. **Radio Frequency Restrictions.** Unless specifically authorized by competent authority, USAF aircraft will not transmit on frequencies reserved for air navigation (115.95 – 117.95 MHz, 328.6 – 335.4 MHz). Limit radio traffic on 118.0 – 137.0 MHz frequencies to ATC communications. Do not transmit secure voice/data communications on other than approved frequencies.

5.8.5. **ATC Communications Failure.** Follow the communications failure procedures published in the FIH.

5.8.6. **UAS ATC Communications Requirements.** For RPA operations in controlled airspace two-way radio communications will be the primary means of communications. When Ultra High Frequency (UHF)/Very High Frequency (VHF) radios are not available, a telephone may be used as a primary means of communication. The PIC shall ensure a MAJCOM-approved back-up means of communication is available while the RPA is airborne in controlled airspace. For limited range, short duration flights, the PIC may request relief from radio requirements from affected ATC agencies provided a suitable alternate communication means is available. All UAS units will maintain a current list of landline contact information for all ARTCCs, Radar Approach Controls, and Airfield Towers through which the RPA may transit on its flight-planned route as well as its planned lost-link/emergency route. UAS pilots will include the number of the Ground Control Segment (GCS) landline (solely dedicated for ATC use) in the remarks section of the flight plan.

5.9. Aircraft Speed.

5.9.1. **Supersonic Flight**. The PIC will not allow the aircraft to operate at or above Mach l except as specified in AFI 13-201. Inadvertent flight above Mach 1 will be handled IAW AFI 13-201.

5.9.1. **(USAFE) Supersonic Flight**. Outside the NAS, USAFE aircrew will conduct supersonic flight IAW HN rules and agreements. Aircrew will report inadvertent flight above Mach 1 when not in HN-approved airspace IAW AFI 13-201, local, and HN rules and agreements.

5.9.2. **In the NAS**. The PIC will:

5.9.2.1. Not allow their aircraft to exceed 250 knots indicated airspeed (KIAS) below 10,000 ft. MSL unless the MAJCOM has approved a higher speed IAW paragraph 5.9.5.

5.9.2.2. Not allow their aircraft to exceed 200 KIAS at or below 2,500 ft. AGL within 4 NMs of the primary airport of a Class C or Class D airspace area unless authorized by ATC, or required to maintain the minimum safe maneuvering airspeed specified in the aircraft T.O.

5.9.2.3. Not allow their aircraft to exceed 200 KIAS in the airspace underlying a Class B airspace area or in a VFR corridor designated through Class B airspace area, unless required to maintain the minimum safe maneuvering airspeed specified in the aircraft T.O.

5.9.3. **Outside the NAS**. The PIC will not allow the aircraft to exceed 250 KIAS below 10,000 ft. MSL unless: in international airspace and mission requirements dictate; ICAO or host nation rules permit or it is necessary to maintain the minimum safe airspeed in the aircraft T.O.

5.9.4. **Holding**. Conduct holding at airspeeds prescribed in FLIP or MDS-specific guidance.

5.9.5. **FAA Speed Authorization**. The FAA recognizes that certain military operations and training requirements cannot be met under the terms of the 14 CFR §91.117, *Aircraft Speed*, and has therefore granted a speed authorization to the USAF.

5.9.5.1. **Use of FAA Speed Authorization.** In the NAS, PICs may operate USAF aircraft in excess of 250 KIAS, below 10,000 ft. MSL, only under the following conditions:

5.9.5.1.1. Within restricted areas or Military Operating Areas (MOAs).

5.9.5.1.2. Within DoD/FAA mutually developed instrument routes or DoD developed visual routes. (Do not exceed 250 KIAS on SR routes).

5.9.5.1.3. Within unpublished joint MAJCOM- and FAA-designated areas or routes. This provision is intended to accommodate speed requirements, as necessary to accomplish the national defense mission, on an interim basis until the area/route can be published

5.9.5.1.4. On MAJCOM-approved large exercises or short-term special missions with appropriate coordination to ensure awareness of the nonparticipating flying public.

5.9.5.1.5. When the aircraft T.O. requires or recommends a higher speed in order to maintain safe maneuverability. If the safe maneuvering airspeed in the T.O. is listed as a range, fly the slowest speed practical in that range, based on weight and configuration. This provision is primarily to accommodate climbs/descents and terminal area operations. Airspeeds applicable to this exemption must be published in the aircraft T.O. (Dash-1). A MAJCOM supplement or MDS-specific Volume 3 does not constitute the aircraft flight manual as referenced in the FAA exemption.

5.10. Large Scale Exercises. MAJCOMs will conduct large-scale exercises in permanent or temporary special-use airspace established according to FAA Handbook 7400.2 and FAA JO 7610.4. When MAJCOMs approve large-scale exercises or short-term special missions they will ensure information on approved activities is available to the non-participating flying public and coordinate these operations with:

5.10. (USAFE)Large Scale Exercises. FAA Handbook 7400.2 and FAA JO 7610.4. do not apply within the USAFE AOR. Large-scale exercises involving only US forces within the USAFE AOR will be coordinated with HN military liaisons IAW HN rules and agreements. Large-scale exercises involving US forces and forces from other countries will be coordinated IAW NATO standards and procedures (i.e. through the applicable NATO CAOC).

5.10.1. Affected non-participating military flying units.

5.10.2. Affected FAA Air Route Traffic Control Center (ARTCCs).

5.10.3. Affected FAA regions through the Air Force representative (AFREP).

5.10.4. Other agencies, as appropriate.

5.11. Airport Operations.

5.11.1. **Ground Operations.** Pilots shall comply with AFI 11-218, *Aircraft Movement on the Ground*, and locally-published procedures as applicable.

5.11.1.1. **UAS-specific Ground Operations**. In the absence of MDS-specific MAJCOM guidance, PIC**s** must not taxi a RPA prior to takeoff, or after landing, from a control station that does not have a line-of-sight link with the RPA.

5.11.1.2. In the absence of MAJCOM guidance, RPA will not taxi on a controlled surface without an escort present who is in continuous communication with the pilot. *Exception:* If the RPA lands at a divert location where no local procedures exist and ATC has an unobstructed view of the RPA, the controller may clear the RPA to taxi if deemed necessary to vacate its position.

5.11.1.3. PICs will ensure the aircraft propulsion and all power sources are shut down as soon as practical after landing and clearing the controlled surface areas if at a location with no GCS and/or unit ground personnel.

5.11.1.4. If no unit personnel are present to safeguard the RPA, the pilot will coordinate appropriate aircraft security until retrieval of the aircraft by military personnel.

5.11.1.5. MAJCOMs must establish or approve hung ordnance, hot brakes, and other safety procedures to ensure the safety of ground personnel, to include diverts.

5.11.1.5. **(USAFE)** The OG/CC is responsible for establishing hung ordnance, hot brakes, and all other MDS-specific safety procedures (e.g. hydrazine) to include considerations for these items at planned divert fields.

5.11.2. **Clearances.** Obtain clearance from ATC before taxiing, taking a runway, or any takeoff or landing at an airport with an operating control tower.

5.11.3. **Taxi Clearance.** If a taxi route requires crossing any runway, pilots will hold short until obtaining specific clearance to cross each runway. Do not taxi across or onto the assigned runway without clearance from ATC.

5.11.3. **(USAFE) Taxi Clearance. Paragraph 5.11.3** also applies at all ICAO airfields within the USAFE AOR (to include the following US-controlled fields that follow ICAO procedures: Lajes AB, Moron AB, Aviano AB, and Incirlik AB). If unsure of the exact taxi clearance or if approaching a runway without specific clearance to hold short or cross, aircrew will query the controller.

5.11.3.1. Surface Movement Guidance and Control System (SMGCS). Pilots of USAF aircraft must obtain MAJCOM-directed training and certification before participating in actual SMGCS taxi operations. MAJCOMs shall publish MDS-specific guidance for aircrews required to operate at SMGCS locations in low visibility.

5.11.3.1. **(USAFE)** Surface Movement Guidance and Control System (SMGCS). USAFE SMGCS training/certification, documentation, and operations will be IAW AFI 11-218, AFI 11-2MDSV3 and local guidance, and MDS-specific AFTTPs.

5.11.4. **Uncontrolled Field Procedures.** Use the runway favored by the winds if no other factors make that runway unacceptable. Announce your activities on the appropriate frequency. (Refer to the Aeronautical Information Manual (AIM) and AFMAN 11-217, Volume 2, *Visual Flight Procedures*, for specific procedures.) In the absence of MAJCOM-specific guidance, UAS operations are prohibited at uncontrolled fields when other traffic is present.

5.11.5. **Land and Hold Short Operations (LAHSO).** USAF fixed-wing pilots are prohibited from accepting LAHSO clearances.

5.11.5.1. Pilots of USAF aircraft may passively participate in LAHSO (land or take-off when another aircraft has been given a LAHSO clearance). The PIC is the final authority whether to take-off, land or continue a touch-and-go when a merging aircraft has received a LAHSO clearance.

5.11.5.2. MAJCOMs of units that require active LAHSO participation for mission accomplishment must contact HQ AFFSA/A3OF to ensure MDS-specific data is incorporated into FAA Order 7110.199 (Appendix 3).

5.11.5.2. **(USAFE)** LAHSO operations within the CONUS will be conducted IAW AFI 11-2MDSV3 and local guidance. LAHSO operations within the USAFE AOR are not authorized.

5.11.6. **Reduced Same Runway Separation (RSRS).** MAJCOMs may approve non-formation RSRS operations. Procedures are specified by affected ATC and user units. MAJCOM approval shall include MDS-specific RSRS criteria governing similar and dissimilar landing/touch-and-go/low approach operations.

5.11.6. **(USAFE) Reduced Same Runway Separation (RSRS).** RSRS operations shall be executed IAW AFI 13-203_USAFESUP, Chapter 8. Once published, AFI 13-204V3_USAFESUP will supersede AFI 13-203_USAFESUP and become the source for RSRS guidance.

5.11.6.1. **(Added-USAFE)** To facilitate safe RSRS operations, aircrew will pass runway braking action to the appropriate agency in the event that braking action is other than expected/reported.

5.11.7. **Turns after Takeoff, Low Approaches, or Closed Patterns.** Do not turn after a takeoff, touch and go or low approach until at least 400 ft. above the Departure End of the Runway (DER) elevation, at a safe airspeed and past the end of the runway (if visible) unless: specifically cleared by the controlling agency or required by a published procedure. This restriction does not apply when executing a closed pattern.

5.11.8. **Traffic Pattern Procedures.**

5.11.8.1. At USAF installations fly the traffic pattern published in the local flying procedures publication or FLIP, unless otherwise directed.

5.11.8.2. At other than USAF installations, fly traffic patterns as directed by the control tower or published in FLIP, CFR Part 91 Subpart B, or the AIM.

5.11.8.3. At airports with no control tower, follow the standard light signals or visual indicators that prescribe the direction of traffic and landing runway. Departures must comply with the appropriate route for the airport. (Refer to AIM for more information.)

5.11.8.4. Helicopters should avoid the flow of fixed-wing aircraft. Helicopters that maintain compatible airspeed may fly in the rectangular pattern with fixed-wing traffic.

5.11.9. **Helicopter Landing Areas.** Helicopters may operate from/to other than established landing areas (i.e., fields, highways, parks, etc.) if conducting an operational mission or a military requirement exists and: the pilot receives permission to use the area for landing, safeguards exist to permit operations without hazard to persons or property and no legal objections are apparent.

5.12. Night Operations. See also paragraph 2.15.3. At night, the PIC will adhere to the following guidance:

5.12.1. Fixed wing aircraft must not operate from a runway unless it is outlined with operable lighting and is clearly discernible. Covert Infrared runway lighting being used by qualified crews equipped with Night Vision Devices (NVDs) meets this requirement. Exception: MAJCOM/A3 may authorize their aircraft to operate from unlit runways or landing zones (or those using high-intensity runway reflective markers) with the following restrictions:

5.12.1.1. Non-contingency operations are restricted to military airfields or civilian airports with an appropriate LOA; and,

5.12.1.2. MAJCOM must issue MDS-specific operating instructions, including comprehensive risk mitigation measures (such as IR lighting requirements, NVD usage, non-participating aircraft procedures, NOTAM issuance, weather and lunar illumination requirements and Operational Risk Management (ORM) assessments); and,

5.12.1.2. **(USAFE)** USAFE units are authorized to conduct operations at unlit runways/LZs IAW AFI 11-2MDSV3 guidance and MDS-specific AFTTPs. If no guidance exists, USAFE authorizes OG/CCs to approve operations as needed. Units will ensure comprehensive risk mitigation measures (see **paragraph 5.12.1.2**) are published and understood by all participating aircrew.

5.12.1.3. Aircraft authorized to operate to unlit landing areas must comply with external lighting requirements in paragraph 5.20.

5.12.2. In Alaska, areas located north of 60° North latitude, Antarctica, and areas located south of 60° South latitude, aircraft may be operated to unlighted airports during the period of civil twilight.

5.12.3. **Night Vision Device (NVD) Operations.** Aircrew will preflight NVDs prior to each use to ensure proper operation and optimum night visual enhancement. MAJCOMs will prescribe the use of NVDs during aircraft operations. See also paragraph 6.3.3.

5.12.3. **(USAFE) Night Vision Device (NVD) Operations.** NVD operations will be conducted IAW AFI 11-214, *Air Operations Rules and Procedures*, AFI 11-2MDSV3 guidance, and MDS-specific AFTTPs.

5.12.4. **Night Approaches.** MAJCOMs shall determine procedures governing the use of instrument approaches while operating in night VMC.

5.12.4. **(USAFE) Night Approaches.** Unless otherwise directed in AFI 11-2MDSV3 or local procedures, night VMC approaches/landings will be accomplished using the following availability priority (or as required based on mission/training requirements):

5.12.4.1. **(Added-USAFE)** Precision Approach.

5.12.4.2. **(Added-USAFE)** Non-precision Approach.

5.12.4.3. **(Added-USAFE)** Visual straight-in.

5.12.4.4. **(Added-USAFE)** A VFR traffic pattern may be flown if an instrument approach is not available and safety would be compromised by flying a visual straight-in (i.e. due to obstacles, population centers, etc.). Rotary wing aircraft may accomplish visual approaches to a designated helipad.

5.13. Landing Gear Reporting Procedures. Pilots operating retractable gear aircraft must report "gear down" to the ATC agency or runway supervisory unit after extending the landing gear. This report shall be made during any approach to an airport prior to crossing the runway threshold.

5.14. Altitude Requirements. Except for MAJCOM-approved aerial demonstrations/events or during takeoff or landing, do not operate aircraft:

5.14.1. **Emergency Landing.** Below an altitude that, should an emergency landing become necessary, creates undue hazard to persons or property.

5.14.2. **VFR.** Above 3,000 ft. AGL under VFR at altitudes or flight levels other than those specified in FLIP. In airspace under FAA jurisdiction, these altitudes do not apply when turning or holding in a holding pattern of 2 minutes or less.

5.14.3. **Congested Areas.** Over congested areas (i.e., cities, towns, settlements) or groups of people if the altitude does not ensure at least 1,000 ft. above the highest obstacle within a 2,000-ft. radius of the aircraft. Pilots flying helicopters in FAA airspace or operating IAW host nation agreements may operate at lower altitudes and in closer proximity if they do not create a hazard to persons or property on the surface.

5.14.4. **Non-congested Areas.** Over non-congested areas at an altitude of less than 500 ft. AGL except over open water, in special use airspace (SUA), or in sparsely populated areas. Under such exceptions, pilots must not operate aircraft closer than 500 ft. to any person, vessel, vehicle, or structure. Pilots flying helicopters in FAA airspace may operate at lower altitudes and in closer proximity if they do not create a hazard to persons or property on the surface.

5.14.4. **(USAFE) Non-congested Areas.** In the UK this guidance also applies anytime aircraft are under "Traffic Service" or "Deconfliction Service." "SUA" also includes all HN-defined low level operating airspace/routes as defined in HN AIPs. USAFE rotary-wing aircraft will operate IAW HN rules/agreements and local guidance.

5.14.5. **Flight over National Recreation Areas and Wildlife Refuges.** Less than 2,000 ft. AGL (mission permitting) over: National Park Service monuments, seashores, lake shores, recreation and scenic river ways; US Fish and Wildlife Service refuges and ranges; and US Forest Service wilderness and primitive areas. This paragraph is not applicable to SUA, low-altitude tactical navigation areas and MTRs. Specific areas may require higher altitudes (see FLIP and sectional aeronautical charts).

5.14.5. **(USAFE) Flight over National Recreation Areas and Wildlife Refuges.** Reference HN AIPs for minimum altitudes over HN-designated national parks and wildlife refuges (or equivalent).

5.14.6. **Disaster Areas**. Within a designated disaster area unless the aircraft is: aiding the area, specifically cleared by ATC or can fly to or from an airport in the area without hampering or endangering relief activities. Pilots must check NOTAMS for disaster areas.

5.15. Altimeter Settings. Set altimeters according to FLIP GP, FIH and AP-series documents. Use temperature correction tables when appropriate. Flight in IMC below FL 180 is not permitted in any area where the barometric pressure is lower than 28 or higher than 31 inches of mercury (See AIM 7-2-1 for more information).

5.15. (USAFE) Altimeter Settings. Altimeter settings in this guidance does not include QFE.

5.16. Simulated Instrument Flight.

5.16.1. **Restrictions.** The following restrictions apply to simulated instrument flight:

5.16.1.1. The aircraft must be equipped with a functional two-way radio.

5.16.1.2. A safety observer, able to see outside at all times, should accompany the flight, either as a crewmember or in a chase aircraft. If a chase aircraft is used, maintain continuous visual contact and two-way communications between aircraft. A safety observer is defined as an instrument qualified pilot, a fighter weapons systems operator (or other MAJCOM-designated aircrew member) with access to a set of flight controls.

5.16.1.3. MAJCOMs may authorize UAS to conduct simulated instrument flight provided the aircraft has sense and avoid capabilities as outlined in paragraph 5.4.2.

5.16.2. **Practice Instrument Approaches.** Approaches conducted in other than actual IMC. The pilot must still be able to see the ground, surrounding terrain, and when established on the final segment of the approach, the airport environment. Practice instrument approaches, including approaches flown under VFR will be conducted IAW Chapter 8 of this instruction. Practice approaches may be conducted without a safety observer (as defined in paragraph 5.16.1.2) if the pilot is instrument qualified and current in the type of approach flown. When flying a practice approach without a safety observer, the pilot must maintain a composite crosscheck that maintains situational awareness with terrain and other traffic. The pilot is not relieved of the responsibility to see and avoid other traffic, terrain and obstacles.

5.16.3. **Vision Restricting Devices.** MAJCOMs must approve the use of vision restricting devices (e.g., hoods, Foggles, etc) and provide specific approval for their use during takeoffs and landings. Vision restricting devices will not be used without a safety observer.

5.16.3. **(USAFE) Vision Restricting Devices.** USAFE units may delegate approval authority for the use of vision restricted devices to no lower than the OG/CC.

5.16.3.1. Maintain at least 2,000 ft of obstruction clearance when using vision restricting devices if the safety observer is in a chase aircraft, is not qualified as a pilot, or does not have full view of the flight instruments and access to the flight controls.

5.17. Simulated Emergency Flight Procedures:

5.17.1. **Restrictions.** The following restrictions apply to simulated emergencies:

5.17.1.1. Do not practice emergency procedures with passengers on board. Non-flight deck crewmembers may accomplish emergency procedures or medical emergency training with passengers on board provided there is no interference with the cockpit crew and mission requirements.

5.17.1.2. Single pilot aircraft require day (including civil twilight), VMC.

5.17.1.3. Multi-pilot aircraft in day IMC require weather conditions at or above published circling minimums for the approach to be flown.

5.17.1.4. Multi-pilot aircraft at night require weather conditions at or above 1,000 ft. ceiling and 2 SMs visibility or circling minimums, whichever is higher.

5.17.1.5. **(Added-USAFE)** Except as authorized/restricted in AFI 11-2MDSV3, USAFE aircrew will adhere to the following additional guidance concerning simulated EPs.

5.17.1.5.1. **(Added-USAFE)** Unusual attitude recoveries may only be conducted in VMC and when a flight examiner or IP has immediate access to the flight controls.

5.17.1.5.2. **(Added-USAFE)** Do not perform actual engine shutdown in-flight (see **paragraph 5.17.3.3**).

5.17.1.5.3. **(Added-USAFE)** Do not perform practice aborts on takeoff or actual/simulated engine-out takeoffs.

5.17.1.5.4. **(Added-USAFE)** Do not practice simulated EPs when actual malfunctions or emergency conditions exist.

5.17.1.5.5. **(Added-USAFE)** Perform practice barrier engagements only IAW AFI 11-2MDSV3 and AFI 32-1043, *Managing, Operating, and Maintaining Aircraft Arresting Systems*.

5.17.2. **Simulated Flameout, Forced Landing, or Emergency Landing Patterns (SFO/ELP).** At controlled fields where SFO/ELP maneuvers are conducted, the facility air traffic manager shall issue a letter of agreement with the appropriate military authority and adjacent facilities as required. The letter of agreement (LOA) shall conform to FAA Joint Order (FAA JO) 7610.4, chapter 9.

5.17.2. **(USAFE) Simulated Flameout, Forced Landing, or Emergency Landing Patterns (SFO/ELP).** SFO/ELP maneuvers may be conducted IAW HN rules/agreements at all fields where USAFE aircraft operate. An LOA is not necessary unless required by HN.

5.17.3. **MAJCOM Responsibilities.**

5.17.3.1. MAJCOMs must provide guidance for SFO/ELP approaches when: the T.O.s do not provide specific guidance; the approaches do not conform to the T.O. guidance; the approaches have not been coordinated with the ATC responsible for the airspace or the airport/landing area does not have: a prepared runway surface, an active tower/RSU, enough runway or proper crash/rescue equipment.

5.17.3.1. **(USAFE)** USAFE units will execute SFOs/ELPs only IAW AFI 11-2MDSV3, local, and TO guidance.

5.17.3.2. MAJCOMs must provide guidance when an instructor pilot or flight examiner does not have immediate access to the aircraft controls.

5.17.3.2. **(USAFE)** IPs and flight examiners chasing SFOs/ELPs will execute chase only IAW AFI 11-2MDSV3 and local guidance as well as MDS-specific AFTTPs.

5.17.3.3. MAJCOMs must provide guidance to minimize actual engine shutdown when a reduction of power suffices.

5.17.3.3. **(USAFE)** See **paragraph 5.17.1.5.2** Aircrew of multi-place aircraft will use established crew-coordination and CRM techniques (e.g. guarding throttles) to ensure awareness of engine parameters during ELPs.

5.17.3.3.1. **(Added-USAFE)** Functional check flight (FCF) certified aircrew may performing actual in-flight engine shutdown in conjunction with an FCF or FCF-training sortie (see also **Attachment 7 (Added)**).

5.18. Touch-and-Go Landings.

5.18.1. MAJCOMs must authorize touch-and-go landings for command-operated aircraft. The authorization will include explicit guidance on operating conditions and qualifications.

5.18.1. **(USAFE)** Touch-and-go landings shall be executed as authorized in AFI 11-2MDSV3. If no authorization exists in AFI 11-2MDSV3, touch-and-go landings must be approved by the OG/CC (may be delegate to no lower than the SQ/DO or designated representative), but only for essential training, evaluation, or operational missions (i.e. not for continuation training).

5.18.1.1. **(Added-USAFE)** When approved, touch-and-go landings shall be executed IAW AFI 11-2MDSV3 and TO guidance as well as MDS-specific AFTTPs.

5.18.1.2. **(Added-USAFE) CAF Only (not to include rotary-wing)**. Ceiling and visibility will be greater than 500/2.4KM or PWC whichever is higher.

5.18.2. Touch-and-go landings are authorized if required by courses listed in the Air Force Education Training Course Announcement (ETCA) database (**https://etca.randolph.af.mil**/).

5.19. Dropping Parachutists or Objects or Fuel Jettison. The PIC will not allow the dropping of parachutists or objects, or jettison of fuel from the aircraft except in an emergency or when required for mission accomplishment.

5.19. (USAFE)Dropping Parachutists or Objects or Fuel Jettison. "Fuel jettison" in this and subsequent paragraphs refers to the dumping of fuel using TO fuel dumping procedures, not the jettisoning of external fuel tanks (if applicable).

5.19.1. **MAJCOM Responsibilities.** MAJCOMs will ensure airdrops comply with applicable directives.

5.19.1. **(USAFE) MAJCOM Responsibilities.** USAFE aircrew will only perform airdrops IAW the following guidance:

5.19.1.1. **(Added-USAFE)** AFI 11-2MDSV3 (including any referenced AFIs)

5.19.1.2. **(Added-USAFE)** AFI 16-1202, *Pararescue Operations, Techniques, and Procedures*, (once published, AFI 10-3502V3 will be referenced due to its incorporation of AFI 16-1202 guidance).

5.19.1.3. **(Added-USAFE)** Local supplements to the above AFI guidance

5.19.1.4. **(Added-USAFE)** MDS-specific AFTTPs

5.19.2. **PIC Responsibilities.** The PIC will:

5.19.2.1. When jettisoning fuel and circumstances permit, notify the appropriate ATC or flight service facility of intentions, altitude, location, and when the operation is complete.

5.19.2.1. **(USAFE)** Planned fuel dumping will be reported to HN ATC IAW HN rules and agreements.

5.19.2.2. Drop chaff containing rope elements IAW AFI 13-201 and JO 7610.4.

5.19.2.2. **(USAFE)** Since JO 7610.4 is only applicable within the NAS, outside the NAS aircrew will follow HN rules and agreements concerning rope chaff.

5.19.2.3. Report any accidental loss of equipment or aircraft parts or jettisoning of fuel or cargo IAW AFMAN 10-206, *Operational Reporting*, and AFMAN 91-223, *Aviation Safety Investigations and Reports*.

5.19.2.3. **(USAFE)** IAW AFI 10-206, aircrew will only report "jettisoning of fuel" (i.e. fuel dumping) if fuel is released from the aircraft either intentionally or unintentionally and it is "likely to have adverse environmental consequences or elicit media coverage." Unless otherwise stated in AFI 11-2MDSV3, local, or HN guidance, aircrew will use 10,000 ft AGL as the altitude below which "environmental consequences" from fuel leakage/dumping may be a factor and therefore will report IAW AFI 10-206.

5.20. Aircraft Lighting.

5.20.1. **Reduced Lighting.** MAJCOMs may authorize reduced or light-out operations in restricted areas, warning areas or host nation approved areas. Host nation approved areas may be documented in a LOA or host nation regulatory documentation.

5.20.1. **(USAFE) Reduced Lighting.** USAFE authorizes reduced/lights-out operations IAW AFI 11-2MDSV3 and AFI 11-214 guidance as well as HN rules/agreements. If an LOA is required due to a lack of HN regulatory documentation, the OG/CC will ensure the LOA is reviewed annually for currency.

5.20.2. **Aircraft Lighting During Formation Operations.** MAJCOMs may authorize formation flights to vary their lighting configuration according to the aircraft type and mission requirement. The MAJCOM must provide guidance on this type of operation and ensure the guidance provides an equivalent level of visual identification as a single aircraft.

5.20.2. **(USAFE) Aircraft Lighting During Formation Operations.** USAFE authorizes formation flights to vary their lighting configuration IAW AFI 11-2MDSV3, local, and HN guidance as well as MDS-specific AFTTPs. This also applies to tanker operations (reference ATP-56).

5.20.3. **Position Lights**. Illuminate all position lights between official sunset and sunrise:

5.20.3.1. Immediately before engine start and when an engine is running. Aircraft that do not have power available before start shall turn them on as soon as power is available.

5.20.3.2. When parked in an area likely to create a hazard or while being towed, unless clearly illuminated by an outside source.

5.20.4. **Anticollision and Strobe Lights.** Anticollision lights and strobe lights are not the same. For the purposes of this section, anti-collision lights are the primary flashing light system on the aircraft intended to attract the attention of others to enhance see and avoid operations, while strobe lights are systems such as wingtip strobes or other similar strobe light installations.

5.20.4.1. **Ground Operations.** Aircraft equipped with anticollision lights will display these lights IAW AFI 11-218, *Aircraft Operations and Movement on the Ground*.

5.20.4.2. **Airborne Operations.** Aircraft equipped with anticollision and strobe lights will operate these lights as follows:

5.20.4.2.1. Anticollision lights must be on from takeoff to landing.

5.20.4.2.2. Strobe lights shall be operated IAW MAJCOM or aircraft T.O. guidance.

5.20.4.2.3. The PIC may turn off anticollision lights when required for safety.

5.20.4.2.4. The PIC may continue a mission with the failure of any light of the anticollision light system to the first practical stop where repairs can be made.

5.20.5. **Landing Lights.** Aircraft must have at least one operable landing light. Helicopters equipped with a searchlight that provides sufficient light for landing may substitute that for an operable landing light. Covert landing lights meet this requirement during NVD use.

5.20.5.1. Landing lights will be illuminated below 10,000 ft. MSL, day or night, within operational constraints.

5.20.5.2. When mission requirements dictate, use of landing lights is optional during take-off/landing, if the aircraft is equipped with an operational sensor that provides a visual representation of the runway environment. Operations must comply with paragraph 5.12.1.

5.20.5.3. When other aircraft are operating in the pattern, landing light off operations should be limited to specific training and operational requirements.

5.21. Aerobatics and Air Combat Tactics. Aerobatics, air combat tactics and air to ground tactics which involve aerobatic type maneuvering must be performed in SUA, ATC-Assigned Airspace (ATCAA), MTRs or host nation approved airspace IAW the guidelines in AFI 11-214, *Aircrew, Weapons Director, and Terminal Attack Controller Procedures for Air Operations*. Aircraft deployed or based at overseas locations will operate IAW applicable host nation agreements or ICAO SARPs. If the aircraft operating requirements (altitude requirements, maximum airspeeds, dropping of objects, etc) dictated in the host nation agreement are less restrictive than USAF/MAJCOM guidance, the most restrictive guidance shall be used.

5.21. (USAFE) Aerobatics and Air Combat Tactics. In the UK, aerobatics and ACT may also be performed anytime aircraft are under "Traffic" or "Deconfliction" Service (reference UK MIL AIP). "SUA" also includes all HN-defined low level operating airspace/routes as defined in HN AIPs.

5.22. Participating in Aerial Events.

5.22.1. The PIC will ensure compliance with AFI 11-209, when participating in aerial events, demonstrations, and static displays.

5.22.1.1. **(Added-USAFE)** See also **paragraph 5.6.3 (Added)**.

5.22.2. When a NOTAM imposes a TFR during an airshow, major sporting event, natural disaster, etc, no aircraft may operate in the designated airspace except IAW the authorization, terms and conditions of the TFR.

5.23. Tobacco Use on USAF Aircraft. Tobacco use is prohibited on USAF or contract aircraft.

5.24. Landing With Hot Armament. MAJCOMs will ensure units develop procedures for handling aircraft that land with live armament to ensure the safe conduct of such operations.

5.24.1. Before landing with hot armament or practice munitions at any airfield where such procedures are not known, the PIC must:

5.24.1.1. Advise the tower of the circumstances, and

5.24.1.2. Advise transient alert and other appropriate agencies, and

5.24.1.3. Request taxi instructions to a designated safe (de-arm) area.

5.24.2. After landing, the PIC must:

5.24.2.1. Avoid taxiing into an area that could threaten personnel or equipment, and

5.24.2.2. Ensure the ground crew is aware of the armament on board, and

5.24.2.3. Request assistance from the nearest Air Force facility, if necessary.

5.24.3. **(Added-USAFE)** Units will execute landings with live and/or practice heavyweight ordnance IAW AFI 11-2MDSV3, local, and HN guidance as well as MDS-specific AFTTPs. Additionally, aircrew will review procedures at HN divert/alternate fields when required to proceed to those fields.

5.25. Pilot Reporting Procedures. In addition to the reporting requirements listed elsewhere in this instruction, AIM, AFMAN 11-217 series, or ICAO/host-nation instructions, pilots will report:

5.25.1. **Position.** Pilots will report their position as requested by ATC and as required by host-nation or ICAO flight procedures in uncontrolled airspace. Use the position reporting format found in the En route Supplement.

5.25.2. **Hazardous Laser Activity.** Pilots will report any hazardous laser activity encounters IAW AIM 7-5-12 and AP/1. Laser encounters can be extremely perilous, see AFI 11-301, Volume 4, *Aircrew Laser Eye Protection*, for specific aircrew actions and more information on protection from laser illumination.

5.25.2. **(USAFE) Hazardous Laser Activity.** Aircrew may find current AIM documentation at the following link: **http://www.faa.gov/air_traffic/publications/**. Under "Manuals" select the most current version of the AIM.

5.25.2.1. **(Added-USAFE)** In addition to the reporting in paragraph 5.25.2., aircrew will report to applicable HN military liaisons IAW local and HN rules and agreements any unauthorized and/or suspected malicious LASER activity.

5.25.3. **Pilot Reports (PIREPs).** Pilots will immediately report hazardous weather conditions, volcanic activity, and large concentrations of birds or wildlife on or near the airport/airfield to the ARTCC, terminal ATC, or FSS. Additionally, pilots are urged to report any significant flight condition information. Pilots operating in warning areas should forward significant weather reports to the appropriate controlling agency (e.g., ARTCC, military radar unit, Airborne Warning and Control System, etc). In all cases, follow up with a report to a Pilot-to-Metro Service (PMSV) to ensure rapid dissemination to other using agencies. See PIREP procedures in the FIH.

5.25.3. **(USAFE) Pilot Reports (PIREPs).** See **Attachment 8 (Added)** for a definition of "Volcanic Activity"

5.26. Operations in the vicinity of hazards. Unless MAJCOM-approved, USAF aircraft will not be operated in any forecast or actual severe condition (e.g. severe icing, turbulence, actual Bird Watch Condition SEVERE, etc). See AFH 11-203 and AFI 91-202 for detailed information.

5.26. (USAFE) Operations in the vicinity of hazards. USAFE authorizes flight operations in forecast or actual severe conditions IAW AFI 11-2MDSV3 and TO guidance if necessary for the accomplishment of HHQ-tasked/contingency missions (i.e. not for daily training) and approved by the following authorities: **CAF**--owning OG/CC or designated representative, **MAF**--owning AOC/CC or comparable level of flying supervision if agreed upon between the owning AOC and the unit.

5.26.1. **Takeoff, Approach, and Landing.** Pilots will not takeoff, land, or fly an approach at an airport where thunderstorms or other hazardous conditions are producing hail, strong winds, gust fronts, heavy rain, lightning, windshear, and (or) microbursts.

5.26.1.1. **Bird Watch Condition (BWC).** In the absence of MAJCOM or MDS-specific BWC guidance, USAF pilots will comply with the following:

5.26.1.2. BWC MODERATE: Operational commanders will consider restricting formation departures, approaches, and pattern work. To increase the chances of seeing and avoiding birds, PICs should avoid hard turns or excessive climb angles. During BWC Phase II periods, PICs will accomplish one approach to a full stop unless mission needs warrant additional approaches and sufficient fuel exists to divert if BWC changes to SEVERE.

5.26.1.3. BWC SEVERE: PICs shall not conduct flight operations except in an emergency. Arriving aircraft will either hold awaiting a lower BWC, or will divert. Non-emergency landings in BWC SEVERE require risk acceptance approval by the operations group commander (or airbase wing commander if no OG/CC) responsible for the airfield's flight operations.

5.26.1.4. Civil or Foreign Fields. PICs will follow BWC MODERATE procedures if they receive a civilian ATC/ATIS hazard advisory to use caution for birds in the vicinity.

5.26.1.5. PICs can expect NATO countries to comply with NATO STANAG 3879. Use this intensity conversion: 0-4: low, 5: medium, 6-8: severe. Risks warning updates for NW Europe can be obtained via: **https://www.notams.jcs.mil/common/birdtam.html**.

5.26.1.5.1. **(Added-USAFE)** Squadrons flying low-level missions in central Europe will ensure current applicable BIRDTAM (or HN equivalent system) information is made available to aircrews during mission planning. Airfield management at USAFE owned/operated bases will ensure current BIRDTAM (or HN equivalent system) information is available to all transient aircrews as necessary for their planned missions.

5.26.1.5.2. **(Added-USAFE)** When BIRDTAM levels 6/7/8 (or HN equivalent) is declared, aircrews are prohibited from low-level training below 2000 ft AGL in the affected area(s). If notified while airborne, aircrews will adjust route of flight and or altitude to avoid those areas. If a BIRDTAM (or HN equivalent) is reported in a grid that includes a USAFE base, supervisors of flying (SOF) and airfield management personnel will assess the current local bird activity and adjust the Bird Watch Condition accordingly.

5.26.2. **Thunderstorms.** Pilots shall not intentionally operate into a thunderstorm except when operating on a MAJCOM-approved mission specifically requiring thunderstorm penetration. Damaging lightning strikes, electrostatic discharges and hail encounters can occur in apparently benign conditions. Pilots shall not fly in IMC in the vicinity of actual thunderstorms without operable radar, unless specifically approved by the MAJCOM.

5.26.2. **(USAFE) Thunderstorms.** "In the vicinity" is defined as within 10 NM below FL230 or within 20 NM above FL 230. An "Operable radar" can be any of the following:

5.26.2.1. **(Added-USAFE)** An on-board system that possesses the capability to provide any type of weather returns.

5.26.2.2. **(Added-USAFE)** In contact with a ground or airborne controller who, with their radar, is capable of painting weather that could be a factor to the flight.

5.26.2.3. **(Added-USAFE)** If in-formation, at least one member of the flight is capable of painting the weather and communicating hazards to the rest of the flight.

5.26.3. **Flight Planned Route.** When forecast, observed or reported hazardous weather activity (thunderstorm or other severe weather condition) affects the planned route, pilots will alter the route of flight to avoid the hazard, delay the scheduled mission or proceed to a suitable alternate. Pilots shall use all available information including ground and on-board radar, PMSV, and PIREPs to avoid hazardous or severe weather conditions.

5.26.3. **(USAFE) Flight Planned Route.** Aircrew will be mindful of the increased risk of electrostatic discharge when flying in visible moisture (clouds or precipitation) at or near the freezing level from (i.e. +8 to -8 degrees Celsius and/or within 5,000 feet) and will avoid to the max extent practical.

5.26.4. **Wake Turbulence and Windshear.** Pilots will:

5.26.4.1. **Report Wake Turbulence.** Notify ATC when encountering wake turbulence. Pilots should observe wake turbulence avoidance criteria in AFMAN 11-217, Volume 3, *Supplemental Flight Information*, and FLIP.

5.26.4.2. **Report Windshear.** Immediately report a windshear or microburst encounter on takeoff, approach or landing to the most appropriate agency (e.g., control tower, approach control, PMSV) and if possible include: the altitude, loss or gain in airspeed or altitude, the type of aircraft and the location of occurrence (see AFH 11-203, Volume 1).

5.26.5. **Volcanic Activity.** Unless conducting rescue operations or when authorized by the MAJCOM/A3, pilots of Air Force aircraft will not operate in an area of known or reported hazardous volcanic activity. MAJCOMS may issue MDS-specific guidance on ground and flight operations, including pilot actions for inadvertent ash encounters and ash avoidance criteria for areas of known or forecast hazardous volcanic ash concentrations. In the absence of MAJCOM guidance, pilots shall not plan to operate within 50 NM of any hazardous volcanic ash without MAJCOM/A3 approval. Consult an authorized weather source (see para. 2.6.) for current Volcanic Ash Advisory Center (VAAC) ash cloud information (or SIGMET). If unable to contact an authorized weather source, pilots will consider those areas identified on international VAAC depictions (or SIGMETs) as hazardous. In ground or flight operations, any encounters with volcanic ash should be reported as soon as possible to the appropriate controlling agency and aircraft maintenance authorities. In all cases, follow up with a report to a PMSV, or other applicable weather agency, to ensure rapid dissemination to other using agencies. See PIREP procedures in the FIH.

5.26.5. **(USAFE) Volcanic Activity.** See **Attachment 8 (Added)** for USAFE guidance on operations near Volcanic Activity.

5.26.6. **Freezing Precipitation (Ice/Snow/Frost).** Pilots will not takeoff with ice, snow, frost or other contamination adhering to the wings, control surfaces, propellers, engine inlets, or other critical surfaces of the aircraft, unless authorized by the program manager or flight manual.

5.26.6.1. A thin coating of frost is permitted on the fuselage, provided the lettering and/or paint lines are visible.

5.26.6.2. Light frost (up to 1/8 inch thick) caused by supercooled fuel is permitted on the lower wing surface (i.e., below the fuel tank area) if the fuselage and all other control surfaces are free of all icing. If deicing is required on any other aircraft surface, the underwing frost shall also be removed.

5.26.6.3. Information on the removal and prevention of frozen precipitation is contained in AF T.O. 42C-1-2, *Anti-Icing, De-Icing and Defrosting of Parked Aircraft* available at **https://www.toindex-s.wpafb.af.mil**.

5.26.6.3.1. Approved annual deicing/anti-icing holdover tables are available at the HQ AFFSA/A3OF website: **https://afkm.wpafb.af.mil/a3of**.

5.26.6.3.1. **(USAFE)** For further guidance, reference the most current USAFE FCIF titled "Cold Weather Procedures/Holdover Tables)" as posted on the USAFE/A3TV ICE (**https://ice.usafe.af.mil/sites/A3/A3T/A3TV_External/default.aspx**).

5.27. Traffic Alerting and Collision Avoidance System (TCAS). Aircraft equipped with TCAS shall operate in the TCAS mode that provides both Traffic Alerts (TAs) and Resolution Advisories (RAs) unless the provisions of paragraph 5.27.2, MAJCOM guidance, mission requirements or host nation agreements dictate otherwise.

5.27.1. **Response to TCAS Alerts.** Pilots shall respond to all RAs as directed by the TCAS system unless doing so would jeopardize the safe operation of the aircraft (e.g., descent into obstacles).

5.27.1.1. Pilots shall not deviate from an assigned ATC clearance based solely on TA information. Attempt to attain visual contact and maintain safe separation.

5.27.1.2. In the event of an RA, alter the flight path only to the extent necessary to comply with the RA.

5.27.1.3. Pilots who deviate from an ATC clearance in response to an RA shall notify ATC of the deviation as soon as practical and promptly return to the current ATC clearance when the traffic conflict is resolved or obtain a new clearance.

5.27.1.4. If a TCAS RA requires maneuvering contrary to ATC instructions, right-of-way rules, cloud clearance requirements, or other VFR/IFR flight rules, pilots are expected to follow the TCAS RA.

5.27.2. **Formation TCAS Operations.**

5.27.2.1. Formation leads (and last aircraft, when formation length exceeds 3 NMs) shall operate in TA mode unless otherwise required by ATC, host nation agreement or specified in the MDS specific guidance.

5.27.2.2. During refueling operations the tanker aircraft will operate in TA mode.

5.27.3. **UAS TCAS Operations.** RPAs equipped with TCAS shall only operate in TA Mode unless specifically authorized by competent authority.

5.28. Terrain Awareness and Warning Systems (TAWS). Pilots will comply with appropriate flight manual procedures upon receipt of a Ground Proximity Warning System (GPWS)/TAWS/Enhanced GPWS (EGPWS)/Ground Collision Avoidance System (GCAS)

warning. During day/VMC flight, terrain warnings need not be followed if the pilot can verify the warning is false by visual contact with the terrain/obstacle.

5.28.1. MAJCOMs will establish guidance on TAWS use during tactical operations.

5.28.1. **(USAFE)** Aircrew will follow AFI 11-2MDSV3, local, and TO guidance as well as MDS-specific AFTTPs concerning the tactical use of GPWS/EGPWS/TAWS/GCAS.

5.29. Navigation Procedures for Higher Latitudes. (See AFMAN 11-217, Volume 1)

5.29.1. Aircraft capable of displaying only magnetic heading are prohibited from operating in designated Areas of Magnetic Unreliability (AMU). For areas north of 70 N and south of 60 S that are not officially designated as AMUs, MAJCOMs will determine the highest allowable latitude for aircraft capable of displaying only magnetic heading.

5.29.1.1. MAJCOMs must provide aircraft-specific operational approval prior to en route and terminal area operations using navigation aids oriented to true or grid.

5.29.1.1. **(USAFE)** Aircrew will follow AFI 11-2MDSV3, local, and TO guidance as well as MDS-specific AFTTPs.

5.29.1.2. Outside of AMUs, aircraft unable to display true or grid heading may use navigation aids oriented to true or grid for en route navigation if allowed by MAJCOM.

5.29.1.2. **(USAFE)** Aircrew are allowed to operate IAW AFI 11-2MDSV3, local, and TO guidance as well as MDS-specific AFTTPs.

5.29.2. Unless otherwise restricted by aircraft flight manual or MAJCOM directives, USAF aircrews are authorized to fly true or grid approaches.

5.29.2.1. Except as noted in paragraph 5.29.2.2 aircraft must possess a true or grid heading source, and be able to display true or grid heading on appropriate navigation displays in order to fly terminal area true or grid instrument procedures in night or IMC.

5.29.2.2. Aircraft without a true or grid heading source may fly true or grid RNAV (GPS) approaches and true or grid RNAV departure procedures at night or IMC provided the RNAV procedure includes all required magnetic course information.

5.30. UAS Abnormal Flight Operations. If ATC loses the RPA transponder signal or the ability to determine the position or altitude of the RPA, the pilot will declare an emergency, attempt to transmit IFF code 7700 (or 7600, if appropriate), terminate the mission, and proceed to either home station or the nearest suitable DoD-controlled airspace/airfield for landing. The pilot will state intentions to ATC and also provide ATC with position reports when requested for tracking.

5.30.1. In the event of a divert, the pilot will coordinate a route of flight and new clearance with ATC that minimizes any hazard to other air traffic and persons on the ground.

5.31. UAS Lost-Link Procedures. Upon confirmation of a sustained loss of command link, the PIC will accomplish appropriate lost link procedures and notify ATC with the following information: time of lost link, last known position, altitude, and programmed lost link routing. The PIC shall confirm execution of appropriate lost link procedures with ATC or other means, if practical.

5.31.1. The PIC will ensure the RPA is programmed to follow a predictable route and altitude plan if it loses link. If practical, lost link routing will be programmed to maintain either the RPA's last assigned clearance or include a delay to enable coordination with ATC prior to aircraft departing its approved working area. The PIC shall attempt to regain command link and will notify ATC of anticipated aircraft maneuvers. Lost link routing shall be planned to ensure that the aircraft has sufficient obstacle clearance and does not penetrate unauthorized airspace.

5.31.2. Lost link routing will terminate in an area that provides the best chance to regain link or at a landing/recovery airfield. If unable to reestablish link, and in absence of MAJCOM-specific guidance, the PIC will inform ATC of the intended flight termination plan.

Chapter 6

AIRCREW FLIGHT EQUIPMENT SYSTEMS

6.1. General Information. This chapter provides basic flight equipment guidance for aircrew.

6.1.1. **Indoctrination Course for Nonrated Flyers.** Flying unit commanders must ensure nonrated personnel and civilians who perform in-flight duties receive an indoctrination course on MDS-specific: missions, emergency procedures, use of flight equipment and egress. A preflight briefing does not qualify as an indoctrination course.

6.1.2. **Passenger Briefing.** The PIC will ensure each passenger is briefed before flight. Minimum briefing items must include: emergency signals and required emergency actions; the location and use of emergency exits; wear and use of parachutes; use of oxygen and other associated survival equipment.

6.2. Aircrew Flight and Survival Equipment. Each crewmember shall wear and use survival and aircrew flight clothing and equipment IAW AFI 11-301 *Aircrew Flight Equipment (AFE) Program*, AFI 16-1301, *Survival, Evasion, Resistance and Escape (SERE) Program*, MAJCOM guidance, SPINS and the aircraft T.O.

6.3. Spectacles, Sunglasses, Contact Lenses, Laser Eye Protection, and NVDs.

6.3.1. **Spectacles.** Crewmembers who wear corrective spectacles while performing aircrew duties must use only Air Force-provided spectacles and sunglasses. Crewmembers must carry a spare set of clear prescription spectacles while performing aircrew duties.

6.3.2. **Sunglasses.** All crewmembers of USAF aircraft shall wear only Air Force-provided sunglasses, based on the Aircrew Flight Frame (AFF), while performing in-flight aircrew duty. Individuals are authorized two pair every two years, obtained through individual equipment supply processes.

6.3.3. **Contact Lenses.** Crewmembers who desire contact lenses must consult with the flight surgeon, meet criteria and follow guidelines outlined in AFI 48-123. While performing aircrew duty, comply with paragraph 6.3.1.

6.3.4. **Laser Eye Protection.** MAJCOMs that permit aircrew laser eye protection will publish specific guidance on training and use prior to in-flight wear. Aircrew will follow AFI 11-301, Volume 4, or MAJCOM guidance, during and after hazardous laser encounters.

6.3.4. **(USAFE) Laser Eye Protection.** Prior to the first use of ALEP, follow AFI 11-202V1 and AFI 11-2MDSV1 training as well as AFI 11-2MDSV3, local, and TO guidance. See also **paragraph 5.25.2**

6.3.5. **NVDs.** Crewmembers must undergo a MAJCOM-approved initial certification course IAW AFI 11-202, Volume 1, *Aircrew Training*, prior to their initial flight with NVDs. If wearing corrective lenses, clear AFF protective lenses, or laser eye protection with NVDs, conduct pre-flight adjustments wearing both.

6.3.5. **(USAFE) NVDs.** NVD initial certification training will be conducted IAW MDS-specific Initial Qualification Training (IQT) (Reference AFI 11-202V1 and AFI 11-2MDSV1).

6.4. Oxygen Requirements. (N/A for UAS ground control stations) The PIC shall ensure sufficient oxygen for the planned mission (including contingencies) is available to all occupants before takeoff. Normally, aircrew will use supplemental oxygen anytime the cabin altitude exceeds 10,000 ft MSL.

6.4.1. **Unpressurized Operations.** When mission essential, aircrew trained IAW AFI 11-403, *Aerospace Physiological Training Program*, may operate aircraft unpressurized above 10,000 ft. MSL without supplemental oxygen IAW MAJCOM guidance and the following restrictions:

6.4.1. **(USAFE) Unpressurized Operations.** USAFE approves unpressurized operations above 10,000 ft MSL IAW parent AFI, AFI 11-2MDSV3, and TO guidance as well as MDS-specific AFTTPs. If no guidance exists, units must request approval from USAFE/A3 IAW **paragraph 1.6.1.4**

6.4.1.1. Total flight time (without supplemental oxygen) above 10,000 ft. MSL shall not exceed 1 hour if any portion of the flight above 10,000 ft. MSL is in IMC, at night, or when using NVGs, employing weapons, conducting airdrop or air-refueling, or performing high-g maneuvers.

6.4.1.2. Maximum of 30 minutes (without supplemental oxygen) between 12,500 and 14,000 ft. MSL.

6.4.1.3. Supplemental oxygen must be used by all persons while above 14,000 ft. MSL.

6.4.1.4. Any occupant, not trained IAW AFI 11-403, limits the cabin altitude to:

6.4.1.4.1. 10,000 ft. to 13,000 ft. MSL for three hours without supplemental oxygen.

6.4.1.4.2. 13,000 ft. MSL without supplemental oxygen.

6.4.1.5. FL 250 shall not be exceeded even if occupants have oxygen (see paragraph 6.5)

6.4.2. **Pressurized Operations.** Pilots flying pressurized aircraft maintaining a cabin altitude below 10,000 ft. will comply with Table 6.2. Each crewmember shall use supplemental oxygen anytime the cabin altitude exceeds 10,000 ft MSL.

6.4.2.1. **(Added-USAFE)** IAW AFFSA waiver titled "Oxygen Requirement Waiver," aircrew of C-37 (all variants) aircraft may conduct flights above FL410 without one pilot donning an oxygen mask under the following provisions. Reference the "*Waivers*" folder on the USAFE/A3TV ICE for the most current version of the waiver document.

6.4.2.1.1. **(Added-USAFE)** Crews will limit exposure to higher altitudes by planning all missions at or below FL410. Any missions planned at altitudes above FL410 due to max range fuel considerations (up to FL450) require USAFE/A3 approval (make requests IAW **paragraph 1.6.1.4**)

6.4.2.1.2. **(Added-USAFE)** During flight, should fuel reserves or flight conditions that cannot be circumnavigated (reported or forecast moderate or greater turbulence or severe weather), necessitate a climb above FL410, and mission requirements preclude the use of oxygen at altitude, C-37 *AlB* crews may operate up to FL450 with oxygen immediately available to both pilots under the following restrictions:

6.4.2.1.2.1. **(Added-USAFE)** Both pilots will occupy their duty positions.

6.4.2.1.2.2. **(Added-USAFE)** The Emergency Descent Mode (EDM) must be functional.

6.4.2.1.2.3. **(Added-USAFE)** The autopilot must be engaged and functional in each axis.

6.4.2.1.2.4. **(Added-USAFE)** The auto-throttles must be engaged and functional.

6.4.2.1.2.5. **(Added-USAFE)** Internal baggage door must remain closed.

6.4.2.1.3. **(Added-USAFE)** Flights over terrain greater than 13,000 feet MSL require one pilot to be continually on oxygen if the aircraft is above FL410.

6.4.2.1.4. **(Added-USAFE)** If all the above criteria cannot be met, one pilot will don an oxygen mask IAW Table 6.1. below. Additionally, if the cabin pressure low warning message illuminates at or above FL400, activating the EDM, the crew will take the following actions:

6.4.2.1.4.1. **(Added-USAFE)** Crew Oxygen Masks -Don (All)

6.4.2.1.4.2. **(Added-USAFE)** Speed Brakes -Extend (P or FE)

6.4.2.1.4.3. **(Added-USAFE)** Emergency Descent Procedures -Initiate (PF)

6.4.2.1.5. **(Added-USAFE)** All flights above FL410 will be reported to the SQ/DO or designated representative and tracked.

6.4.3. **Procedures for Loss of Cabin Pressure.** Initiate an immediate descent to the lowest practical altitude, preferably below 18,000 ft. MSL, but do not allow cabin altitude to remain above FL 250 unless occupants are wearing functional pressure suits. If any occupant lacks functioning oxygen equipment, descend to an altitude of 13,000 ft MSL or less (terrain permitting) and comply with paragraph 6.4.1.

6.4.3.1. If cabin altitude exceeds 18,000 ft MSL following the unintended loss of cabin pressure, aircrew and passengers must be evaluated by a flight surgeon or other competent aviation medical authority prior to further flight. If cabin altitude cannot be determined, use the aircraft altitude at the time of the event. Report a loss of cabin pressurization IAW AFMAN 91-223.

6.4.4. **Decompression Sickness (DCS).** If any occupant exhibits DCS symptoms, the pilot must descend as soon as practical and land at the nearest suitable installation where medical assistance can be obtained. Individuals suspected of DCS should be administered and remain on 100 percent oxygen (using tight-fitting mask or equivalent) until evaluated by competent aviation medical authority. Decompression sickness may occur up to 12 hours after landing. Aircrew will not fly after a DCS event without specific authorization from a flight surgeon or designated civil aviation medical examiner.

6.4.5. **Hypoxia.** Should anyone on the aircraft experience hypoxia symptoms, the pilot will immediately descend to the lowest practical altitude and land at a suitable location to obtain medical assistance. Aircrew will not fly after a hypoxia event without specific authorization from a flight surgeon or designated civil aviation medical examiner**.**

6.5. High Altitude Operations. Without a functional pressure suit, the pilot shall maintain a cabin altitude below FL 250 and adhere to the time limits in Table 6.1. For high-altitude airdrop missions, use the oxygen requirements in AFI 11-409, *High Altitude Mission Support Procedures*. If the aircraft lands between missions, and the time on the ground equals or exceeds the time spent at or above a cabin altitude of FL 210, the time of allowable duration can be reset to the maximum.

Table 6.1. Cabin Altitude Time Limits (DCS Prevention) (N/A for U-2 Operations).

Time (minutes)	Cabin Altitude (ft MSL)
0	At or Above FL 250
45	24,000 – 24,999
70	23,000 – 23,999
120	22,000 – 22,999
200	21,000 – 21,999

Table 6.2. Oxygen Requirements for Pressurized Aircraft.

	Pilot(s)	Navigator/ Flight Engineer	Other Flight Deck Crew	Cabin/Cargo Area Crew	Pax
10,000 ft through FL 250	R	R	R	A	NA
Above FL 250 to FL 350	One I/One R	I	R	A	A
Above FL 350 to FL 410 (two pilots at controls)	I	I	R	A	A
Above FL 350 to FL 410 (only one pilot at controls)	One O/One A	I	R	A	A
Above FL 410 to FL 450	One O/ One I	I	R	A	A
Above FL 450 to FL 500	One O/ One I	I	I	A	A
Above FL 500 to FL 600	G	G	G	G	G
Above FL 500 (Sustained)	S	S	S	S	S

Note: Single-pilot aircraft must follow the most restrictive guidance in this table
LEGEND: **A - Oxygen available.** Carry or place portable oxygen units or extra oxygen outlets with masks throughout the cabin/cargo area so that any person has quick access to oxygen should a loss of pressurization occur. **R - Oxygen readily available.** A functioning system and mask shall be located within arms reach, and the regulator must be set to 100 percent and ON (when regulator is adjustable). **I - Oxygen immediately available.** Must wear helmets with an oxygen mask attached to one side, or have available an approved quick-don style mask properly adjusted and positioned. Regulators shall be set to 100 percent and ON. **O - Oxygen mask ON.** Regulator ON and normal. **G - Wear a partial pressure suit.** Suit must provide 70mm Hg of assisted positive pressure breathing for altitude (pressure breathing for altitude system/get-me-down scenario) **S – Wear a pressure suit.** Suit must provide a total pressure (atmospheric plus suit differential) of at least 141mm Hg to the head and neck with adequate body coverage to prevent edema and embolism.

6.6. (Added-USAFE) Wind and Sea State Restrictions for Ejection Seat Aircraft. Flying training operations will not be conducted when the surface winds along the intended route of flight exceed 35 knots steady state over land (25 knots over water) or when the sea state exceeds 4 meters wave height. This is not intended to restrict point-to-point operations (e.g. ocean crossings) when only a portion of the route is affected and the flight planned route can be altered to avoid the affected area. The OG/CC or designated representative is the waiver authority.

Chapter 7

VISUAL FLIGHT RULES (VFR)

7.1. General Information. PICs may fly USAF aircraft under VFR when required for mission accomplishment. Mission examples include: operational necessity, host nation requirements, training, proficiency or evaluation sorties, aircraft equipment that precludes IFR flight; and ATC or NAVAID gaps that preclude IFR flight. Unless specifically authorized by the MAJCOM/A3, USAF fixed-wing multi-engine aircraft will not depart VFR without ensuring they can vertically clear published IFR departure procedure restrictions along the planned departure route with one engine inoperative. Comply with AFMAN 11-217, Volume 2, and the following:

7.1. (USAFE)General Information. Make requests for the authorization allowed in paragraph 7.1. IAW paragraph 1.6.1.4. (written) or 1.6.1.5. (verbal). For all authorizations, aircrew must brief obstacle avoidance maneuvers in case of OEI and must be able to see-and-avoid all obstacles along their route of flight that drive published IFR departure restrictions.

7.1.1. The PIC will utilize radar advisory, monitoring or control services when practical, and should ensure flight following by any available means (i.e. FSS or C2 agency).

7.1.1. **(USAFE)** Aircrew will use HN VFR radar services to the max extent practical, but are not prohibited from VFR training (to include low-level navigation) if unable to secure any type of flight following.

7.1.2. The PIC will conduct planning, at a minimum, IAW paragraph 2.1., as appropriate to the area of operations, to ensure VFR operations are authorized and properly planned.

7.1.3. When conditions (e.g. weather, airspace, etc.) prevent continued flight under VFR, the PIC will alter the route and continue operations under VFR until: the destination, obtaining an IFR clearance or until landing at a suitable location.

7.1.4. PICs conducting tactical operations should fly under VFR unless compliance degrades mission accomplishment.

7.1.5. RPA pilots must comply with provisions of JO 7610.4 when operating under VFR.

7.2. Weather Requirements for Filing VFR. The forecast weather for the departure, planned route of flight and arrival (1 hour of the Estimated Time of Arrival (ETA)) must comply with the minima in Table 7.1. or 7.2. If transitioning to IFR, the pilot shall maintain appropriate visibility and cloud clearance requirements to a minimum IFR altitude and until receipt of the IFR clearance. If transitioning from IFR to VFR, the PIC must maintain the appropriate visibility and cloud clearances as soon as the IFR cancellation is acknowledged by ATC.

7.2.1. The forecast for helicopters must comply with Table 7.1. or Table 7.2.

7.2.2. The forecast for fixed-wing must be equal to or greater than l,500 ft. ceiling and 3 SMs visibility.

7.3. Flight Operations under VFR. PICs shall adhere to the weather minimums listed in Table 7.1. when in FAA airspace. When outside FAA airspace, PICs shall comply with guidance in FLIP, FCG or the ICAO VFR weather minimums in Table 7.2. PICs of VFR aircraft must at all

times be able to control the aircraft by visual reference to a discernible horizon, regardless of cloud clearance requirements.

7.3.1. **Cold Weather Operations.** USAF pilots shall apply altimeter corrections to en route and terrain clearance altitudes, especially when operating VFR at night. See Chapter 8.

7.4. Special VFR (SVFR). USAF fixed-wing aircraft shall not fly under SVFR. MAJCOMs may allow helicopter aircrews to fly under SVFR IAW 14 CFR §91.157 in FAA airspace, or appropriate host-nation guidance. Helicopter PIC's may request SVFR clearances at airports with the designation "NO SVFR" in the Airport Facilities Directory or on the sectional chart.

7.4. (USAFE)Special VFR (SVFR). USAFE authorized rotary-wing operations under SVFR IAW AFI 11-2MDSV3, local, and HN guidance as well as MDS-specific AFTTPs.

7.5. VFR Over-the-Top. PICs operating VFR above a ceiling shall comply with AFMAN 11-217V2. See also paragraph 8.18 for VFR-on-Top.

Table 7.1. USAF VFR Cloud Clearance and Visibility Minimums.

FAA Airspace Class	Prevailing or Flight Visibility	Distance from Cloud
Class A	Not Applicable	Not Applicable
Class B	3 SMs	Clear of Clouds
Class C and Class D	3 SMs	500 ft. below, 1,000 ft. above, and 2,000 ft. horizontal
Class E and G (Fixed-wing) Below 10,000 ft. MSL	3 SMs	500 ft. below, 1,000 ft. above, and 2,000 ft. horizontal
Class E and G (Fixed-wing) At or above 10,000 ft. MSL	5 SMs	1,000 ft. below, 1,000 ft. above, and 1 SM horizontal

Class E (Helicopter) Below 10,000 ft. MSL	3 SMs	500 ft. below, 1,000 ft. above, and 2,000 ft. horizontal
Class E (Helicopter) At or above 10,000 ft. MSL	5 SMs	1,000 ft. below, 1,000 ft. above, and 1 SM horizontal
Class G (Helicopter) Below 1,200 ft. AGL	Day: 1/2 SM Night: 1 SM	Clear of clouds if operated at a speed that allows the pilot adequate opportunity to see any air traffic or obstructions in time to avoid a collision.
Class G (Helicopter) Above 1,200 ft. AGL and Below 10,000 ft. MSL	Day: 1 SM Night: 3 SMs	500 ft. below, 1,000 ft. above, and 2,000 ft. horizontal
Class G (Helicopter) Above 1,200 ft. AGL and Above 10,000 ft. MSL	5 SMs	1,000 ft. below, 1,000 ft. above, and 1 SM horizontal
NOTE: When permitted by MAJCOM and ATC, helicopters, IAW SVFR, may operate in lower visibility conditions if maneuvered at a speed that will give adequate opportunity to observe other traffic or any obstacles in time to avoid collision.		

Table 7.2. ICAO VFR Cloud Clearance and Visibility Minimums.

ICAO Airspace Class	Flight Visibility	Distance from Cloud
Class A	Not Applicable	Not Applicable
Class B	8 KMs above 10,000 ft. MSL 5 KMs below 10,000 ft. MSL	Clear of clouds
Class C, D, and E	Same as Class B	1,500 m horizontal 300 m (1,000 ft.) vertical
Class F and G (Fixed-wing) Above 900 m (3,000 ft.) MSL or above 300 m (1,000 ft.) above terrain, whichever is higher	Same as Class B	Same as Class C, D, and E.
Class F and G (Fixed-wing) At and below 900 m (3,000 ft.) or 300 m (1,000 ft.) above terrain whichever is higher	5 KMs	Same as Class C, D, and E.
Class F (Helicopter) Above 900 m (3,000 ft.) or 300 m (1,000 ft.) above terrain whichever is higher	8 KMs above 10,000 ft. MSL 5 KMs below 10,000 ft. MSL	1,500 m horizontal 300 m (1,000 ft.) vertical.

Class F and G (Helicopter) At and below 900 m (3,000 ft.) or 300 m (1,000 ft.) above terrain whichever is higher	5 KMs (See NOTE)	Clear of cloud and in sight of the surface.
Class G (Helicopter) Above 900 m (3,000 ft.) or 300 m (1,000 ft.) above terrain whichever is higher	8 KMs above 10,000 ft. MSL 5 KMs below 10,000 ft. MSL	1,500 m horizontal 300 m (1,000 ft.) vertical
NOTE: When permitted by MAJCOM and ATC, helicopters, IAW SVFR, may operate in lower visibility conditions if maneuvered at a speed that will give adequate opportunity to observe other traffic or any obstacles in time to avoid collision.		

Chapter 8

INSTRUMENT FLIGHT RULES (IFR)

8.1. IFR Requirements. PICs will fly USAF fixed-wing aircraft under IFR to the maximum extent possible without unacceptable mission degradation. Pilots shall fly under IFR if:

8.1.1. Weather conditions do not permit flight according to VFR.

8.1.2. Airspace rules require IFR flight (e.g. Class A airspace).

8.1.3. Operating in excess of 180 KTAS within (not simply crossing) federal airways.

8.1.4. Operating fixed-wing aircraft at night, unless the mission cannot be flown under IFR.

8.1.4.1. **(Added-USAFE)** HN airspace requirements requiring aircrew to fly VFR during night low-level training is considered a mission requirement and is therefore included in **paragraph 8.1.4**.

8.2. Practice Instrument Approaches Under VFR. MAJCOM approval is required to practice instrument approaches under VFR. The following restrictions apply:

8.2.1. Maintain VFR cloud clearances and visibilities IAW Chapter 7.

8.2.2. Terminal radar service shall be used when available.

8.2.3. Aircrews must make all position reports IAW AFMAN 11-217, Volume 2.

8.2.4. Pilots must request ATC authorization to fly the published missed approach.

8.2.5. **(Added-USAFE)** With OG/CC approval, aircrew are authorized to practice instrument approaches under VFR IAW AFI 11-2MDSV3, local, HN, and TO guidance.

8.3. ATC Clearance. Pilots must obtain an ATC clearance before commencing any IFR flight that originates in or penetrates controlled airspace.

8.4. Published Instrument Procedure. A "published" procedure is defined as:

8.4.1. An instrument procedure charted in US government FLIP by the DoD/National Geospatial-Intelligence Agency (NGA) or FAA/National Aeronautical Charting Office (NACO). USAF aircrews will use NGA or NACO products when available.

8.4.2. A procedure developed IAW AFI 11-230, *Instrument Procedures*.

8.4.3. Radar procedure with minimums published graphically or in FLIP Radar Instrument Approach Minimums section.

8.4.4. A host nation or commercially produced procedure which is approved by the MAJCOM per paragraph 8.4.5.

8.4.5. **Non-US Government and Foreign Terminal Instrument Procedures (FTIP).** USAF aircrews will not fly a non-US Government (USG) published instrument procedure (includes commercially-produced procedures like Jeppesen or Lido) that has not been reviewed to ensure conformance with accepted standards by the appropriate Terminal Instrument Procedures (TERPS) office. This validation must be a current TERPS review letter (attached to the procedure or as published in the ASRR's "Giant Report") that informs

the pilot of items that do not comply with US TERPS, ICAO PANS-OPS or NATO criteria (e.g. recognized obstruction clearance, weather/visibility minima, etc.). MAJCOMs shall establish a process to ensure initial (or update) review requests of non-USG or FTIPs are provided to the appropriate TERPS office 7 days prior to use.

8.4.5.1. Prior to use, pilots shall ensure the TERPS review is current. FTIPs (government or commercially produced), reviewed by one TERPS office, may be flown by aircrews from any other MAJCOM unless precluded by their own MAJCOM.

8.4.5.1. **(USAFE)** Restrictions contained in other MAJCOM's review letters apply to all USAFE and USAFE-gained aircrews unless a superseding USAFE-specific restriction or waiver is annotated.

8.4.5.2. MAJCOMs must ensure crews receive adequate training prior to the initial use of any non-USG instrument procedure. At a minimum, this training should include the differences in symbology, language or translation, weather minimums, host nation NOTAM retrieval, equipment and airspace requirements.

8.4.5.2. **(USAFE)** USAFE aircrew will receive initial non-USG IAP training as part of Theater Indoctrination (TI) IAW AFI 11-202V1_USAFESUP_I. Refresher training will be incorporated into the local IRC IAW AFMAN 11-210, *Instrument Refresher Program*.

8.4.5.3. **Waiver of TERPS Review**. During non-standard operations (defined as an urgent requirement to fly short-notice: humanitarian, contingency, medical evacuation, "Special" Access and vital State Department missions), the TERPS review may be waived by the applicable MAJCOM/A3 (if an O-8 or above). The MAJCOM/A3 may also waive the TERPS review for non-USG procedures, for which the exact same USG procedure exists. If the A3's grade is below O-8, then waiver authority will lie with the first O-8 in the MAJCOM's operational chain of command. This waiver authority will not be further delegated. If this waiver authority is exercised, MAJCOMs will ensure the aircrew and the applicable TERPS office are aware that the provisions of paragraph 8.4.5. have been waived.

8.4.5.3. **(USAFE) Waiver of TERPS Review**. Request TERPS review waivers IAW **paragraph 1.6.1**

8.4.5.4. **(Added-USAFE)** IAW AFI 11-230, *Instrument* Procedures, a non-USG instrument procedure must be reviewed by HQ USAFE/APF, have a table-top review conducted by HQ USAFE/A3TV, and be approved by HQ USAFE/A3. If a dispatching agency does not make requests on behalf of the aircrew, the aircrew will use the following procedures when requesting a TERPS review.

8.4.5.4.1. **(Added-USAFE)** Aircrew will determine that a review is needed based on the following factors (reference the ASRR "Giant Report"): 1) no USG approach is published for the same procedure, 2) a current review does not already exist or a current review will expire during the mission (see **paragraph 8.4.5.1**).

8.4.5.4.2. **(Added-USAFE)** Once aircrew determine a review is needed, they shall reference the "HQ USAFE Air Procedures Flight (APF)" page on the AF Portal (https://www.my.af.mil/gcss-af/USAF/ep/globalTab.do?channelPageId=s6925EC134C680FB5E044080020E329A9) for the most current "USAFE TERPS

Review Request." An additional link to the APF page can be found on the USAFE/A3TV CoP by clicking on the "TERPS Portal Review Request" link.

8.4.5.4.3. **(Added-USAFE)** Forward requests IAW the TERPS Review Request document email link (**usafe.terps@ramstein.af.mil**) NLT 7 business days prior to the mission start date. Short-notice requests (< 7 business days) will be accepted, but must be kept to an absolute minimum to ensure review completion by the mission date. If problems occur with the online review request, contact HQ USAFE/APF (DSN: 314-480-7024; Comm: +49-6371-47-7024).

8.4.5.4.4. **(Added-USAFE)** Approved procedures are not MAJCOM/aircraft specific. Aircrew are responsible for conducting a thorough review of each approved approach (prior to flight) to determine that the procedure is compatible with the navigation equipment installed in their aircraft.

8.4.5.4.5. **(Added-USAFE)** It is the responsibility of the requesting aircrew to ensure a requested procedure has been reviewed and is posted to the ASRR prior to use. For updates on the status of a requested review, aircrew may contact HQ USAFE/APF or HQ USAFE/A3TV inside five working days of the mission date.

8.5. Destination Requirements for Filing Purposes. See Attachment 2 for a decision tree.

8.5.1. **Destination with a Published Approach Procedure.** Pilots may file IFR to a destination with a published instrument approach capable of being flown with navigational equipment aboard the aircraft.

8.5.2. **Destination Without a Published Instrument Approach Procedure.** If there is no compatible published approach at the destination, pilots may file a composite IFR/VFR flight plan to:

8.5.2.1. A point en route where forecast weather at ETA (± 1 hour) allows continued flight to the destination under VFR.

8.5.2.2. A point served by a published approach procedure where forecast weather at ETA (± 1 hour) allows the pilot to descend to VFR conditions and continue to the destination under VFR.

8.6. IFR Filing Weather Requirements. The following are the weather requirements for filing to a destination:

8.6.1. **Temporary (TEMPO) Conditions.** Pilots may file to a destination with a forecast that includes temporary (TEMPO) changes in ceiling and/or visibility lower than prescribed in 8.7.1., but an alternate may be required.

8.6.1. **(USAFE) Temporary (TEMPO) Conditions.** See **paragraph 8.6.3.1.1** for filing to a destination with TEMPO conditions below the minimum filing weather.

8.6.2. **UAS Weather Requirements.** MAJCOMs may determine UAS weather limit requirements based on airspace rules, aircraft equipage, level of autonomy and crew qualifications/capabilities. In the absence MAJCOM guidance, UAS will follow weather requirements as published in this section.

8.6.3. **Fixed-Wing Aircraft.** Weather for the ETA (±1 hour) at destination or recovery base must be at or above the lowest compatible published landing minimums for the aircraft concerned.

8.6.3.1. MAJCOMs may waive this requirement when operational necessity dictates the use of a destination forecast to be below minimums, but MAJCOMs must establish alternate recovery procedures, such as the use of two or more alternate airports, additional holding fuel, etc.

8.6.3.1. **(USAFE)** With OG/CC approval, aircrew may file to a destination whose forecast (not including TEMPO conditions) is lower than prescribed in **8.6.3**, but will designate two alternates by using the dual alternate concept described in **paragraph 8.8.3 (Added).**

8.6.3.1.1. **(Added-USAFE)** Aircrew may file to a destination whose forecast includes TEMPO changes in ceiling and/or visibility that are lower than prescribed in **8.6.3** and **8.6.4**, but an alternate may be required (see **paragraph 8.7**)

8.6.3.2. For a straight-in or sidestep approach, the forecast weather must meet only the published visibility requirements for that approach.

8.6.3.2. **(USAFE) CAF Only (not to include rotary-wing)**. Both the forecast ceiling and visibility will be at or above their applicable PWC minimums [see **Table A4.1 (Added)**].

8.6.3.3. For a circling approach, the forecast weather must meet both the ceiling and prevailing visibility requirements.

8.6.4. **Helicopters.** PICs may use Category A minima, regardless of approach speed. PICs should fly a constant airspeed to comply with the stabilized approach concept. PICs may reduce the Category A visibility minima on Category I procedures by one-half, but no lower than 1/4 SM prevailing visibility (PV) or 1,200 feet runway visual range (RVR). PICs may not reduce the visibility minima on Copter procedures, Category II procedures or if "Visibility Reduction by Helicopters NA" is annotated on the procedure. PICs will apply any inoperative approach lighting visibility correction before reducing minima. PICs will apply airspeed limitations IAW Table 8.1. For more information, see Chapter 7 in FAA-H-8261-1A, "Instrument Procedures Handbook, available at: **http://www.faa.gov/library/manuals/aviation**/.

Table 8.1. Helicopter Use of Approach Procedures.

Procedure	Helicopter Visibility Minima	Helicopter MDA/DA	Maximum Speed Limitations
Conventional (non-Copter)	The greater of: - one-half the Category A visibility minima, or - ¼ SM visibility, or - 1200 RVR	As published for Category A	Initiate the final approach segment at speeds up to the upper limit of the highest Approach Category authorized by the procedure, but must be slowed to no more than 90 KIAS at the MAP in order to apply the visibility reduction.
Copter Procedure	As published	As published	90 KIAS when on a published route/track

GPS Copter Procedure	As published	As published	90 KIAS when on a published route or track, EXCEPT 70 KIAS when on the final approach or missed approach segment and, if annotated, in holding. Military procedures are limited to 90 KIAS for all segments.

8.7. Required IFR Alternate. This section prescribes when an IFR alternate must be filed. MAJCOMs will determine alternate airfield policies for UAS.

8.7.1. **Weather.** An alternate is required when the worst weather (TEMPO or prevailing) at the ETA (±1 hour) for the first point of intended landing (or each point of intended landing on a stopover flight plan) does not permit a VFR descent from the MIA and is less than:

8.7.1. **(USAFE) Weather.** To determine MIA, aircrew will use the highest Minimum Sector Altitude (MSA) as published on either USG or TERPs-reviewed non-USG IAPs (NOTE: aircrew will ensure they reference the TERPs review letter for any MSA adjustments prior to referencing the non-USG IAP). An IAP may be used to determine the MSA regardless of the compatibility of the aircraft. If an MSA is not published (or an IAP is not available), aircrew will use the highest ORTCA (found on the OCONUS Low Enroute Chart) within 10NMs of the field. Reference **paragraph 8.13** and **Attachment 1, Glossary of References and Supporting Information** for more information on MIA determinations.

8.7.1.1. **Fixed-Wing Aircraft:** A ceiling of 2,000 ft. and a visibility of 3 SMs.

8.7.1.1.1. Exception: MAJCOMs may lower this requirement to a ceiling of 1,000 ft. and a visibility of 2 SMs, if two or more suitable independent precision approaches are available and operable for the airport of intended landing at ETA (±1 hour).

8.7.1.1.1. **(USAFE)** Exception: USAFE authorizes a ceiling of 1,000 ft and a visibility of 2 SMs at those airfields where there are two or more runways each supported by their own suitable and fully-serviceable precision approach.

8.7.1.2. **Helicopters.** A ceiling of 1,000 ft. (or 400 ft. above the lowest compatible approach minimums, whichever is higher) and a visibility of 2 SM.

8.7.2. **Additional Conditions Requiring an Alternate.** Unless forecast weather for the ETA (±1 hour) at the destination (or a point en route) exceeds the requirements of 8.7.1. and permits a VFR descent from the Minimum IFR Altitude (MIA) to a VFR approach and landing, pilots must designate an alternate airport on all IFR flight plans when filing to a destination:

8.7.2.1. Where all compatible approaches require radar.

8.7.2.2. Where required NAVAIDs are unmonitored.

8.7.2.3. When the destination has no weather reporting capability.

8.7.2.4. When the point of intended landing's lowest compatible approach weather minimums are greater than or equal to a 1,500 ft. ceiling or 3 SM visibility.

8.7.2.5. **(Added-USAFE)** Aircrew will designate en route alternates for use in the event of unsuccessful AR operations on all flights where AR is required to successfully complete the mission.

8.7.3. **Exception for Remote or Island Destinations.** MAJCOMs may authorize holding for a specified time in lieu of an alternate for those remote or island destinations for which designating an alternate is not possible. MAJCOMs that authorize holding at a remote or island destination will prescribe weather criteria and recovery procedures.

8.7.3. **(USAFE) Exception for Remote or Island Destinations.** USAFE authorizes holding in-lieu of an alternate for remote or island destinations IAW AFI 11-2MDSV3 guidance.

8.7.4. **(Added-USAFE) Keflavik Alternate Weather Requirements.** Reference the AFFSA waiver titled "Waiver for Keflavik Flying Operations" for all USAFE F-15(C-E)/F-16 flying operations conducted at Keflavik, Iceland for determining alternate and fuel requirements (when an alternate is normaly required IAW AFI 11-202V3 guidance). Reference the "*Waivers*" folder on the USAFE/A3TV ICE for the most current version of the waiver document.

8.8. Selecting an Alternate. Except for TEMPO conditions for thunderstorms and snow/rain showers, the worst forecasted prevailing weather conditions for an alternate airport (ETA ±1 hour) must meet or exceed:

8.8.1. **Alternate with a Compatible Published Instrument Approach Procedure:**

8.8.1. **(USAFE) Alternate with a Compatible Published Instrument Approach Procedure: CAF Only (not including rotary wing)**. PWC minimums will not be used to determine if the weather is suitable to declare an airfield as an alternate. PWCs should be factored into ORM assessments when alternate weather is at/near PWC minimums.

8.8.1.1. **Fixed-Wing Aircraft.** A ceiling of at least 500 ft. above the lowest compatible approach minima and a visibility of at least 2 SM or published visibility minima whichever is greater.

8.8.1.2. **Helicopters.** A ceiling of at least 200 ft. above, and a visibility of at least 1 SM above, the lowest compatible published landing minimum.

8.8.2. **Alternate without a Published or Compatible Instrument Approach Procedure.** Forecast weather for the ETA (±1 hour) must permit a VFR descent from the MIA to a VFR approach and landing, or, if the mission justifies the increased risk, under specific conditions, an otherwise unqualified airfield may be designated as an alternate by the MAJCOM/A3. MAJCOMs establish UAS alternate airfield policies.

8.8.2. **(USAFE) Alternate without a Published or Compatible Instrument Approach Procedure.** To determine MIA at alternate airfields, aircrew will use the highest Minimum Sector Altitude (MSA) as published on either USG or TERPs-reviewed non-USG IAPs (NOTE: aircrew will ensure they reference the TERPs review letter for any MSA adjustments prior to referencing the non-USG IAP). An IAP may be used to determine the MSA regardless of the compatibility of the aircraft. If an MSA is not published (or an IAP is not available), aircrew will use the highest ORTCA (found on the OCONUS Low Enroute

Chart) within 10NMs of the field. Reference **paragraph 8.13** and **Attachment 1 Glossary of References and Supporting Information** for more information on MIA determinations.

8.8.3. **(Added-USAFE) Dual Alternates**. IAW with the AFFSA document title "Waiver for Alternate Requirements", when unable to select an airport that meets the alternate weather requirements of **paragraphs 8.8.1** and **8.8.2**, aircrew may use dual alternates IAW the following guidance. Reference the "*Waivers*" folder on the USAFE/A3TV ICE for the most current version of the waiver document.

8.8.3.1. **(Added-USAFE)** Each alternate must have a compatible and operational precision approach servicing the active runway.

8.8.3.2. **(Added-USAFE)** The worst weather (prevailing or TEMPO) forecasted for both alternates during the period 1 hour before to 1 hour after the ETA is no less than:

8.8.3.2.1. **(Added-USAFE)** 700 ft ceiling or 400 ft above the published minimums, whichever is higher.

8.8.3.2.2. **(Added-USAFE)** 1.6KM visibility day (2.4KM night), or the published visibility minimum, whichever is higher.

8.8.3.3. **(Added-USAFE)** The alternates are at least 35NM apart. The more distant alternate will be used to compute fuel requirements.

8.9. Airports That Do Not Qualify as Alternates. Except IAW paragraph 8.8.2, airports do not qualify as alternates if:

8.9.1. All compatible approaches require radar.

8.9.1. **(USAFE)** If the forecast weather for the ETA (±1 hour) at an alternate does not permit a VFR descent from the MIA (see **paragraph 8.8.2 (USAFE)**) to a VFR approach and landing, then IAW the MAJCOM/A3 authorization allowed in **paragraph 8.8.2** airfields within the USAFE AOR where all compatible approaches require radar may still be designated as alternates IAW the following guidance.

8.9.1.1. **(Added-USAFE)** Squadron operations supervision determines the increased risk is acceptable due to complete dependence on HN radar capabilities based on mission requirements, aircrew experience, and HN equipment reliability.

8.9.1.2. **(Added-USAFE)** Aircrew must ensure familiarity with applicable lost communication procedures for the approaches being flown to include any specific HN requirements.

8.9.1.3. **(Added-USAFE)** To the maximum extent practical, at non-US-controlled fields, a Supervisor of Flying (SOF) or similar MDS liaison will be available (with access to the necessary radios) to communicate with USAF aircrew and liaise with HN ATC personnel anytime USAF aircraft are airborne.

8.9.2. GPS is the only available NAVAID.

8.9.3. The FLIP designation **"▲ NA"** is displayed on all compatible approach plates.

8.9.4. The FLIP ▲ designation (*without* **NA**) is displayed on all compatible approach plates and an associated note applies. The ▲ signifies that non-standard alternate minimums are published for that runway. While non-standard alternate minimums do not apply to USAF

aircraft, there may be notes associated with the non-standard alternate minimums that do. Pilots must check for such notes whenever the ▲ designation is shown on an IAP.

8.10. RVR Use, Applicability and Conversion. RVR reports, when given for a particular runway, apply to all takeoffs, landings, and approaches to that runway, and always take precedence over any other visibility report for that runway. RVR is normally reported in feet or meters. Pilots will use the static RVR when available (regardless of reported variability). If only a variable report is received and a static RVR cannot be determined, pilots will apply the lowest reported RVR value. If necessary, pilots may convert the reported visibility from one format to another (e.g. RVR to PV) only for takeoffs and straight-in approaches using the conversion tables printed in the front of the Terminal Procedures Publication (TPP) booklet. For conversions, use the higher of: the next higher value in the conversion chart, or the highest published value from the IAP minima block; do not interpolate.

8.10. (USAFE)RVR Use, Applicability and Conversion. "TPPs" are FAA NACO (therefore CONUS/Alaska/Hawaii) products; however, HQ AFFSA intends for the term "TPP" to include all USG and TERPS-reviewed non-USG FLIP. If operating in areas of FAA NACO TPP coverage, aircrew can find the current TPPs at the following link: **http://avn.faa.gov/index.asp?xml=aeronav/applications/d_tpp**. Select the most current TPP volume then select the link for "Legends and General Information".

8.10.1. **(Added-USAFE)** Alternatively, and for areas without FAA NACO TPP coverage, aircrew may use the conversion tables in DoD FLIP, Jeppesen IAP booklets, or HN AIP guidance. In all cases, do not interpolate values. Use the higher of either the next higher value in the conversion chart or the highest published value from the IAP minima block.

8.11. Minimum Takeoff Weather. Pilots shall not takeoff when existing weather is below the landing minimums for their aircraft, unless specifically authorized by the MAJCOM, but in no case less than 600 RVR (200 meters).

8.11. (USAFE)Minimum Takeoff Weather. CAF (except rotary wing). PWC shall be used to determine landing minimums for takeoff weather.

8.11.1. **RVR Requirements.** (N/A for Helicopter) Minima below 1600 RVR are not authorized unless the runways are equipped with centerline lights, visible runway centerline markings, and two operative transmissometers. All reported RVR readings must meet or exceed minimum authorized values.

8.11.2. MAJCOMs that permit takeoffs when weather is lower than the published landing minimums shall prescribe alternative takeoff minima and substitute recovery procedures.

8.11.2.1. **(Added-USAFE) CAF (except rotary wing)**. The OG/CC may authorize aircrew to take off in weather below their PWC (but not lower than approach minimums) when operational requirements dictate.

8.11.2.2. **(Added-USAFE) MAF**. USAFE authorizes takeoffs with weather below landing minimums IAW AFI 11-2MDSV3 guidance.

8.11.3. Civil contract carriers may operate from airports under USAF jurisdiction using the takeoff minimums approved by the FAA and published in the air carrier's operations specifications.

8.12. IFR Departures. Pilots of USAF aircraft must adhere to IFR departure procedures guidance in this section and in AFMAN 11-217, Volume 1.

8.12.1. **MAJCOM Responsibility.** Normally, MAJCOMs or COMAFFORs will ensure aircraft are tasked to takeoff at a weight that allows the PIC to comply with paragraph 8.12.11.

8.12.2. **PIC Responsibility.** The PIC will ensure the planned departure method, climb gradient, low close-in obstacles, route and emergency procedures are briefed to the crew prior to takeoff. See Attachment 3 for a decision tree.

8.12.3. **Authorized IFR Departure Methods.** Obstacle Departure Procedures (ODP) and Standard Instrument Departures (SID) should be flown to the maximum extent possible. USAF aircraft will depart IFR using only these methods:

8.12.3.1. Published ODP; textual or graphic, including Reduced Takeoff Runway Length (RTRL) and Visual Climb Over the Airport (VCOA) procedures. VCOA procedures may also be termed VCID (Visual Climb to Instrument Departure).

8.12.3.2. SID.

8.12.3.3. Specific ATC Departure Instructions.

8.12.3.4. Diverse Departures (Omni-directional Departures-ICAO).

8.12.3.5. Special MAJCOM Certification (authorized locations, pilots and aircraft only). See paragraph 8.12.9.

8.12.4. **Obstacle Departure Procedures.** Pilots will fly the published ODP ▼ for the runway used. If issued other departure instructions, pilots should request clearance to fly the ODP or comply with 8.12.6.

8.12.4.1. **Visual Climb Over Airport.** Pilots will not fly any VCOA procedure until completion of MAJCOM-specified training. The weather must be at or above the minimums published for the VCOA. Unless published, pilots will consider the VCOA's visibility requirement as a "remain within" distance, and will not exceed this radius from the center of the airfield while climbing to the specified altitude. Pilots will notify ATC (or other traffic) when planning to depart via the VCOA. Pilots without NVDs will not fly a VCOA at night, unless specifically authorized by the MAJCOM.

8.12.4.1. **(USAFE) Visual Climb Over Airport. VCOA Training**. Aircrew will accomplish and document VCOA training IAW AFI 11-2MDSV1 and V3. If no guidance exists accomplish VCOA training IAW the following guidance. If not received as part of local Theater Indoctrination (TI) training (see AFI 11-202V1_USAFESUP_I) pilots will review the USAFE VCOA training presentation found on the USAFE/A3TV ICE under "*Misc Information and Guidance*" (link: **https://ice.usafe.af.mil/sites/A3/A3T/A3TV_External/default.aspx**) prior to their first flight using VCOA procedures. Units will document the training with the ARMS event VC10.

8.12.4.1.1. **(Added-USAFE) VCOA Procedures at Night**. USAFE authorizes VCOA procedures at night without NVDs IAW the following guidance:

8.12.4.1.1.1. **(Added-USAFE)** Flying the VCOA procedure must be a last resort for the aircraft to safely depart the airfield.

8.12.4.1.1.2. **(Added-USAFE)** A suitable terrain chart (scale no greater than 1:500,000) is thoroughly reviewed during mission planning/briefing and readily accessible in-flight).

8.12.4.1.1.3. **(Added-USAFE)** The aircrew has adequately (as determined by operations supervision) identified and, to the max extent practical, mitigated the risks involved (updated ORM, heightened awareness, CRM, etc.).

8.12.4.2. **Reduced Takeoff Runway Length ODP.** Pilots using a published RTRL procedure shall ensure their aircraft can attain a safe liftoff speed and rotate prior to the distance remaining specified in the procedure. MAJCOMS should establish ad hoc RTRL request procedures for their aircrews. Ad hoc RTRL procedures will be considered a published ODP.

8.12.4.2. **(USAFE) Reduced Takeoff Runway Length ODP.** Aircrew will request ad hoc RTRL ODPs IAW TERPS review request procedures (see **paragraph 8.4.5.3**).

8.12.4.3. **Sector Departure ODP.** Pilots may fly "sector" diverse departures as published.

8.12.5. **Standard Instrument Departures.** PICs will comply with the routing, altitudes, and climb gradient (including notes) published on the SID (or in the T, if not published on the SID). If the aircraft cannot comply with an ATC minimum climb gradient, coordinate with ATC prior to flying the procedure or obtain an amended clearance. The term SID includes other approved published instrument departure procedures (DP).

8.12.6. **Specific ATC Departure Instructions.** ATC instructions refer to specific navigational guidance (e.g. heading, routing, altitude) issued with the clearance or by tower. Outside the NAS, in a non-radar environment, to be considered a valid instrument departure, the instructions must be issued with either a minimum climb gradient or confirmation that the climb gradient does not exceed 200 feet/NM. Unless issued with a minimum climb gradient, the instructions may not provide obstacle clearance below a minimum IFR altitude. Therefore, in all cases:

8.12.6.1. If the departure runway has any published climb gradients, the PIC must meet or exceed the highest gradient when departing via ATC instructions.

8.12.6.2. If unable to meet any ATC climb gradient, coordinate with ATC prior to flying the procedure.

8.12.6.3. Pilots are never relieved of the responsibility for terrain and obstacle avoidance. The radio call "Radar Contact" only means the aircraft has been identified on radar. Responsibility is shared between pilot and controller only after navigational guidance is issued.

8.12.6.4. Outside the NAS, use caution when flying radar vectors. See paragraph 8.13.2.

8.12.7. **Diverse Departures (Omni-directional Departure).** Pilots will track runway centerline to 400 feet above the DER before turning on course. PICs must ensure their aircraft will vertically clear applicable low close-in obstacles published in NOTAMs or the Takeoff Minima and Departure Procedures (T) before turning on course. Diverse departures are not authorized when an obstacle departure procedure, climb gradient or non-

standard takeoff weather minima are published for that runway. "Sector" diverse departures are authorized.

8.12.8. **Special MAJCOM Certification.** MAJCOMs may develop departure procedures for their aircraft at specific locations that allow safe aircraft departure. Pilots must meet MAJCOM-specified training or certification requirements before these procedures may be flown. Once developed, these departure procedures will be sent to HQ AFFSA/A3O for review and inclusion in the ASRR or other appropriate location.

8.12.9. **No Authorized IFR Departure Method.** If the airport does not have one of the IFR departure methods described above, then an IFR departure is not authorized. Refer to Chapter 7.

8.12.10. **Required Climb Gradients.** Regardless of the IFR departure method selected, PICs will climb at a minimum of 200 ft/NM unless a higher gradient is published for the departure runway (in a departure procedure or ▼). For specific ATC departure instruction climb gradients, see paragraph 8.12.6. When no departure procedure is published and a diverse departure is not authorized, coordination with MAJCOM TERPS specialists is required to determine the best departure method and required climb gradient prior to an IFR departure.

8.12.10. **(USAFE) Required Climb Gradients.** Reference **paragraph 8.4.5.3** for TERPS review correspondence and requests.

8.12.10.1. **Low Close-in Obstacles.** In addition to complying with the published climb gradient, the PIC must also ensure that the aircraft can always vertically clear applicable published low close-in obstacles.

8.12.10.1. **(USAFE) Low Close-in Obstacles.** Reference **Attachment 1** for a definition of "Low Close-in Obstacles".

8.12.10.2. **Non-Standard Takeoff Minimums.** Pilots will not depart an airfield using non-standard takeoff minimums in lieu of meeting the required climb gradient. When non-standard takeoff minima are published, with or without a climb gradient, the PIC may not take-off under the provisions of IFR established in paragraph 8.11. unless:

8.12.10.2.1. The departure procedure authorizes "standard" takeoff minimums with a climb gradient in lieu of the non-standard criteria and the requirements of paragraph 8.12.10.4 or 8.12.10.5 below are met, or

8.12.10.2.2. The aircraft is capable of being at or above the published non-standard takeoff minima ceiling requirement prior to crossing the departure end of the runway (for fixed-wing multi-engine, calculate this capability with One Engine Inoperative (OEI)) and can continue a climb profile that will vertically clear all obstacles.

8.12.10.3. **Unable to meet Required Climb Gradient.** If unable to meet or exceed the required climb gradient and before reducing a published gradient with one of the methods listed below, MAJCOMs will ensure supervisors and PICs consider: reducing aircraft gross weight, delaying the mission until environmental conditions improve, the crew's familiarity with the departure area and the ability to increase performance by jettisoning external stores. If still unable to comply with the required gradient after exhausting the remedies in this chapter, an IFR departure is not authorized. Exception: If the mission

justifies the increased risk, and if specifically authorized by the MAJCOM/A3, the pilot may depart any location, in VMC, without regard to the IFR climb gradient. Without such specific authorization, pilots will refer to Chapter 7.

8.12.10.3. **(USAFE) Unable to meet Required Climb Gradient.** For the following missions, USAFE authorizes the OG/CC (CAF aircraft) or the owning AOC/CC or comparable level of flying supervision if agreed upon between the owning AOC and the unit (MAF aircraft) to approve IFR departures in VMC if aircrew are unable to comply with **paragraph 8.12.10.3**. Prior to departure, aircrew will ensure all factor obstacles and associated avoidance plans are briefed and understood. Approval authority for all other missions is USAFE/A3 (make requests IAW paragraph 1.6.1.4. [written] or 1.6.1.5. [verbal]).

8.12.10.3.1. **(Added-USAFE)** HHQ-tasked/Contingency

8.12.10.3.2. **(Added-USAFE)** Urgent Aeromedical Evac

8.12.10.4. **Single Engine Aircraft and All Helicopters.** PIC's will ensure the aircraft meets or exceeds the published climb gradient (or 200 ft/NM if a higher gradient is not published) for the selected departure to an appropriate minimum IFR altitude IAW paragraph 8.13.

8.12.10.4.1. If unable to comply and when authorized by the MAJCOM, climb in VMC to an appropriate IFR altitude or fly VFR IAW Chapter 7.

8.12.10.4.1. **(USAFE)** With OG/CC approval, USAFE authorizes IFR departures in VMC if unable to comply with **paragraph 8.12.10.4**.

8.12.10.5. **Multi-Engine Fixed Wing Aircraft.** PIC's will ensure the aircraft meets or exceeds the published climb gradient (or 200 ft/NM if a higher gradient is not published) for the selected IFR departure method, with One Engine Inoperative (OEI), to an appropriate MIA.

8.12.10.5.1. If operationally necessary, the operations supervisor (or equivalent mission execution authority supervisor) may authorize the PIC to ensure the aircraft vertically clears all obstacles along the planned departure path OEI by subtracting up to 48'/NM from the published (or standard) climb gradient or the use of the departure runway's SDP for OEI departure planning (IAW 8.12.11.).

8.12.10.5.1. **(USAFE)** For USAFE CAF aircraft "Operations supervisor," in this context, is IAW AFI 11-418. For USAFE MAF aircraft approval authority is the SQ/CC or designated representative. The following missions are considered "operationally necessary":

8.12.10.5.1.1. **(Added-USAFE)** Training conducted as part of any Building Partnership (BP) deployment/mission.

8.12.10.5.1.2. **(Added-USAFE)** Upgrade training conducted under an approved syllabus.

8.12.10.5.1.3. **(Added-USAFE)** HHQ-tasked/Contingency missions

8.12.10.5.1.4. **(Added-USAFE)** Urgent Aeromedical Evac

8.12.10.5.2. When using any method to reduce the required climb gradient, the PIC must still ensure the aircraft, with all engines operating (AEO), meets or exceeds the published climb gradient and all ATC or SID climb restrictions for the method selected.

8.12.11. **Special Departure Procedures (SDP).** MAJCOMs may authorize SDPs for OEI departure planning when operationally necessary. The following guidance applies to the use of SDP's or similar specifically designed departure procedures and/or routing for use in the event of the loss of an engine's thrust. The term SDP refers to all such procedures/routing and not to any one particular product. All such products must be constructed from data and criteria specifically approved by HQ AFFSA/A3O. MAJCOMs must certify pilots prior to the use of SDPs. PICs must understand a SDP delivers as little as zero feet of obstruction clearance and must be flown exactly as published. PIC's shall:

8.12.11. **(USAFE)** 4 (Added) USAFE authorizes SDP use IAW AFI 11-2MDSV3 for the "operationally necessary" missions listed in **paragraphs 8.12.10.5.1.1 (Added) - 8.12.10.5.1.3 (Added)**.

8.12.11.1. Use only the most current procedure and brief the procedure prior to takeoff,

8.12.11.2. Not exceed the maximum gross weight published for the procedure,

8.12.11.3. Fly SDP routing that differs from clearance routing only in an emergency, unless approved by ATC.

8.12.11.4. **(Added-USAFE)** USAFE certification is satisfied by successful completion of a unit training program IAW AFI 11-2MDSV1 and local guidance. In addition to AFI 11-2MDSV1 documentation, units that use SDPs will annotate SDP certification on the squadron Letter of Xs (see **AFI 11-202V2_USAFESUP_I, Attachment 11**).

8.13. Minimum IFR Altitude (MIA). This section is not applicable to climbs and descents required for takeoff and landing or practice approaches.

8.13.1. **On Airways.** Pilots shall not fly lower than the Minimum En route Altitude (MEA), Minimum Reception Altitude (MRA), Minimum Crossing Altitude (MCA) or Minimum Obstacle Clearance Altitude (MOCA) published for the airway.

8.13.1.1. Pilots using the MOCA shall ensure that the altitude selected will provide suitable navigation facility and ATC radio reception.

8.13.2. **Off Airways.** Pilots shall fly no lower than:

8.13.2.1. The Off Route Obstacle Clearance Altitude (OROCA).

8.13.2.2. The Off Route Terrain Clearance Altitude (ORTCA).

8.13.2.2.1. Pilots using the OROCA or ORTCA shall ensure that the altitude selected will provide suitable navigation facility and ATC radio communication reception.

8.13.2.3. An altitude that provides at least 1,000 ft. of clearance above all obstacles within 5 nautical miles of the course to be flown in non-mountainous terrain or 2,000 ft. in mountainous terrain (see paragraph 2.11. & Glossary).

8.13.2.3. **(USAFE)** The calculation in **paragraph 8.13.2.3** will be used to determine Route Abort Altitude (RAA) for all low-level training in the USAFE AOR. Aircrew will

ensure the RAA encompasses the entire area anticipated for low-level training regardless of black line routing. Reference AFI 11-2MDSV3 for more information.

8.13.2.4. Descent below applicable MIAs, listed above, is only authorized under the following conditions:

8.13.2.4.1. To an ATC-provided Minimum radar Vectoring Altitude (MVA) within the NAS from a suitably equipped and capable radar facility. For areas of responsibility outside the NAS, MAJCOMs will determine which radar facilities are not suitably equipped and capable.

8.13.2.4.1. **(USAFE)** Aircrew may accept an IFR clearance in IMC at MVA IAW HN and local procedures given that ATC assumes obstacle/terrain/traffic clearance responsibility. ***Note*:** It is incumbent upon aircrew to be familiar with the MIA at their destination airfield should they need to execute IAW **paragraph 8.13.2.4.1.1** As a technique to determine MIA, aircrew may use the highest Minimum Sector Altitude (MSA) as published on either USG or TERPs-reviewed non-USG IAPs (**Note:** aircrew will ensure they reference the TERPs review letter for any MSA adjustments prior to referencing the non-USG IAP). An IAP may be used to determine the MSA regardless of the compatibility of the aircraft. If an MSA is not published (or an IAP is not available), aircrew will use the highest ORTCA (found on the OCONUS Low Enroute Chart) within 10NMs of the field.

8.13.2.4.1.1. If there is any doubt as to whether the ATC-provided minimum vectoring altitude is providing adequate obstacle clearance pilots should not descend below the non-radar minimum altitudes listed above.

8.13.2.4.1.1. **(USAFE)** Prior to low-level training within the USAFE AOR, units will ensure aircrew are trained and familiar with local and HN allowances for IMC descents into the low-level environment. IMC descents to the low level environment are prohibited under ATC control if ATC cannot provide obstacle/terrain/traffic separation. Only those aircraft equipped with a Terrain Following/Terrain Avoidance (TF/TA) system are authorized IMC descents to the low-level environment, but only if receiving IFR traffic separation from ATC and executed IAW HN rules and agreements and (see **paragraph 8.13.2.4.3**)

8.13.2.4.1.2. In no case will the minimum altitude be below 1000 ft. AGL.

8.13.2.4.2. When cloud clearance and visibility, IAW Tables 7.1/7.2 or MAJCOM direction, allow the pilot to maintain safe clearance from terrain and obstacles, or

8.13.2.4.3. When a MAJCOM-approved self-contained navigation system (or approved Terrain Following/Terrain Avoidance system (TF/TA)) is used.

8.13.2.4.3. **(USAFE)** USAFE approves use of all TF/TA systems certified for use on USAFE aircraft IAW AFI 11-2MDSV3 and TO guidance. Aircrew will use the systems only IAW AFI 11-214, AFI 11-2MDSV3, local, and TO guidance as well as MDS-specific AFTTPs.

8.13.3. **Military Training Routes (MTR).** Pilots operating on MTRs shall adhere to the minimum altitudes published in FLIP AP.

8.13.3. **(USAFE) Military Training Routes (MTR).** In the USAFE AOR where low-level training areas are used by HN instead of MTRs, reference HN low-level guidance for minimum altitude information.

8.14. IFR Cruising Altitudes.

8.14.1. Pilots should file requested altitudes for IFR flights in controlled airspace according to the cruising altitude diagram depicted on the appropriate en route chart.

8.14.2. Pilots operating in uncontrolled airspace shall maintain altitude IAW the diagrams published on the appropriate en route chart.

8.15. IFR Enroute Navigation. Pilots shall fly along the centerline of the direct course between NAVAIDS or fixes defining a published or unpublished route when operating in controlled airspace under IFR unless:

8.15.1. Authorized by the controlling agency, or while operating in SUA or on MTRs.

8.15.1. **(USAFE)** In the UK aircrew may assume clearance to fly other than direct course anytime aircraft are under "Traffic Service" or "Deconfliction Service" (execute IAW UK AIP). "SUA" also includes all HN-defined low level operating airspace/routes as defined in HN AIPs.

8.16. In-Flight Communications.

8.16.1. **Position Reports.** A pilot operating under IFR will continuously monitor appropriate ATC frequencies and follow FIH instructions for position reports, lost communications, and radio procedures.

8.16.1. **(USAFE) Position Reports.** Fighter aircrew are not responsible for position reporting when in-formation with a tanker (e.g. CORONET movements). Should circumstances dictate separation from the tanker, aircrew will attempt to remain in radio contact with a tanker who will relay position reports as required.

8.16.2. **Navigation and Communication Equipment Malfunctions.** When operating in controlled airspace under IFR, the PIC will immediately report to ATC the loss or impairment of navigational or air-to-ground communications capability according to instructions in the FIH.

8.16.2. **(USAFE) Navigation and Communication Equipment Malfunctions.** In the UK, **paragraph 8.16.2** applies anytime when under "Radar Control". While under "Traffic Service" or "Deconfliction Service" aircrew will report comm/nav problems (not including complete loss of comm--in which case follow FIH procedures) only if it directly impairs their ability to maintain an IFR service in IMC.

8.16.3. **Cancellation of IFR Clearance.** Pilots shall ensure compliance with Chapter 7 of this instruction before canceling IFR. VFR flight following requirements are not required if already in contact with the destination's control tower.

8.16.3. **(USAFE) Cancellation of IFR Clearance.** See **paragraph 7.1.1 (USAFE)**.

8.17. Descent, Approach and Landing. Pilots will obtain the latest destination airport conditions prior to beginning descent or commencing an approach. See paragraph 8.10.

8.17.1. **Prior to Descent or Approach.** Pilots shall not begin an en route descent, arrival or published approach if the destination's weather is below the required approach minimums.

8.17.1. **(USAFE) Prior to Descent or Approach.** This does not prohibit aircrew from proceeding to a published holding fix on a segment of the published arrival/approach (see **paragraph 8.7.3** for remote or island destinations). In all cases, aircrew will not delay the decision to divert once the aircraft has already reached the pre-planned fuel state needed to proceed to a designated alternate.

8.17.1.1. **After Beginning Descent or Approach.** If a pilot has begun the en route descent, arrival or published approach (or has received a radar vector for the approach) and subsequently determines the weather is below minimums (visibility for straight-in approaches or either ceiling or visibility for circling approaches), the pilot must not deviate from the last ATC clearance until obtaining a new or amended clearance. The pilot may request a clearance to a holding fix or alternate airport, or, unless restricted by the MAJCOM, continue the approach as published to the Missed Approach Point (MAP) and land if the aircraft is in a position to make a safe landing and the runway environment is in sight (See AFMAN 11-217, Volume 1).

8.17.2. **Determining Visibility Minimums for Approach and Landing.** Prevailing visibility (PV) may be used when RVR is not reported. For circling approaches, PV shall be used. See paragraph 8.10. MAJCOMs shall determine suitable weather minima based on aircraft equipage, level of autonomy and crew proficiency.

8.17.2. **(USAFE) Determining Visibility Minimums for Approach and Landing.** Weather minima will be IAW AFI 11-2MDSV3 determination of aircraft category. When RVR is not reported, PV will be used based on the highest of ATIS, ATC-provided weather, or TO-certified on-board WX reporting system.

8.17.2.1. **Operational Criteria for Arriving Aircraft**. USAF pilots will not use published visibility minima below 2,400 feet (or ½ SM or 800m) unless touchdown zone (TDZ) and centerline lighting (CL) are available and operable. Helicopter PICs will use touchdown zone RVR to determine visibility requirements.

8.17.2.1.1. Category I (1800 RVR or greater). MAJCOMs may authorize Category I Instrument Landing System (ILS) approaches to less than 2400 RVR at locations without TDZ/CL (or when such system is inoperative) provided the approach is flown using guidance from an approved flight director, heads-up display, or coupled to an autopilot flown to a Decision Altitude. In addition to MAJCOM approval, authorization must be stated on the IAP.

8.17.2.1.1. **(USAFE)** Category I (1800 RVR or greater). USAFE authorizes Cat I approaches IAW AFI 11-2MDSV3, local, and HN guidance.

8.17.2.1.2. Category II (1200 to less than 1800 RVR). Touchdown zone RVR will be used to determine if visibility is suitable for the instrument approach procedure. For RVR 1600 to less than 1800, mid/rollout RVR values will be used as advisory information. If RVR is less than 1600, rollout RVR (or mid RVR, if rollout RVR inoperative) is also required.

8.17.2.1.3. Category III (RVR less than 1200). All installed transmissometers must be operational. MAJCOMs will publish Category III RVR requirements (i.e. in 11-2MDS V3), if applicable.

8.17.2.1.3. **(USAFE)** Category III (RVR less than 1200). (USAFE) Reference AFI 11-2MDSV3 for Cat III RVR requirements.

8.17.2.2. **Straight-In or Sidestep Approach.** Weather must only be at or above the published visibility minimums.

8.17.2.2. **(USAFE) Straight-In or Sidestep Approach. CAF (except rotary wing).** Weather must be at or above both the published ceiling and visibility minimums.

8.17.2.3. **Circling Approach.** Weather must be at or above both the published ceiling and visibility minimums.

8.17.2.4. **Inoperative Approach Lighting System (ALS).** Unless paragraph 5.12.1.4. applies, when the runway ALS (or any portion thereof), as depicted on the procedure, is inoperative, pilots shall increase the published visibility minimums of an instrument approach by one of the following:

8.17.2.4.1. As directed by the inoperative components table in FLIP.

8.17.2.4.2. As stated on IAP, NOTAMs, ATIS, or other airport information source.

8.17.2.4.3. If no other guidance is provided, increase published visibility by ½ mile.

8.17.2.4.4. This paragraph applies only to the ALS itself, not to Visual Approach Slope Indicator (VASI) or Precision Approach Path Indicator (PAPI).

8.17.2.4.5. **(Added-USAFE)** For non-USG approaches, aircrew are reminded to check the TERPS review letter for further restrictions when the ALS is inoperative (see **paragraph 8.4.5**).

8.17.3. **Conventional Approach.** Pilots will fly conventional approaches IAW this instruction, AFMAN 11-217, Volume 1, MDS-series Volumes 3, and other governing directives (including the AIM, when appropriate) as defined by the MAJCOM.

8.17.3. **(USAFE) Conventional Approach.** Aircrew will ensure familiarity with any HN MIL AIP restrictions/requirements when flying TERPs-reviewed HN approaches. Copies of HN MIL AIP should be procured through HN liaisons to ensure the most current versions are referenced. The HQ USAFE/A3TV ICE will attempt to provide links to AIP sites as they are available.

8.17.4. **RADAR Approach.** For pilots to fly a published radar approach or instrument approach procedure that requires radar to define a fix essential for flying the approach, a non-radar facility must provide a positive aircraft position within 25 NMs of the airfield. Pilots operating in Class A airspace may file to the nearest nonradar facility or fix (regardless of distance from the terminal) and request radar vector service to the terminal.

8.17.4. **(USAFE) RADAR Approach.** IAW with the AFFSA document title "USAFE/A3 Operational Authorization with[in] the USEUCOM AOR" the requirement to use a non-radar facility for fixing aircraft position with 25 NMs of the airfield is hereby waived. IAW the waiver document, USAFE/A3 authorizes all USAFE units to utilize this waiver as necessary

to facilitate safe mission accomplishment. Reference the "*Waivers*" folder on the USAFE/A3TV ICE for the most current version of the waiver document.

8.17.4.1. **(Added-USAFE)** For units requiring to operate under this waiver, aircrew will place special emphasis on HN flying procedures, weather reporting capabilities of the operating location, fuel management, monitoring/use of all on-board navigation systems.

8.17.4.2. **(Added-USAFE)** In addition to MDS-specific MESLs, each aircraft must be equipped with an operable point-to-point RNAV system (both INS and EGI if dual equipped), and at least two operable radios.

8.17.4.3. **(Added-USAFE) CAF (expect rotary-wing)**. There will always be two aircraft airborne at the same time (exception: a single-ship may be airborne if in the pattern preparing to land) to ensure wingman back-up for on-board RNAV systems and radio capability.

8.17.5. **Precision Runway Monitoring (PRM) Approach.** Pilots shall not fly PRM approaches unless the pilot(s) and the aircraft are properly certified by the MAJCOM. Pilots unable to accept a PRM approach clearance must contact the Air Traffic Control System Command Center at 1-800-333-4286 to coordinate an arrival time. Without coordination, pilots should expect an ATC-directed divert to a non-PRM airport.

8.17.5. **(USAFE) Precision Runway Monitoring (PRM) Approach.** Certification of pilots to fly PRM approaches will be completed and documented IAW AFI 11-2MDSV1 and local guidance. Aircraft certification is IAW AFI 11-2MDSV3 and TO guidance.

8.17.5.1. TCAS II equipped aircraft will fly the ILS PRM approach in TA/RA mode.

8.17.5.2. If an ATC breakout and a TCAS RA are received simultaneously, or shortly after one another, the pilot will respond to any turns required in the breakout instructions as well as the vertical correction required by the TCAS system.

8.17.6. **Self-Contained Approach (SCA).** A MAJCOM-approved arrival procedure flown from a MIA to a landing surface using only the navigational equipment on board the aircraft (GPS, radar or other sensors). These procedures may be practiced in the NAS (or elsewhere with host-nation approval) under radar control, in conjunction with a published instrument approach procedure, in SUA or under VFR.

8.17.6. **(USAFE) Self-Contained Approach (SCA).** SCAs may be practiced IAW the limitations in **paragraph 8.17.6** at the following USAFE bases unless restricted by HN or local guidance: Aviano AB, Incirlik AB, RAF Lakenheath, RAF Mildenhall, Moron AB, Ramstein AB, Spangdahlem AB.

8.17.6.1. **Airborne Radar Approach (ARA).** ARAs are instrument approaches conducted using navigational guidance provided by reference to the aircraft's on-board radar system. ARA's conducted in IMC shall be developed and approved by the MAJCOM TERPS office. For the purposes of filing under IFR, ARA approaches will be considered published if they meet the requirements of paragraph 8.4.

8.17.6.1. **(USAFE) Airborne Radar Approach (ARA).** IAW AFI 11-230, USAFE/APF (TERPS) is the only authorized source for creating ARAs within the USAFE AOR. Aircrew will request ARA creation/review by contacting HQ USAFE/APF

(DSN: 314-480-7024; Comm: +49-6371-47-7024). ARAs will be executed IAW AFI 11-2MDSV3, local, and TO guidance.

8.17.6.2. **SCA using GPS or other sensors.** MAJCOMs will publish specific guidance and restrictions on the use of SCAs such as Self-Contained Navigation Systems (SCNS), Mission Computer Approaches, SCAs using FMS or other GPS-based systems (or other sensors) that have not been certified to civil IFR instrument approach standards. These procedures fall outside the construct of published instrument approaches and should be flown under VFR or closely follow a published instrument approach ground track. MAJCOMs that permit their pilots to fly SCAs in IMC during tactical operations must publish SCA guidance that includes, at a minimum:

8.17.6.2. **(USAFE) SCA using GPS or other sensors.** USAFE aircrew may fly SCA IAW **paragraph 8.17.6.2**, AFI 11-2MDSV3 and TO guidance as well as MDS-specific AFTTPs. If allowed by AFI 11-2MDSV3, aircrew may fly SCAs in IMC during contingency operations as long as all the criteria in paragraphs 8.17.6.2.1. through 8.17.6.2.2. is included.

8.17.6.2.1. SCA weather minimums, minimum final approach segment dimensions, tracks, and minimum altitudes, based on aircraft equipage and capabilities. Along the planned ground track, a minimum of 300 feet (250 feet with TF/TA) of obstacle clearance must be observed between the MIA and the MDA/DA; and

8.17.6.2.2. SCA missed approach procedures and ground tracks will be established and assessed for obstructions along the planned escape ground track, and require no more than a 200 ft/nm climb gradient; and

8.17.6.2.3. SCA allowable course deviation standards, required actions when those standards are exceeded, aircraft equipage requirements, pilot certification and proficiency rules, landing surface marking/lighting requirements, and minimum standards of navigation system accuracy required to commence the procedure; and

8.17.6.2.4. SCA guidance to ensure corrections (i.e. temperature, restrictions to visibility, NOTAM information, obstacle data, etc.) are applied to the procedure. Corrections will be applied to the MDA/DA and other altitudes using the best available data.

8.17.7. **Temperature Correction.** When the reported temperature at the altimeter setting source (normally the airfield), is lower than the International Standard Atmosphere (ISA) temperature, the aircraft's actual altitude will be lower than the barometric altimeter indicates. It is critical that pilots flying aircraft equipped with FMS that compensate for cold temperatures be familiar with the conditions under which the FMS calculates cold weather altitudes. During all flight operations, to maintain obstacle clearance, pilots will use the FIH chart (or FMS calculations) to apply cold weather corrections to barometric altitudes on IAPs IAW Table 8.2.

8.17.7. **(USAFE) Temperature Correction.** For aircraft either not equipped with an FMS or not equipped with an FMS capable of cold temperature altitude calculations, reference **Table 8.2** for when to apply the corrections and the following link for an electronic version of the FIH: **https://dbgia.geointel.nga.mil/downloads/index.cfm**.

8.17.7.1. In lieu of MAJCOM guidance, while in IMC in mountainous terrain, pilots will plan to fly at least 1,000 ft above published minimum altitudes obtained from IFR enroute charts and terrain charts (e.g. MEAs, MOCAs, OROCAs or other minimum safe altitudes during low-levels, etc.) if the temperature at those altitudes is colder than 10°C below ISA.

8.17.7.1. **(USAFE)** While flying IMC in mountainous terrain (as defined by **paragraph 2.11**) in aircraft with no on-board outside air temperature (OAT) readings or ability to display temperature deviations from ISA, aircrew will adhere to the MIA appropriate for the phase of flight (see **paragraph 8.13**).

8.17.7.2. Pilots will not apply a temperature correction to an ATC assigned altitude, but may refuse a lower altitude if obstacle protection is in doubt.

8.17.7.3. When applying corrections to IAP altitudes, pilots will advise ATC if any applied correction exceeds 80 feet.

Table 8.2. Cold Weather Altitude Corrections.

Altimeter Setting Source Temperature	Published IAP	IAP in mountainous terrain	If any altitude on the IAP is > 3000 ft above the altimeter setting source (N/A for High-Alt IAF)
Below 32° F / 0° C	**Correct all altitudes inside FAF**		
Below -22°F / -30° C	**Correct all altitudes on the IAP**		

8.17.8. **Determining DH/DA/MDA.** Pilots shall determine minimum approach altitudes (DH, DA or MDA) with the barometric altimeter except when flying a Category II/III ILS approach. When flying a Category II/III ILS approach use the radar altimeter to determine DH and use the barometric altimeter as a supporting instrument. Pilots shall not fly Category II or III approaches unless the pilot(s) and the aircraft are properly certified by the MAJCOM IAW appropriate civil standards. MAJCOM should direct procedures for the use of radar altimeters during all other approach types, including during tactical operations.

8.17.8.1. **(Added-USAFE)** Certification of pilots to fly Category II/III approaches will be completed and documented IAW AFI 11-2MDSV1, and local guidance. Aircraft are certified IAW AFI 11-2MDSV3 and TO guidance. Once certified, pilots may fly Cat II/III ILS approaches IAW AFI 11-2MDSV3, local, and TO guidance as well as MDS-specific AFTTPs.

8.17.8.1.1. **(Added-USAFE)** USAFE authorizes full use of radar altimeters IAW AFI 11-2MDSV3, local, and TO guidance on all approaches and during all tactical operations.

8.17.8.2. **(Added-USAFE) CAF (except for rotary wing) Pilot Weather Category (PWC)**. Reference **Attachment 4 (Added)** for guidance on determining PWCs for use in calculating appropriate instrument approach minimums.

8.17.9. **Descent Below DH/DA/MDA.** Continuing an approach below DH/DA/MDA is not authorized until sufficient visual reference with the runway environment has been established and the aircraft is in a position to execute a safe landing. The term "runway environment" is defined in the glossary and AFMAN 11-217, Volume 1.

8.17.10. **Executing the Missed Approach.** If on arrival at the MAP or DH/DA (or at any time thereafter) any of the requirements in paragraph 8.17.9. are not met, the pilot shall immediately execute the appropriate missed approach procedure, ATC issued climb out instructions or other ATC clearance.

8.17.10.1. To ensure obstacle/terrain clearance, the missed approach procedure may not be initiated until over the MAP/DH/DA, unless otherwise cleared by ATC. Climbing prior to the MAP/DH/DA is permitted but ATC should be advised as soon as practical.

8.17.10.2. Prior to starting any instrument approach, pilots will ensure their aircraft can accomplish the missed approach. Unless a higher climb gradient is published or assigned by ATC, maintain a minimum climb gradient of 200 ft/NM during the missed approach. "Copter Only" approaches require a minimum climb gradient of 400 ft/NM. If, during an emergency, an aircraft is unable to comply with the missed approach routing or climb requirements, pilots should coordinate for alternate climb out instructions to ensure the aircraft will vertically clear all obstacles.

8.18. IFR "VFR-on-Top. " Unless otherwise restricted by the MAJCOM, PICs may request and fly IFR "VFR on Top" operations (IAW AFMAN 11-217V2 guidance) when the mission requires such clearances. If the PIC cancels the IFR clearance, comply with Chapter 7.

8.18. (USAFE)IFR "VFR-on-Top. " IFR "VFR-on-Top" may only be used if specifically allowed in AFI 11-2MDSV3 or as part of a formal course syllabus.

8.19. Performance Specification Airspace. PIC's will ensure their aircraft is properly equipped, certified, and approved before operating in any performance specification airspace (e.g. MNPS/RVSM/RNP-10/BRNAV, etc). See CNS/ATM requirements in Chapter 2.

Chapter 9

CREW REST, FATIGUE MANAGEMENT AND FLIGHT DUTY LIMITATIONS

9.1. Background Information. This chapter prescribes mandatory crew rest and maximum Flight Duty Periods (FDP) for all personnel who operate USAF aircraft. Basic guidance for fatigue management strategies and waiver authority procedures are also addressed.

9.2. Waiver Authority. Procedures in this chapter may be waived by:

9.2.1. MAJCOM/A3 when an ORM assessment determines that mission requirements justify the increased risk. At MAJCOM/A3 discretion, waiver authority may be further delegated to no lower than the operations group commander (or equivalent). Waivers to crew rest and flight duty limitations may be published in MAJCOM guidance or on a case-by-case basis. Exception: when authorized by the MAJCOM/A3, the PIC may extend maximum FDP up to 2 hours to compensate for unplanned mission delays, provided the mission requirements justify the increased risk.

9.2.1. **(USAFE) FDP and Crew Rest Waivers**. With concurrence of the PIC and if the mission justifies the increased risk, the following individuals are waiver authority for the first two hours of FDP and/or the first 12 hours of pre-departure crew rest:

9.2.1.1. **(Added-USAFE) CAF.** The owning OG/CC or designated representative.

9.2.1.2. **(Added-USAFE) MAF.** For training missions, approval authority is the owning OG/CC or designated representative. For HHQ-tasked missions, approval authority is the owning AOC/CC or comparable level of flying supervision if agreed upon between the owning AOC and the unit.

9.2.1.3. **(Added-USAFE)** The WG/CC is approval authority for all other FDP/Crew Rest waivers. For all WG/CC-approved waivers, provide notification of approval to 3 AF/CC and USAFE/A3 (through USAFE/A3T, with info to USAFE/A3TV).

9.2.1.4. **(Added-USAFE)** Prior to issuing crew rest waivers, commanders will ensure ORM processes are in place to identify that the waiver exists and that all levels of flying supervision are aware of the effected aircrews' status.

9.2.1.5. **(Added-USAFE)** The PIC may extend the maximum FDP up to two hours without the above waiver approval authority provided the aircrew have exhausted all means to contact the appropriate approval authority and the mission justifies the risk. Affected aircrew will ensure they notify their flying chain of command as soon as practical upon mission completion or upon termination of the affected leg of a multi-leg mission, whoever occurs first.

9.2.2. COMAFFOR (in the grade of O-8 or higher) for forces under his or her operational control during contingencies and impending or actual hostilities. Waiver authority may be delegated to no lower than Air Component Commander/A3 or equivalent level.

9.3. Fatigue Management Authorization. Regardless of authorized FDP, the PIC will restrict duty time, extend crew rest periods or terminate a mission/mission leg if safety may be compromised by fatigue factors.

9.4. Terms Explained.

9.4.1. **Aircrew or Crew**. The full complement of military, civilian and contract personnel required to operate a USAF aircraft and to complete an assigned mission.

9.4.2. **Aircrew Member.** An individual, designated on the Flight Authorization, who:

9.4.2.1. Is an aircrew member as explained in AFPD 11-4, *Aviation Service,* AFI 11-402, *Aviation and Parachutist Service, Aeronautical Ratings and Badges,* and,

9.4.2.2. Is assigned to a position listed in AFI 65-503, *US Air Force Cost and Planning Factors,* and,

9.4.2.3. Is designated on orders to fulfill specific aeronautical tasks.

9.4.3. **Augmented Aircrew.** A basic aircrew supplemented by additional aircrew members to permit in-flight rest periods IAW paragraph 9.4.8. If the basic aircrew requires only one pilot and a second qualified pilot (includes pilots enrolled in an AETC formal aircrew training course) is designated an aircrew member to augment pilot duties, the crew can be considered augmented.

9.4.4. **Basic Aircrew**. Aircrew positions as defined in the aircraft T.O. (or MDS-specific AFI) for the normal operation of the aircraft or mission.

9.4.5. **Crew Rest Period.** The crew rest period is normally a minimum 12-hour non-duty period before the FDP begins. Its purpose is to ensure the aircrew member is adequately rested before performing flight or flight related duties. Crew rest is free time, and includes time for meals, transportation, and rest. Rest is defined as a condition that allows an individual the opportunity to sleep.

9.4.6. **Flight Duty Period.** FDP begins when an aircrew member reports for a mission, briefing, or other official duty and ends when engines are shut down at the end of the mission, mission leg, or a series of missions. FDP for UAS ends at final engine shut down, final in-flight handover briefing, or final crew swap, whichever occurs last.

9.4.7. **"Deadhead" Time**. For crew rest purposes, "deadhead" time is computed as FDP. If an aircrew member will perform in-flight or crew-specialty related duties (i.e., aircraft off-loading or performance data calculations) in conjunction with "deadheading", paragraphs 9.8., 9.11., 9.12. and Table 9.1 apply.

9.4.8. **Sleeping Provisions.** Sleeping provisions are crew bunks or other MAJCOM-defined rest facilities aboard the aircraft. Rest facilities should provide adequate privacy and noise levels to obtain suitable rest.

9.5. Alert Duty. MAJCOMs establish alert and compensatory periods in keeping with mission requirements and an ORM assessment.

9.5. (USAFE)Alert Duty. Reference AFI 11-2MDSV3 and **Attachment 6 (Added)** for alert guidance.

9.6. Maximum Flying Time. 56 hours flight time logged per 7 consecutive days, 125 hours flight time logged per 30 consecutive days and 330 hours per 90 consecutive days.

9.7. Maximum FDP. (see Table 9.1)

9.7. (USAFE)Maximum FDP. See waiver information in **paragraph 9.2.1**

9.7.1. If official post-flight duties are anticipated to exceed 2 hours, commanders should consider reducing the FDP to ensure the safe completion of those duties.

9.7.2. For single pilot aircraft or when only one pilot has access to the flight controls, the maximum FDP is 12 hours.

9.7.2. **(USAFE) Single-pilot aircraft.** Maximum FDP when during night operations (not to include civil twilight) is 10 hours. ***Exception:*** Alert crews operating IAW **paragraph 9.5** and aircrew on an ACC/AOS movement to/from the CONUS. In these cases the maximum FDP is IAW **Table 9.1**.

Table 9.1. Maximum FDP (Hours).

Aircraft Type	**Basic Aircrew**	**Augmented Aircrew**
Single Control Aircraft	12	NA
Fighter, Attack or Trainer (Dual Control)	12	16
Bomber, Reconnaissance, Electronic Warfare, or Battle Management (Dual Control)	16	24
Tanker/Transport (includes T-39 and T-43)	16	NA
Tanker/Transport (Sleeping Provisions) (includes T-39 and T-43)	16	24
Rotary Wing (without Auto Flight Control System)	12	14
Rotary Wing (with Auto Flight Control System)	14	18
Utility	12	18
Unmanned Aircraft System (Single Control)	12	NA
Unmanned Aircraft System (Dual Control)	16	NA

9.8. Crew Rest. Aircrew require at least 10 continuous hours of restful activities (including an opportunity for at least 8 hours of uninterrupted sleep) during the 12 hours immediately prior to the FDP. To ensure individual accountability and mission reliability, crewmembers should be officially notified prior to entering a crew rest period. A crew rest period cannot begin until after the completion of official duties.

9.8. (USAFE)Crew Rest. See waiver information in **paragraph 9.2.1**

9.8.1. Crew rest is compulsory for any aircrew member prior to performing any of the following flight-related duties: preflight, load/unload, start, and taxi aircraft.

9.8.2. Each aircrew member is individually responsible to ensure that he or she obtains sufficient rest during crew rest periods. Activities that would prevent the opportunity to achieve at least 8 hours of uninterrupted sleep are discouraged.

9.9. Crew Rest Interruptions. Any official business or duty that requires the active participation of an aircrew member interrupts the crew rest period. This includes official business conducted on the telephone or other electronic means. If crew rest is interrupted so that the individual cannot get an opportunity for at least 8 hours of uninterrupted sleep, the individual must be afforded the opportunity for at least 8 more hours of uninterrupted sleep plus reasonable time to dress, eat, travel, etc. Intentional crew rest interruptions shall only be made under the most exceptional circumstances. The individual must consider unofficial interruptions so that the intent of paragraph 9.8. is met. If crew rest is interrupted, individuals will inform a supervisor and remove themselves from the flight schedule, when necessary.

9.9. (USAFE)Crew Rest Interruptions. USAFE defines "active participation" as any activity where the aircrew is not simply an observer, but is a contributing member of the activity or receiving training.

9.10. Exceptions to the 12-Hour Minimum Crew Rest Period. For continuous operations when basic aircrew FDPs are greater than 12 but less than 14 hours, subsequent crew rest may be reduced proportionally to a minimum of 10 hours in order to maintain a 24-hour work/rest schedule.

9.10.1. Continuous operations means three or more consecutive FDPs of at least 12 hours duration separated by minimum crew rest.

9.10.1.1. The 10-hour crew rest exception shall only be used to keep crews in 24-hour clock cycles, not for scheduling convenience or additional sortie generation.

9.10.1.2. Any reduction from 12 hours crew rest requires pre-coordination for transportation, meals and quarters, so that crewmembers are provided an opportunity for at least 8 hours of uninterrupted sleep.

9.11. Scheduling Restrictions. Aircrews will not perform flight duties until the requirements of paragraph 9.8 have been met.

9.11.1. Aircrew members must maintain a medical clearance from the flight surgeon to perform in-flight duties. All medical or dental treatment obtained from any source must be cleared by a flight surgeon prior to reporting for flight duty.

9.11.2. Use of any medication or dietary supplements is governed by AFI 48-123 and as approved by a flight surgeon. Aircrew members will not normally self-medicate. In the absence of other MAJCOM guidance, the following is a partial list of medications that may be used without medical consultation:

9.11.2.1. Single doses of over-the-counter (OTC) aspirin, acetaminophen or ibuprofen to provide analgesia for minor self-limiting conditions.

9.11.2.2. OTC skin antiseptics, topical anti-fungals, 1 percent hydrocortisone cream, or benzoyl peroxide for minor wounds and skin diseases which do not hinder flying duties or wear of personal equipment.

9.11.2.3. OTC antacids for mild isolated episodes of indigestion.

9.11.2.4. OTC hemorrhoidal suppositories.

9.11.2.5. OTC bismuth subsalicylate for mild cases of diarrhea.

9.11.2.6. OTC oxymetazoline or phenylephrine nasal sprays may be carried should unexpected ear or sinus block occur during flight. Aircrew may only use such sprays as "get me downs." Do not use to treat symptoms of head congestion prior to flight.

9.11.2.7. For information on medication, see Aerospace Medicine policy letters at: **https://kx.afms.mil/kxweb/dotmil/kjPage.do?cid=CTB_020686&functionalArea=AerospaceMedicine**.

9.11.3. Aircrew members will not fly:

9.11.3.1. Within 24 hours of compressed gas diving (including SCUBA), surface supplied diving, hyperbaric (compression) chamber exposure or aircraft pressurization checks (to below sea level) that exceed 10 minutes duration (this restriction not applicable to UAS ground control station operations).

9.11.3.1.1. Exceptions: Following HEEDS training, aircrew may only fly within the 24 hour window if the aircraft's maximum altitude remains below 10,000 ft. MSL.

Pararescue aircrew personnel will follow guidelines IAW US Navy Diving Manual on flying and diving restrictions.

9.11.3.2. Within 12 hours after completion of a hypobaric (altitude) chamber flight above 25,000 ft. MSL. Personnel may fly as passengers in aircraft during this period, provided the planned mission will maintain a cabin altitude of 10,000 ft. MSL or less. For altitude chamber flights to a maximum altitude of 25,000 ft. MSL or below, aircrew members may fly without delay as crewmembers or passengers if their cabin altitude does not exceed 15,000 ft. MSL (this restriction not applicable to UAS ground control station operations).

9.11.3.3. Within 72 hours after donating blood, plasma or bone marrow. The flying unit commander must approve donations of blood, plasma or bone marrow by aircrew members.

9.11.3.4. Within 12 hours of consuming alcohol or other intoxicating substance, or while impaired by its after effects. See also paragraph 5.1.4.

9.11.4. MAJCOMs should establish scheduling restrictions for aircrew members who, for duty or personal reasons, transit multiple time zones less than 24 hours prior to reporting for flying duty.

9.11.4. **(USAFE)** Aircrew crossing four or more time zones within a 24-hour period while returning to their home station (e.g. returning from the CONUS to the USAFE AOR) will not fly a local training sortie for 48 hours after first arriving back in the USAFE AOR.

9.11.4.1. **(Added-USAFE) EXCEPTION**: Aircrew who have no more than a 36 hour layover (beginning when they land at their destination) after leaving the EUCOM and/or AFRICOM AORs prior to returning to home station.

9.11.4.2. **(Added-USAFE)** Waiver authority is the OG/CC (may be delegated to no lower than the SQ/CC, or designated representative).

9.12. Alertness Management Strategies. Commanders, mission planners, aerospace medicine personnel and crewmembers share responsibility for alertness management.

9.12.1. MAJCOMs will emphasize alertness management programs or procedures to minimize the risks associated with aircrew fatigue. These should include:

9.12.1.1. **Commander's Responsibilities**. Commanders use reasonable means to manage the health and welfare of their crew forces. Use aircrew and family education to emphasize the importance of aircrew fitness and alertness on duty performance. Consultation with aerospace medicine or other fatigue management experts is advisable.

9.12.1.2. **Fatigue Mitigation**. Mechanisms to ensure that at all stages of the mission, commanders, mission planners and PICs assess the impact of reduced aircrew alertness.

9.12.1.2.1. Assessments should include the fatiguing effects of weather, extremes of temperature, nighttime operations and use of NVDs, poor sleeping conditions (due to both location and time of day), mission delays, and restrictive personal equipment.

9.12.1.2.1.1. Commanders, mission planners, aerospace medicine personnel and PICs must continually execute ORM assessments and implement alertness management strategies such as: extending crew rest periods, pre-positioning crews, using sleep quarantine facilities, non-pharmacological countermeasures such as controlled cockpit rest, bright light or physical activity breaks; pharmacological agents (go and no-go pills), and fatigue management education and training.

9.12.1.2.2. To combat cumulative fatigue, commanders should grant additional crew rest, or limit consecutive duty days, during surge, combat, max-effort, or operations near maximum FDPs.

9.12.1.2.2.1. **(Added-USAFE)** Afford aircrew members a minimum of 24 hours crew rest following three consecutive FDPs of 16 hours or more with minimum crew rest between flights.

9.12.1.2.2.2. **(Added-USAFE)** Aircrew member will not fly their first day back from a non-flying absence lasting 2 weeks or more. OG/CCs may dictate a shorter period based on individual experience, proficiency, and mission. Individuals must be given time to refresh on aircraft procedures and unit standards and be afforded the opportunity to participate in the mission planning for their first flight back.

9.12.1.3. **Fatigue Countermeasure Medications**. MAJCOMs will provide guidance on the use of go and no-go medications IAW AF/SG policy. For more information see: **https://kx.afms.mil/kxweb/dotmil/kj.do?functionalArea=AerospaceMedicine**. This website contains policy letters, approved medications, forms, dosage and warnings for approved fatigue countermeasures medications. The website will be updated as required by AFMOA/SG3PF.

9.12.1.3. **(USAFE) Fatigue Countermeasure Medications**. Aircrew will only use go/no-go medication IAW AF/SG policy, AFI 11-2MDSV3 and local guidance.

9.12.1.4. **Controlled Cockpit Rest**. Unless further restricted in MAJCOM guidance or MDS specific Volume 3, controlled cockpit rest may be implemented when the basic aircrew includes a second qualified pilot. All cockpit crewmembers must remain at their

stations. Cockpit rest shall be limited to 45 minutes, taken by only one crew member at a time and must be restricted to non-critical phases of flight between cruise and one hour prior to planned descent. More than one rest period per crewmember is permitted. Cockpit rest is not authorized with any aircraft system malfunctions that increase cockpit workload (e.g., Autopilot, Navigation Systems). The resting crewmember must be roused immediately if a situation develops that may affect flight safety. Cockpit rest shall not be a substitute for any required crew rest.

9.12.2. Flight publications describe procedures for loss of pressurization, oxygen, cockpit temperature control, inoperative autopilot, and other in-flight malfunctions or emergencies that restrict flight duration and contribute to aircrew fatigue. Such limitations in flight publications take precedence over less restrictive standards in this instruction.

9.13. Forms Prescribed. AF Form 70, *Pilot's Flight Plan and Flight Log*; DD 175, *Military Flight Plan* and DD 1801, *DoD International Flight Plan*.

9.14. Forms Adopted. See above and AF Form 847, *Recommendation for Change of Publication (Flight Publications),* DD Form 2131, *Passenger Manifest*.

9.14. (USAFE)Forms Adopted: AF Form 8, *Certificate of Aircrew Qualification;* AF Form 4327, *ARMS Flight Authorization;* AFTO Form 781A, *Maintenance Discrepancy and Work Document;* USAFE Form 116, *Functional Check Flight (FCF) Training and Recurrency Certificate*

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Attachment 1

GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION

References

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AFMAN 11-217V1, *Instrument Flight Procedures,* 3 Jan 05

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AFMAN 33-363, *Management of Records,* 1 Mar 2008

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AFPAM 11-216, *Air Navigation,* 1 Mar 01

FAA Advisory Circular 120-76, *Guidelines for the Certification, Airworthiness, and Operational Approval of Electronic Flight Bag Computing Devices*

FAA Handbook 7400.2 *Procedures for Handling Airspace Matters*

FAA Joint Order 7610.4 *Special Military Operations*

FAA Order 7110.199 *Land and Hold Short Operations (LAHSO)*

FAA TSO-129a *Airborne Supplemental Navigation Equipment Using the Global Positioning System (GPS)*

Title 14 Code of Federal Regulations Parts 91, 121, 135 *General Operating and Flight Rules*

FAA AIM *Aeronautical Information Manual*

Note: All FAA guidance available at: **http://www.faa.gov**/

T.O. 42C-1-2 *Anti-Icing De-Icing and Defrosting of Parked Aircraft*

Note: Technical orders available at: **https://www.toindex-s.wpafb.af.mil**/

Abbreviations and Acronyms

AC—Advisory Circular

ACAS—Aircraft Collision Avoidance System (ICAO) (see TCAS)

ADIZ—Air Defense Identification Zone

AFF—Aircrew Flight Frame

AFFSA—Air Force Flight Standards Agency

AFH—Air Force Handbook

AFI—Air Force Instruction

AFJI—Air Force Joint Instruction

AFMAN—Air Force Manual

AFPD—Air Force Policy Directive

AFRC—Air Force Reserve Command

AFREP—Air Force Representative to the FAA

AGL—Above Ground Level

AIM—Aeronautical Information Manual

AIP—Aeronautical Information Publication

ALS—Approach Lighting System

ALTRV—Altitude Reservation

AMU—Area of Magnetic Unreliability

ANG—Air National Guard

AP—Area Planning

ARCP—Air Refueling Control Point

ARTCC—Air Route Traffic Control Center

ASRR—Airfield Suitability and Restrictions Report

ATC—Air Traffic Control

ATCAA—Air Traffic Control Assigned Airspace

ATIS—Automatic Terminal Information Service

BARO—VNAV-Barometric Vertical Navigation

BRNAV—Basic Area Navigation

BWC—Bird Watch Condition

CFR—Code of Federal Regulations (Formerly FARs)

CMNPS—Canadian Minimum Navigation Performance Standards

CNS/ATM—Communications, Navigation, Surveillance and Air Traffic Management

COA—Certificate of Authorization or Waiver

COMAFFOR—Commander Air Force Forces

CONUS—Continental United States

DA—Decision Altitude

DER—Departure End of the Runway

DH—Decision Height

DP—Departure Procedure

EFB—Electronic Flight Bag

EGPWS—Enhanced Ground Proximity Warning System

ELT—Emergency Locator Transmitter

ELP—Emergency Landing Pattern

ETA—Estimated Time of Arrival

ETCA—Education and Training Course Announcement

ETOPS—Extended Operations

FAA—Federal Aviation Administration

FAAO—Federal Aviation Administration Order

FAWP—Final Approach Waypoint

FBO—Fixed-Base Operator

FCG—Foreign Clearance Guide

FDE—Fault Detection and Exclusion

FDP—Flight Duty Period

FIH—Flight Information Handbook

FL—Flight Level

FLIP—Flight Information Publication

FMC—Flight Mission Computer

FMS—Flight Management System

FOD—Foreign Object Damage

FSS—Flight Service Station

GCAS—Ground Collision Avoidance System

GCS—Ground Control Segment/Station (of an UAS)

GP—General Planning

GPS—Global Positioning System

GPWS—Ground Proximity Warning System

HAA—Height Above Aerodrome

HAT—Height Above Touchdown

HDD—Head-Down Display

HEEDS—Helicopter Emergency Egress Device System

HMD—Helmet-Mounted Display

HMU—Height Monitoring Unit

HUD—Head-Up Display

IAP—Instrument Approach Procedure

ICAO—International Civil Aviation Organization

IFR—Instrument Flight Rules

ILS—Instrument Landing System

IMC—Instrument Meteorological Conditions

INS—Inertial Navigation System

ISA—International Standard Atmosphere

KIAS—Knots Indicated Airspeed

LAAS—Local Area Augmentation System

LAHSO—Land and Hold Short Operations

LNAV—Lateral Navigation

LOA—Letter of Agreement

LPV—Localizer-performance with Vertical Guidance

MAGR—Miniature Airborne GPS Receiver

MAJCOM—Major Command

MAHP—Missed Approach Holding Point

MAP—Missed Approach Point

MAWP—Missed Approach Waypoint

MDA—Minimum Descent Altitude

MDS—Mission Design Series

MEA—Minimum En route Altitude

MEP—Mission Essential Personnel (see “Passenger” and AFI 11-401)

MIA—Minimum IFR Altitude

MNPS—Minimum Navigation Performance Specifications

MOA—Military Operations Area

MOCA—Minimum Obstruction Clearance Altitude

MSL—Mean Sea Level

MTR—Military Training Route

NACO—National Aeronautical Charting Office

NAS—National Airspace System

NAT—North Atlantic Track

NAVAID—Navigational Aid

NGA—National Geospatial-Intelligence Agency

NM—Nautical Mile

NOAA—National Oceanic and Atmospheric Administration

NOTAM—Notices to Airmen

NVD—Night Vision Device

OCONUS—Outside the Continental US

OEI—One Engine Inoperative

OROCA—Off Route Obstruction Clearance Altitude

ORM—Operational Risk Management

ORTCA—Off Route Terrain Clearance Altitude

OTC—Over-the-Counter

PAPI—Precision Approach Path Indicator

PANS—OPS-Procedures for Air Navigation Services-Aircraft Operations

PFPS—Portable Flight Planning System

PFR—Primary Flight Reference

PGU—Portable GPS Unit

PIC—Pilot in Command

PIREP—Pilot Report

PLGR—Precision Lightweight GPS Receivers

PMSV—Pilot-to-Metro Service

PRM—Precision Runway Monitoring Approach

PV—Prevailing Visibility

ODP—Obstacle Departure Procedure

OWS—Operational Weather Squadron

RA—Resolution Advisory

RAIM—Receiver Autonomous Integrity Monitoring

RNAV—Area Navigation (may use GPS)

RNP—Required Navigation Performance

RPA—Remotely Piloted Aircraft

RSRS—Reduced Same Runway Separation

RSU—Runway Supervisory Unit

RTRL—Reduced Takeoff Runway Length

RVR—Runway Visual Range

RVSM—Reduced Vertical Separation Minimum

RVV—Runway Visibility Value

SAR—Search and Rescue

SARP—Standards and Recommended Practices

SCA—Self-Contained Approach

SCNS—Self Contained Navigation System

SDP—Special Departure Procedures

SFO—Simulated Flameout

SID—Standard Instrument Departure

SM—Statute Mile

SUA—Special Use Airspace

SVFR—Special Visual Flight Rules

TA—Traffic Alert

TAWS—Terrain Awareness and Warning System (see EGPWS)

TCAS—Traffic Alerting and Collision Avoidance System (see ACAS)

TEMPO—Temporary

TERPS—Terminal Instrument Procedures

TFR—Temporary Flight Restriction

TF/TA—Terrain Following/Terrain Avoidance System

T.O.—Technical Order

TPP—Terminal Procedures Publication

TSO—Technical Standard Order

UA—Unmanned Aircraft

UAS—Unmanned Aircraft System

USG—United States Government

VASI—Visual Approach Slope Indicator

VFR—Visual Flight Rules

VMC—Visual Meteorological Conditions

VNAV—Vertical Navigation

WAAS—Wide Area Augmentation System

WX—Weather

Terms

Some terms printed here are reserved for future use or are intended to define a common vocabulary for HQ AFFSA, MAJCOM, USAF aircrew and industry users of this AFI.—

1090mHz Extended Squitter (1090 ES)—The most mature of the 3 ADS-B link options. A "Squitter" provides a spontaneous transmission containing information about the aircraft's identification, position, altitude, velocity, and route of flight information. It uses the Mode S transponders as a basis for operation.

8.33KHz spacing—Due to frequency congestion in the 118-137 MHz range (voice communications) in Europe, the normal spacing between frequencies (25 kHz) was further divided into three 8.33 kHz bands.

Automatic Dependent Surveillance Broadcast (ADS—B)—Aircraft equipment that automatically broadcasts routine messages which include its position (such as lat, long, altitude), velocity, and altitude. Other information may also be included.

Aerobatics—Intentionally performed spins, vertical recoveries, and other maneuvers that require pitch and bank angles greater than 90 degrees.

Air Force Flight Standards Agency (AFFSA)—HQ USAF Field Operating Agency (FOA) charged with the development, standardization, evaluation and certification of procedures, equipment and standards to support global flight operations. Centrally manages ATCALS, the SDP program contract, performs combat flight inspection, and instructs the Air Force Advanced Instrument School for USAF pilots. Central agency responsible for global USAF Terminal Instrument Procedures. Headquartered at the FAA's Mike Monroney Aeronautical Center in Oklahoma City, OK.

Air Combat Tactics—A general term that includes basic fighter maneuvers, air combat maneuvers, and air combat tactics.

Civil Twilight—Evening Civil Twilight is the period that begins at sunset and ends in the evening when the center of the sun's disk is 6 degrees below the horizon. Morning Civil Twilight begins in the morning when the center of the sun's disk is 6 degrees below the horizon, and ends at sunrise. Use an authorized weather source, the latest version of the Air Almanac, MAJCOM-approved computer program or US Naval Observatory data to determine and calculate light and moon data. Both periods of twilight are considered "day", unless further restricted by the MAJCOM.

Communication, Navigation, Surveillance, and Air Traffic Management (CNS/ATM)—An umbrella term used to describe the emerging avionics technologies and architecture of space- and ground-based systems designed to bring about **Free Flight**. Examples include: **RNAV/RNP, RVSM, CPDLC, ADS-B, elementary and enhanced Mode S, 8.33 kHz radios, FM Immunity, TCAS, and TAWS**—Previously termed Global Air Traffic Management (GATM) by the DoD.

Composite Flight Plan—A flight plan which specifies VFR operation for one portion of flight and IFR for another portion.

Controller-Pilot Data Link Communications (CDPLC)—An "email-like" data link between pilots and ATC that will augment and may replace voice communications. The two

environments for CPDLC are currently Future Aeronautical Navigation System 1/A (FANS-1/A) and the Aeronautical Telecommunications Network (ATN).

Critical Phase of Flight—For the purposes of this AFI, this term shall include: Terminal Area operations including taxi, takeoff and landing, Low-level flight, Air Refueling, Airdrop, weapons employment, flight using NVGs, tactical/air combat and formation operations (other than cruise) and all portions of any test or functional check flight or any aerial demonstration.

Day—The time between the beginning of morning civil twilight and the end of evening civil twilight, as published in the Air Almanac, converted to local time.

Down link Aircraft Parameters (DAP)—This is data down-linked to the ground, via the Mode S transponder, that provides information about the aircraft operations and planned route. The three types of DAP are "basic functionality" (flight ID, transponder capability, and flight status), "enhanced" [EHS] and "elementary" [ELS] surveillance features also provide flight intent information.

Decision Altitude/Decision Height (DA/DH)—A specified altitude in the precision approach at which a decision must be made to either continue the approach if the pilot acquires the required visual references, or to immediately climb or execute a missed approach. Outside the NAS, Decision altitude is referenced to mean sea level and decision height is referenced to the threshold elevation.

Diverse Departure—If the airport has at least one published approach, the absence of any non-standard takeoff minimums and/or IFR departure procedures for a specific runway normally indicates that runway meets diverse departure criteria. Pilots departing a diverse runway may climb runway heading to 400 ft. above the DER elevation and then turn in any direction provided the aircraft maintains a minimum climb gradient of 200 ft/NM until reaching the appropriate IFR altitude. Published "Sector" diverse departures (i.e. "Diverse Departure authorized 145° CW to 278° with min climb gradient of…) are authorized as an Obstacle Departure Procedure.

Embedded GPS/INS (EGI)—A military, self-contained navigation system that provides positioning, velocity, and acceleration data for the aircraft. The EGI receives signals from GPS. The EGI receiver tracks up to five satellites simultaneously.

Enhanced Surveillance (EHS)—Support of EHS consists of populating and maintaining three Mode S transponder registers beyond those required for ELS: Selected Vertical Intention, Track and Turn Report, and Heading and Speed Report.

Elementary Surveillance (ELS)—Support of ELS consists primarily of populating and maintaining four Mode S transponder registers: Data Link Capability Report, Common-Usage Ground Initiated Comm B (GICB) Capability Report, Aircraft Identification (Flight ID), and Airborne Collision Avoidance System (ACAS) resolution advisory.

Extended Operations (ETOPS)—Those operations conducted over large bodies of water, or desolate land areas, outside of gliding distance to a suitable landing site.

FAA Authorization—An authorization is an official written FAA document which provides the petitioner relief from specified parts of the CFRs.

FAA Exemption—An exemption is an official written FAA document which provides the petitioner relief from specified parts of the CFRs.

Fault Detection/Exclusion (FDE)—A GPS receiver capable of autonomously determining which GPS satellite(s) is (are) causing the RAIM alert and then excluding the faulty satellite(s) from the navigation solution. Flight in some civil airspace requires both RAIM and FDE.

Flight Mission Computer/Flight Management System (FMC/FMS)—An on-board computer system that uses a database to allow routes and other navigation data to be preprogrammed. The system is updated with respect to position accuracy by reference to conventional navigation aids.

Formation Flight—More than one aircraft which, by prior arrangement between the pilots, operates as a single aircraft with regard to navigation and position reporting. Separation between aircraft within the formation is the responsibility of the flight leader and the pilots of the other aircraft in the flight. This includes transition periods when aircraft within the formation are maneuvering to attain separation from each other to effect individual control and during joinup and breakaway. Such a group is treated for ATC purposes as a single aircraft.

Free Flight—A safe and efficient operating capability under instrument flight rules in which the pilot has the freedom to select routing, altitude, and speed in real time.

Fuel Reserve—The amount of usable fuel that must be carried on each aircraft, beyond that required to complete the flight as planned.

Ground-Based Augmentation System (GBAS)—GBAS augments ground systems (typically at an airport) with equipment similar in functionality to a GPS satellite. This augmentation allows a properly equipped aircraft to increase the accuracy of the vertical/lateral GPS solution. The US LAAS is a GBAS equivalent system.

GNSS Landing System (GLS)—Hardware and software that augments the GPS SPS to provide for precision approach and landing capability. Based on differential GPS concepts, the GLS augments the basic GPS position data in order to increase the integrity, continuity, and accuracy needed for a precision approach.

GPS-based Monitoring Unit (GMU)—An on-board monitoring and recording unit composed of a GPS receiver, computer and flight deck windows antennae. An alternative to the ICAO requirement of overflying a Height Monitoring Unit (HMU) as a means to check aircraft for RVSM compliance.

Global Navigation Satellite System (GNSS)—An umbrella term adopted by ICAO to encompass any independent satellite navigation system. GNSS provides suitably equipped aircraft with en route/terminal navigation with non-precision approach and precision approach capabilities. The U.S. system is GPS.

Global Positioning System (GPS)—A constellation of satellites that enables the user to receive signals from six operational satellites nearly 100% of the time from most locations on Earth. RAIM and FDE ensures the GPS derived solution meets the accuracy, availability, and integrity requirements critical to flight safety

Differential GPS (GPS-D)—DGPS is a GPS augmentation that uses *differential corrections* to the basic satellite measurements that are performed within the receiver. DGPS is based upon accurate knowledge of the geographic location of Earth reference stations. This knowledge is used to compute corrections to GPS parameters, error sources, and/or resultant positions. These differential corrections are then transmitted to GPS users, either from a ground-based station [e.g., LAAS] or from a satellite-based system [WAAS, EGNOS, GALILEO, etc]. GPS receivers

apply the corrections to their received GPS signals and compute a more optimum position. For a civil user, differential GPS can improve accuracy from 100 meters to better than 10 meters.

Global Positioning System- Precise Positioning Service (GPS-PPS)—The military maintains exclusive access to the more accurate "P-code" (pseudo random code). It is much more accurate, much harder to jam and spoof. To provide better protection to military aircraft, the DoD has encrypted the P-code to form Y-code. Horizontal accuracy is less than ten meters.

Global Positioning System Standard Positioning Service (GPS- SPS)—One of two levels of GPS service used by both the military and civil aviation community in order to support aircraft navigation and landing. Since a Presidential Order turned Selective Availability off, SPS horizontal accuracy is about ten meters [vs. about 100 meters when SA is on].

GPS "Overlay" Approaches—These are instrument approaches that were previously approved for use with GPS based on an existing traditional instrument approach such as a VOR or NDB approach. As most of the "Overlay" approach locations now have RNAV (GPS) approaches, there is no GPS "Overlay" approach authorization from the FAA in the NAS.

Ground Control Element—Comprises the UAS ground control station, power generation units, communications infrastructure and antenna arrays.

Height Monitoring Unit (HMU)—A passive, ground-based system that measures the geometric height of an aircraft for comparison with the geometric height of the flight level at which it is being flown. The HMU calculates altimetry system error using meteorological information and the Mode-C/S height data. Overflight of an HMU satisfies the ICAO requirement to check aircraft for RVSM compliance. Additional information on RVSM monitoring program can be found at: **http://www.tc.faa.gov/act-500/niaab/rvsm/naarmo_intro.asp**

ICAO—The International Civil Aviation Organization (a UN Specialized Agency), headquartered in Montreal, Canada, is the global forum for civil aviation that works to achieve its vision of safe, secure and sustainable development of civil aviation through cooperation amongst its member States. Promotes understanding and security through cooperative aviation regulation.

Inertial Navigation System (INS)—A self contained, dead reckoning system that senses the acceleration along the three axes of the aircraft and calculates the distance traveled from a reference point. Accuracy of the system decreases with time.

Instrument Meteorological Conditions—Meteorological conditions expressed in terms of visibility, distance from cloud, and ceiling less than the minima specified for visual meteorological conditions.

Lateral Navigation (LNAV)—A function of RNAV equipment which calculates, displays, and provides lateral guidance to a profile or path.

Land and Hold Short Operations (LAHSO)—Procedures developed to expedite traffic flow at civil and joint-use airports needing additional tools to increase capacity. Allows civilian aircraft to operate on intersecting runways simultaneously.

Low Close-in Obstacles—Those obstacles within the Initial Climb Area that require an excessive climb gradient to a climb-to-altitude of 200 feet or less above the Departure End of Runway elevation or alternate takeoff weather minima. These obstacles are published in NOTAMs, on the SID chart or in the IFR Take-off Minimums and (Obstacle) Departure

Procedures section of the terminal procedure booklet. Typical chart notation is: "NOTE: Rwy 17L, tree 5610' from DER, 212' left of centerline, 82' AGL/2723' MSL."

Minimum Fuel—Indicates that an aircraft's fuel supply has reached a state where, upon reaching the destination, it can accept little or no delay. This is not an emergency situation but merely indicates an emergency situation is possible should any undue delay occur.

Minimum IFR Altitude (MIA)—The lowest safe altitude permitted to be flown under IFR. Normally, this is the lowest published IFR altitude (i.e. MEA, MOCA, OROCA, or ORTCA) for a given area, not including any portion of an IAP. See paragraph 8.13.

Minimum Navigation Performance Specification (MNPS)—Implemented in the North Atlantic region between FL285-420, it specifies a number of equipment, training, and procedural requirements. MNPS navigation accuracy is equivalent to RNP 12.6. Dual long-range navigation systems (LRNS) and dual long-range communication systems are required. RVSM is mandatory in MNPS airspace. Aircraft that cannot meet dual LRNS requirements may be accommodated on special routings ("Blue Spruce" routes). Aircraft that cannot meet RVSM requirements are excluded from MNPS airspace unless operating on an ALTRV.

Mode 4—Transponder mode established to enable IFF (Identification Friend or Foe) functions between military aircraft or military aircraft and military ground stations. Uses classified codes, but operates on 1030 MHz and 1090 MHz, the same frequency pair used by the Air Traffic Control Radar Beacon System that civil air traffic uses for Mode 3A/C, Mode S, and TCAS. Mode 4 interrogation signals can suppress civil airborne transponders, therefore all Mode 4 operations in the NAS require prior authorization through the Air Force Frequency Management Agency (AFFMA): **affma.cc@pentagon.af.mil.**

Mode 5—Mode 5 is the performance upgrade to the current Mark XII IFF transponder system. Mode 5 provides new waveforms, new cryptography, more data, and improved radio frequency (RF) link margin to resolve many of the deficiencies identified with Mark XII. It will eventually replace the analog Mode 4 IFF system with digital IFF message formats which embed unprecedented combat relevant data.

Mode Select (Mode S)—The primary role of the Mode S transponder is to "selectively" respond to interrogations [as opposed to responding to *all* interrogations] from a ground sensor or TCAS to provide airborne data information including identification, equipage, and altitude.

Mountainous Terrain—Defined in 14 CFR §95.11 for CONUS, Alaska, Hawaii and Puerto Rico. PANS-OPS defines mountainous terrain as an area over which the changes of surface elevation exceed 900m (3,000 ft) within a distance of 18.5 km (10.0 NM), or 300 ft over a 1 NM distance. AFFSA believes the PANS OPS definition is too restrictive, so instead chose to use the definition from NATO's ATP 56(B) (Part 3, Chapter 4) that defines mountainous terrain as 500 ft surface elevation change over a ½ NM distance.

National Airspace System (NAS)—The NAS is the common network of *United States* (U.S.) airspace: air navigation facilities, equipment, services, airports or landing areas, aeronautical charts, information/services, rules, regulations, procedures, technical information, manpower and material. Included are system components shared jointly with the military. *United States*, in a geographical sense, means (1) the States, the District of Columbia, Puerto Rico, and the possessions, including the territorial waters (within 12 nautical miles) and (2) the airspace of those areas. **Note**: IAW ICAO Article 12 and Annex 2 and 11, the United States has accepted

responsibility for providing air traffic services within airspace overlying the high seas beyond 12 miles from the coast (also known as international airspace). These flight information regions of international airspace include: Oakland Oceanic, Anchorage Oceanic, Anchorage Continental, Anchorage Arctic, Miami Oceanic, Houston Oceanic and New York Oceanic. Aircrews should be aware that although they are being provided air traffic services by the FAA, they are operating in international airspace and ICAO SARPS, FLIP, and AFIs are applicable. (See paragraph 1.2)

Night—The time between the end of evening civil twilight and the beginning of morning civil twilight, as published in the Air Almanac, converted to local time.

Non-Standard Formation—Operations under any of the following conditions:

a. When the flight leader has requested and ATC has approved other than standard formation dimensions (≤1 NM lateral separation or ≤ 100 ft. vertical separation).
b. When operating within an authorized altitude reservation (ALTRV) or under the provisions of a letter of agreement.
c. When operations are conducted in airspace specifically designed for a special activity.

Obstacle Climb Gradient—FLIP products often provide different climb gradients, ATC and Obstacle. Only the obstacle climb gradient need be considered for OEI (if applicable) IFR departure planning. If no obstacle climb gradient is published, the aircraft must achieve a minimum climb gradient of 200 ft/NM (or as specified in paragraph 8.12.6.), OEI (if applicable), on all IFR departures. VFR departures must meet or exceed only any published gradient, OEI (if applicable), to an appropriate VFR cruise altitude or a MIA.

One Engine Inoperative—Multi-engine aircraft are typically certified as airworthy after demonstrating satisfactory control authority and climb capability after suffering the loss of one engine at the most critical moment on takeoff. USAF multi-engine aircraft must be operated so the aircraft is capable of experiencing such an event and still vertically clear all departure path obstacles (even at night or while IMC). Therefore, using civilian "see and avoid" rules is prohibited, unless specifically authorized by the MAJCOM/CC or as published in a Special MAJCOM Certification procedure.

Operations Supervisor—This term is officially defined in AFI 11-418. MAJCOMS for which that AFI does not apply (AFSOC/AMC/AFRC) should use an equivalent-level mission execution authority position as the operations supervisor.

OROCA—An off-route altitude which provides obstruction clearance with a 1,000 ft. buffer in non-mountainous terrain areas and a 2,000 ft. buffer in designated mountainous areas within the United States. This altitude may not provide signal coverage from ground-based navigational aids, air traffic control radar, or communications coverage.

ORTCA—An off-route altitude that provides terrain clearance with a 3,000 ft. buffer from terrain. This altitude may not provide signal coverage from ground-based navigational aids, air traffic control radar, or communications coverage. This altitude is used on en route charts covering those areas outside the United States.

Passenger—An individual on board the aircraft who is not on the aeronautical orders IAW AFI 11-401. For the purpose of this AFI, MEPs are considered passengers.

P Airfield—Civil airport wherein permit covers use by transient military aircraft.

PANS-OPS—ICAO documents detailing specific procedures for the safety of air traffic navigation agreed to by ICAO signatories.

Predictive RAIM (P-RAIM)—Using a standard set of algorithms, the availability of RAIM may be determined based on the satellite coverage expected at an aircraft's ETA. Due to terrain masking and other factors (e.g. satellite fails after RAIM prediction made), P-RAIM does not *guarantee* there will actually be sufficient satellite coverage on arrival. P-RAIM does not have to reside in the GPS receiver. It can be provided by FAA Flight Service (US NAS only) and other ground based RAIM algorithms.

Prevailing Visibility—The greatest horizontal visibility observed throughout at least half of the horizon circle. It need not be continuous throughout 180 consecutive degrees.

PRM Approach—An instrument landing system (ILS) approach conducted to parallel runways whose extended centerlines are separated by less than 4,300 ft. and the parallel runways have a PRM system that permits simultaneous independent ILS approaches. See: **http://www.faa.gov/education_research/training/prm**/.

Radar Required—This note on an instrument procedure indicates aircraft using the procedure will be monitored by ATC radar during a particular phase of flight or throughout the entire procedure, as applicable. Coordination with air traffic is necessary to ensure ATC capability and agreement to provide these services before adding the note to any instrument procedure. Note: Instrument procedures with radar requirements should be avoided whenever possible.

Receiver Autonomous Integrity Monitoring (RAIM)—RAIM is a two-step process used to assess the integrity of the GPS signals in the receiver. First, the GPS receiver determines if five or more working satellites are above the horizon and in the proper geometry to make RAIM available. Second, based upon the range solutions from those satellites it must determine if the RAIM algorithm indicates a potential navigation error. Flight in some civil airspace requires RAIM and FDE.

Reduced Lighting—External aircraft lighting that is less than that required by paragraph 5.20.

Reduced Same Runway Separation—Allows reduction of the normal ATC aircraft separation standards during landing/touch-and-go and restricted low approach operations to increase the airport/runway capacity.

Reduced Takeoff Runway Length Procedure—Method used by TERPS to reduce high IFR climb gradients by shortening the available takeoff runway, thus increasing the distance to the obstacle, spot elevation, or terrain feature. Normally printed in the IAP section as: *"…or alternatively, w/ standard takeoff minimums and a normal 200'/NM climb gradient, takeoff must occur no later than 2200' prior to departure end of runway."* Aircrews are NOT permitted to compute climb gradients in this manner.

Remotely Piloted Aircraft—The aircraft portion of an unmanned aircraft system. Normally, Group 4 and 5 unmanned aircraft are considered RPAs, and are flown by RPA Pilots.

Remote/Island Destination—In the absence of more restrictive MAJCOM guidance, pilots will consider a remote/island destination as any aerodrome that, due to its unique geographic location, offers no suitable alternate within two hours flying time.

Required Navigation Performance (RNP)—Prescribes the system performance necessary for operation in a specified airspace, based on its required accuracy (RNP value). The basic

accuracy requirement for RNP-X airspace is for the aircraft to remain within X nautical miles of the cleared position for 95% of the time in RNP airspace.

RNAV–Area Navigation—Rather than fly established airways from one ground NAVAID to another, RNAV permits suitably equipped aircraft to operate on any desired course between virtual waypoints.

Runway Environment—The runway environment consists of one or more of the following elements: The approach light system (except that the pilot may not descend below 100 ft. above the Touch Down Zone Elevation using the approach lights as a reference unless the red termination bars or the red side row bars are also visible and identifiable), the threshold, threshold markings or threshold lights, the runway end identifier lights, the touchdown zone lights, the runway or runway markings, the runway lights, the visual approach slope indicator. For more information, refer to AFMAN 11-217, Volume 1.

Runway Visual Range—The maximum distance in the direction of takeoff or landing at which the runway, or the specified lights or markers delineating it, can be seen from a position above a specified point on its center line at a height corresponding to the average eye-level of pilots at touch down. This value is normally determined by instruments located alongside and about 14 ft. above the runway and calibrated with reference to the high-intensity runway lights.

Reduced Vertical Separation Minimum (RVSM)—Reduces the vertical separation between properly equipped and certified aircraft to 1000 ft in special qualification airspace, normally between FL290-410 inclusive.

Self-Contained Approach—An arrival procedure, normally from a minimum IFR altitude, to a runway, using only navigational equipment on board the aircraft (GPS, radar, or other sensors).

Single Medium Display—A single medium display is a Head-Up Display (HUD), Head-Down Display (HDD), or Helmet-Mounted Display (HMD) presenting flight instrumentation on a single display such as a HUD combiner, a “glass” multifunction display, or a helmet visor.

Special Departure Procedure—A procedure designed to allow a safe takeoff for multi-engine aircraft whose OEI climb rate would otherwise not meet the TERPS minimum climb gradient requirement. The runway and all known obstacles along a chosen takeoff path are analyzed and compared to the aircraft OEI takeoff and climb performance. The procedure provides a maximum allowable takeoff gross weight for given environmental conditions that ensure vertical and lateral obstacle clearance safety margins. The minimum allowable gross and net climb gradients for SDPs are typically lower than TERPS standards. Unlike TERPS, the takeoff path is selected to minimize obstacle clearance requirements and only those obstacles within the lateral limits of the chosen flight path are considered. Pilots should understand that most SDPs allow exactly zero feet of clearance between their aircraft and the offending obstacles, and provide no safety factor for pilot technique, less than 100% engine thrust, etc. The term SDP encompasses both the use of the textual obstacle data table information and the graphical departure procedures.

Standard Formation—A formation in which no participating aircraft is more than 1 NM horizontally and 100 feet vertically from the lead aircraft.

Stopover Flight—A flight where intermediate stops are planned en route to a final destination.

Tactical Operations—Flight operations consisting of maneuvers that are unique to the employment of air power to: gain and maintain air superiority, prevent freedom of operation for the enemy in the objective area, and to assist naval and ground forces in the attainment of their objectives. Tactical operations must be specifically MAJCOM (or COCOM) defined, approved and implemented. These operations are normally practiced only on training or exercise missions, in a form of special use airspace or on designated training ranges or routes.

Terrain Alert Warning System (TAWS)—Generic term for any on-board system taking inputs from terrain databases, radar altimeter, aircraft position sensors, etc. to activate a Ground Proximity Warning System or Automatic Ground Collision Avoidance System (AGCAS). Developed to help prevent Controlled Flight Into Terrain (CFIT) mishaps.

Traffic Collision Avoidance System (TCAS)—An airborne system that functions independently of the ground-based radar to provide collision avoidance protection between suitably equipped aircraft. TCAS I provides proximity warnings to pilots in the form of traffic advisories. TCAS II provides both traffic advisories and recommended *vertical* escape maneuvers, known as resolution advisories.

Terminal Area Operations—Terminal area operations are normally those flight phases conducted within 30 NM of an airfield of intended departure or landing, or those operations on charted Standard Instrument Departures, on charted Standard Terminal Arrivals (STARs), or other flight operations between the last enroute fix/waypoint and an initial approach fix/waypoint.

Unmanned Aircraft System—A control station, one or more unmanned aircraft, control and payload datalinks, and mission payloads, designed or modified not to carry a human pilot and operated through remote or self-contained autonomous control. A UAS must meet all applicable requirements of a manned aircraft, unless specifically exempted. The term RPA is specific to the Remotely Piloted Aircraft (the flying portion of the UAS).

Unmonitored Navigational Aid—Most NAVAIDs have internal monitoring systems that provide automatic shutdown or notification when a malfunction occurs. Unmonitored NAVAIDs lack the ability to immediately notify ATC when a malfunction occurs. The pilot may still use the NAVAID for all types of navigation, including instrument approaches, but must monitor the NAVAID for a loss of identification since no prior warning of operation may be available from ATC.

Visual Meteorological Conditions—Meteorological conditions in which visual flight rules may be used; expressed in terms of visibility, ceiling height, and aircraft clearance from clouds along the path of flight. When these criteria do not exist, instrument meteorological conditions prevail and instrument flight rules must be followed.

VFR-on-Top—ATC authorization for an IFR aircraft to operate in VFR conditions at any appropriate VFR altitude (as specified in FLIP and as restricted by ATC). A pilot receiving this authorization must comply with the VFR visibility, distance from cloud criteria, and the minimum IFR altitudes specified in Chapters 7 and 8.

VFR-over-the-Top—VFR flight maneuver during which an aircraft on a VFR flight plan climbs over a ceiling in VMC, maintains VMC above the clouds, then descends in VMC and lands.

Vertical Navigation (VNAV)—A term that describes using GPS lateral and vertical guidance to define the minimums for a GPS non-precision or precision approach.

Wide Area Augmentation System (WAAS)—The U.S. implementation of Space Based Augmentation System (SBAS), a satellite navigation system consisting of the equipment and software which augments the GPS Standard Positioning Service (SPS).

World Geodetic Survey—1984 (WGS-84)—Developed by the U.S. for world mapping, WGS 84 is an earth fixed global reference frame. It is the ICAO standard.

Attachment 1 (SPANGDAHLEMAB)

GLOSSARY OF REFERENCE AND SUPPORTING INFORMATION

References

AFI 11-202V3_USAFESUP_I, *General Flight Rules,* 19 March 2012

AFI 21-101_COMBATAIRFORCESUP(USAFE)_I, *Aerospace Equipment Maintenance Management,* 28 December 2010

AFI 21-101_COMBATAIRFORCESUP_SPANGDAHLEMABSUP, *Aerospace Equipment Maintenance Management,* 04 June 2012

SPANGDAHLEMABI 13-201, *Airfield Operations*, IC 1 28 October 2011

T.O. 1F-16CM-6CF-1, *Acceptance and Functional Check Flight Procedures,* 15 Apr 2007

T.O. 1A-10C-6CF-1, *Acceptance and Functional Check Flight Manual,* 02 April 2012

Abbreviations and Acronyms

BMC—Basic Mission Capable

CC – Commander

CMR—Combat Mission Ready

FCF – Functional Check Flight

FW – Fighter Wing

MXG—Maintenance Group

MXQ—Maintenance Group Quality Assurance

OCF – Operational Check Flight

OG—Operations Group

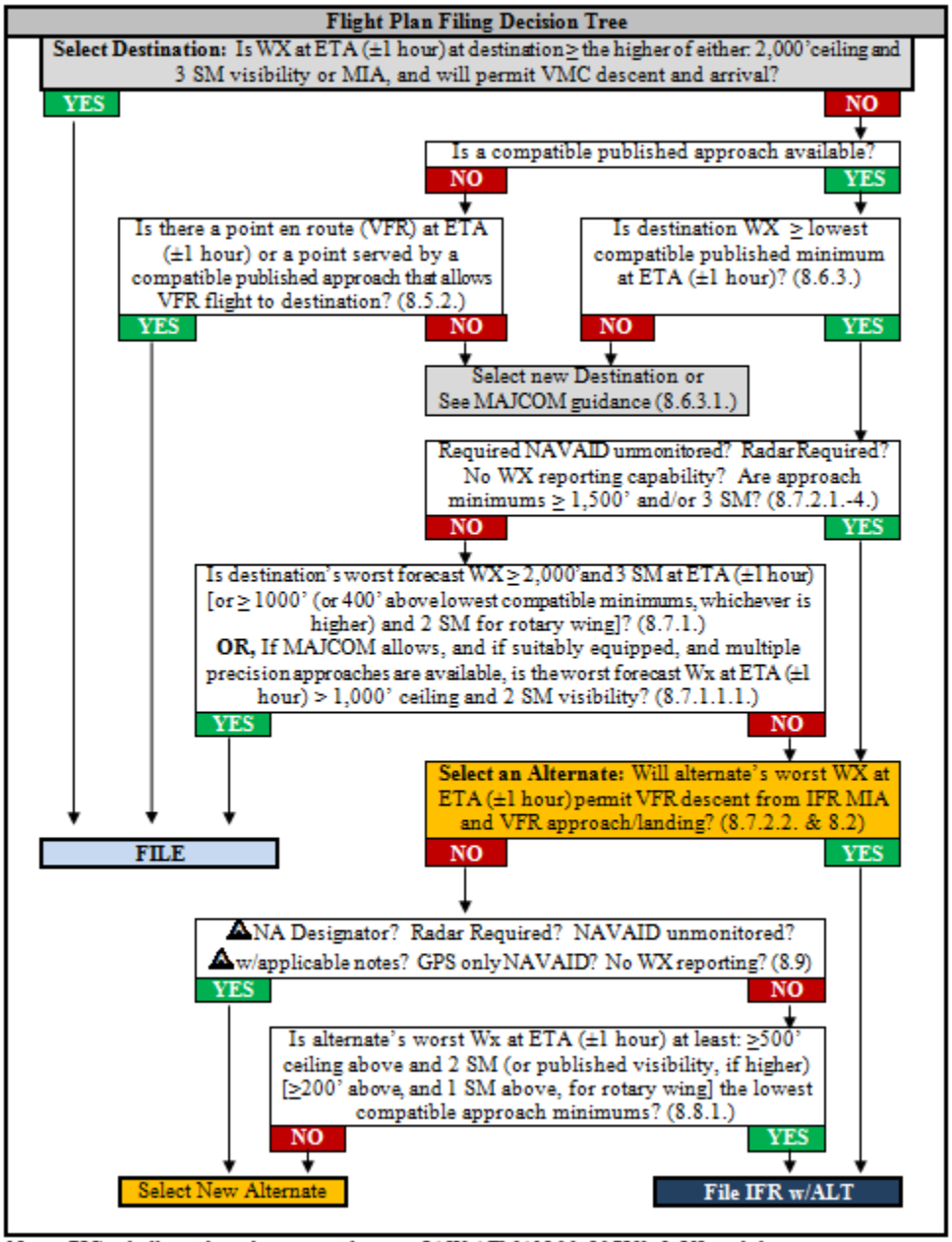
OGV—Operations Group Standardization and Evaluation

OPR—Office of Primary Responsibility

PEX – Patriot Excalibur

ATTACHMENT 2

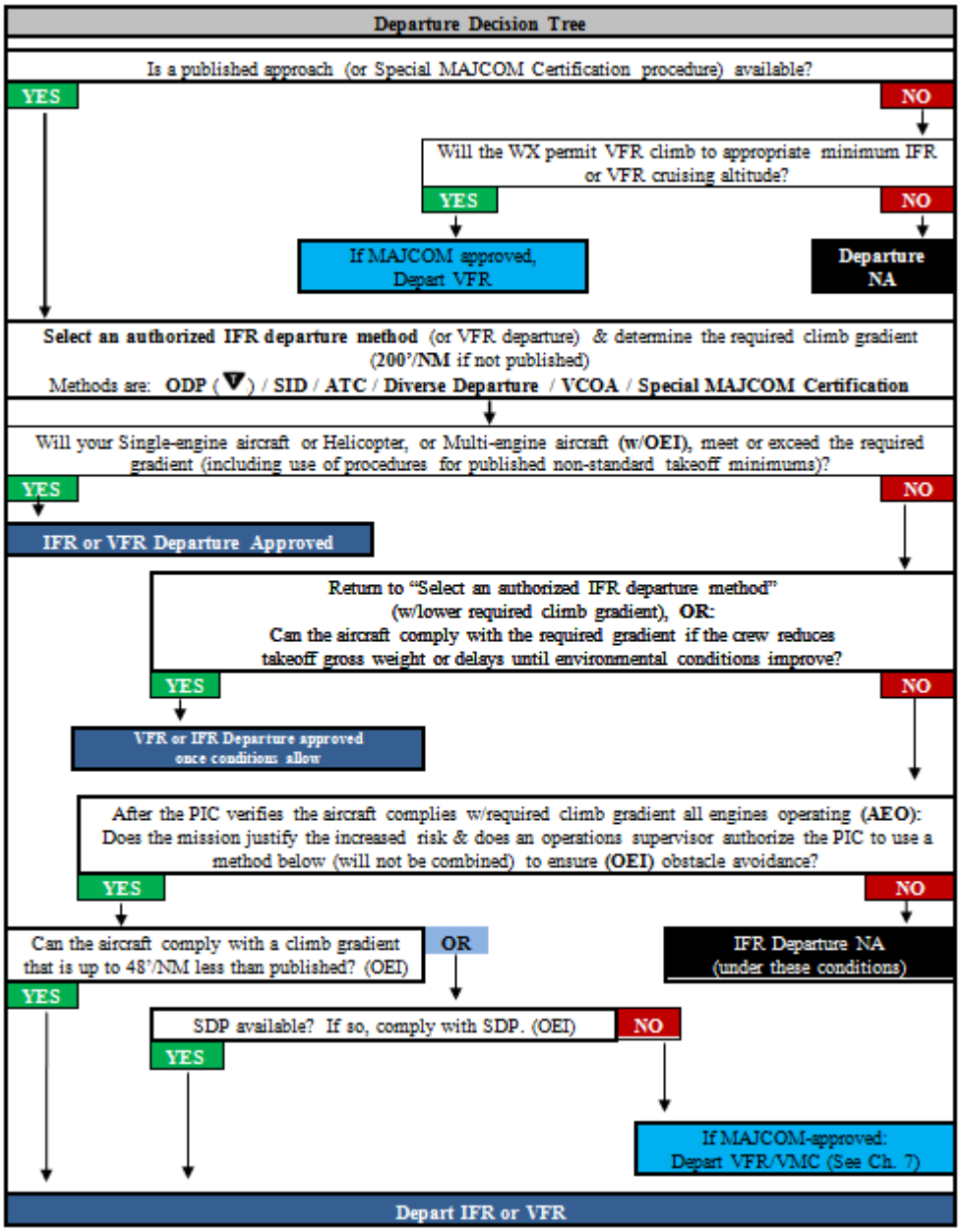
FLIGHT PLAN FILING DECISION TREE



Note: PICs shall conduct departure planning IAW AFMAN 11-217V1 & V2 and this instruction.

Attachment 3

DEPARTURE DECISION TREE



Note: PICs shall conduct departure planning IAW AFMAN 11-217V1 & V2 and this instruction.

Attachment 4 (Added-USAFE)

PILOT WEATHER CATEGORY (PWC) DETERMINATION AND USE

A4.1. (Added) Use the following guidance to assign PWCs for use in determining appropriate instrument approach minimums.

A4.2. (Added) SQ/CCs will assign a PWC according to the individual's assessed proficiency and capability, but in no case lower than the criteria specified in Table A4 1. (Added). Annotate PWCs on the unit Letter of Xs (see AFI 11-202V2_USAFESUP_I).

A4.2.1. **(Added)** Non-USAFE aircrew who fly USAFE aircraft on a temporary basis will use the PWCs of their parent MAJCOM or as annotated on cross command Letter of Agreement (LOA). Completion of local TI academics is a prerequisite to use any other MAJCOM PWCs in the USAFE AOR less than 700/2.

A4.2.2. **(Added)** During the hours of daylight (including civil twilight) at the home airfield, OG/CCs may authorize all MR pilots to use published approach minimums rather than PWCs. This authorization may not be delegated, but may be published in local guidance as a blanket authorization.

A4.2.3. **(Added) F-15/F-16**. If an IP occupies the rear cockpit, the IP's PWC may be used.

A4.2.4. **(Added)** If non-current for a precision approach (see AFI 11-2MDSV1 and associated RAP Tasking Message), increase PWC by one category until currency is regained.

A4.2.5. **(Added)** For formation approaches use the most restrictive PWC in the formation, but in no case less than AFI 11-2MDSV3 weather requirements.

A4.2.6. **(Added)** For straight-in approaches, calculate DH/MDA at each PWC by referencing the following elevations in order of priority: touch-down-zone elevation (TDZE), runway threshold elevation (THRE), field elevation.

A4.2.7. **(Added)** For circling approaches, calculate MDA by referencing the airport/airfield elevation.

Table A4.1. (Added) USAFE Pilot Weather Categories (Fighter/Attack Only).

CAT	MINIMUMS (all visibility is SM except as noted)	CRITERIA
A	Published approach minimums	150 pilot hours in MDS and 1,000 hours total.* Demonstrated proficiency at Cat B.
B	Published approach minimums, or 300/1 (1.6K, 1600M), whichever is higher	100 pilot hours in MDS and 750 hours total*, or 150 pilot hours in MDS and 350 hours total.* Demonstrated proficiency at Cat C.
C	Published approach minimums, or 500/1.5 (2.4KM, 2400M), whichever is higher	LAO (TI academics & flight) complete and cleared unsupervised flight in appropriate training documentation.**

D	Published approach minimums, or 700/2 (3.2KM, 3200M), whichever is higher	Current INSTM qualification in MDS
E	Published approach minimums, or 1500/3 (5.0KM, 5000M), whichever is higher	Pilots that have not completed or have an expired INSTM qualification in MDS
NOTE: “Hours” are actual flight hours. MTC time may not be used. * When calculating total time, UPT time may be included, but do not include non-pilot (i.e. “other”) flight time. ** “Cleared unsupervised in appropriate training documentation” applies only to pilots not previously Cat C or other MAJCOM equivalent (i.e., ACC Cat 3).		

Attachment 5 (Added-USAFE)

CONTROL OF FIGHTER AIRCRAFT FOR OFF STATION SORTIES/DIVERTS

A5.1. (Added-USAFE) Airfield Criteria:

A5.1.1. **(Added-USAFE)** Unless the planned base is covered by STANAG 3113, *Provision of Support to Visiting Personnel, Aircraft, and Vehicles*, for contract fuel, the bill must be paid from unit operations and maintenance funds.

A5.1.2. **(Added-USAFE)** Usable runway length and arresting systems for USAFE and USAFE-gained fighters are IAW **Table A5.1 (Added)**. Waiver authority is the OG/CC with notification to "USAFE/A3TV (Workflow)." OGV will archive waivers for at least one year.

Table A5.1. (Added-USAFE) Required Runway Length and Arresting Gear

Aircraft	Landing Surface (Note 1)	Arresting Gear (Notes 2,3)
A-10	5000'	None
F-15C	7000'	BAK 9/12/13 or combination BAK 14
F-15E	7500'	BAK 9/12/13 or combination BAK 14
F-16	7000'	BAK 6/9/12/13 or combination BAK 14
NOTE 1: Landing surface is 125 percent of takeoff/landing distance or stated runway length, whichever is greater NOTE 2: HN-equivalent arresting gear is acceptable if listed in the FIH NOTE 3: Aircrew must verify the capability/compatibility of arresting systems not listed in the FIH by contacting HN airfield management or other HN contacts (to include the Defense Attaché if direct HN contact is not possible) prior to arrival.		

A5.1.3. **(Added-USAFE)** Security provisions compatible with the aircraft or equipment classification must be available at the airfields. Aircrew will coordinate with their wing security office for the most updated published guidance. The following references are provided for aircrew awareness and should be a part of every unit's off-station aircraft security procedures: FCG, AFI 31-101, AFI 31-401, and associated USAFESUPs.

A5.2. (Added-USAFE) Responsibilities:

A5.2.1. **(Added-USAFE)** USAFE bases will establish command post procedures for flight following during off-station training flights. Parent unit command posts will monitor unit aircraft on all flight segments. The base of departure will pass the following information to the scheduled destination base: call sign, departure time, estimated time of arrival, and alternate airfields. When departing other than home station, aircrew will place the following statement in the remarks section of DD 1801, *DoD International Flight Plan*: "RMK/PASS

ATD-ETA TO XXXX BASE OPERATIONS" (XXXX being ICAO identifier for parent unit airfield).

A5.2.2. **(Added-USAFE)** Units will ensure the responsible individual at their parent unit (e.g. Ops Sup, SOF, OG/CC, etc.) is immediately notified when destination base weather deteriorates.

A5.2.3. **(Added-USAFE)** Aircrew will contact their parent unit command post after completing each day's flights with the flight times and aircraft status. The PIC will ensure the installation command post (if available) has the PICs lodging location and telephone number.

A5.2.4. **(Added-USAFE)** PICs will inform parent units of changes to itinerary prior to occurrence, if practical. If unable, report itinerary changes to parent command post as soon as practical upon landing at the next destination.

A5.2.5. **(Added-USAFE)** Units will include cross-country checklists in in-flight guides. Checklists should include pre- and post-flight procedures, with emphasis on aircrew-to-ground crew communication. Aircrew supervision of servicing operations at non-USAFE bases is required. At bases where arresting systems are listed as "available upon request," aircrew will verify suitable departure end arresting gear is rigged prior to takeoff.

A5.2.6. **(Added-USAFE)** Sustained deployed operations such as contingency operations or weapons training deployments operate under the control of contingency operation Special Instructions (SPINS) and host unit procedures.

Attachment 6 (Added-USAFE)

USAFE ALERT GUIDANCE

A6.1. (Added-USAFE) Alert Duty. Unless specified in AFI 11-2MDSV3, units will use the following alert procedures:

A6.2. (USAFE) Alert scheduling. Do not schedule an aircrew member for more than 7 days of continuous alert duty. Following a 7-day tour, an aircrew must have a minimum of 24 hours rest time away from the alert site before beginning a subsequent alert tour. If aircrew swap-out is delayed following a 7-day tour, an aircrew may extend for one 24-hour period with sector/ Director of Operations (DO) approval.

A6.2.1. **(Added-USAFE)** Qualified pilots may be placed on alert regardless of their PWC. If observed or forecast weather is below PWC criteria, pilots will be placed on mandatory alert status.

A6.2.1.1. **(Added-USAFE)** "Mandatory alert status" is a status whereby the aircrew will only scramble for a launch if given a Mandatory Scramble Order (MSO).

A6.2.1.2. **(Added-USAFE)** MSOs will only be directed for real world events requiring immediate response. In no case will an aircrew launch if they consider conditions unsafe for flight.

A6.2.2. **(Added-USAFE)** An alert aircrew or alert site commander may put the site on restricted or "mandatory alert status" at any time due to crew rest considerations (actual /planned tasking, fatigue, or other factors).

A6.3. (Added-USAFE) Flight Duty Period (FDP).

A6.3.1. **(Added-USAFE)** Initial FDP is IAW **Chapter 9** guidance and begins with the first squadron duty or alert changeover briefing, whichever occurs first. After the first crew rest period while on alert, subsequent FDPs begin with any official tasking and will not exceed 12 hours.

A6.3.2. **(Added-USAFE)** The FDP for alert aircrews traveling to the alert sight via commercial air begins one hour prior to the scheduled commercial air takeoff. For alert aircrews traveling via military air, the FDP begins upon arrival at the squadron for mission preparation/briefing.

A6.3.3. **(Added-USAFE)** Planned taskings (e.g. training sorties, aircraft swaps, etc.) will not exceed the FDP. If an actual alert tasking results in an aircrew member exceeding the FDP, replace or put the aircrew on "mandatory alert status" until crew rest is attained.

A6.3.4. **(Added-USAFE)** An aircrew member may fly up to three sorties during an FDP. Alert scrambles do not have a day/night combination limit. Upon reaching the sortie limit, replace the aircrew member or put on "mandatory alert status" until crew rest is attained.

A6.3.5. **(Added-USAFE)** An aircrew member may perform non-alert duty after being on alert if **Chapter 9** crew rest requirements are met. The post-alert duty day begins at changeover, scramble activity (including battle stations or a "suit-up" call), or other official tasking, whichever occurs first.

A6.4. (Added-USAFE) Crew Rest

A6.4.1. **(Added-USAFE)** Upon assuming alert duties, alert aircrew enter crew rest. For same day aircrew swap-outs at the end of the aircrew 12-hour crew duty day, the unit will go on "mandatory alert status" until aircrew have had the opportunity for 8 hours of uninterrupted rest. After required crew rest is obtained aircrews may begin a FDP IAW **A6.3 (Added)**.

A6.4.2. **(Added-USAFE) Normal sleeping hours**. Except for actual alert tasking, do not disturb alert crews from 2200-0600L. For any planned missions (actual alert or training) that start during, or extend into the period 2200-0600L, make all possible attempts to notify aircrew members in enough time for mission preparation and crew rest. Any tasking or duty accomplished by the aircrew during this period will be considered official duties and will impact crew rest and FDP determinations. This includes those duties in paragraph **A6.4.3.2 (Added)** that do not normally affect crew rest and FDP (e.g. obtaining weather/ NOTAMS, power-on checks, aircraft acceptance).

A6.4.3. **(Added-USAFE)** Once meeting **Chapter 9** crew rest requirements, aircrew may start a new alert FDP. The crew rest period for alert is defined as the period when official alert duties are not being performed.

A6.4.3.1. **(Added-USAFE)** Official alert duties are defined as alert scrambles to include battle stations, runway alert, hot cocking, or a suit-up call.

A6.4.3.2. **(Added-USAFE)** Official alert duties do not include checking weather, NOTAMS, Power-on checks (i.e. those checks accomplished without engine start, or aircraft acceptance), and walk around and forms check if performed during the hours of 0600-2200L.

A6.4.4. **(Added-USAFE) Restricted status**. If the air defense sector and the unit determine that the aircrew needs to be put into crew rest due to probable future tasking, they may place the unit on restricted status.

A6.4.4.1. **(Added-USAFE)** When on restricted status, alert crews will be in crew rest.

A6.4.4.2. **(Added-USAFE)** Restricted status differs from "mandatory alert status" in that it does not require up-channel reporting or prevent a HHQ tasking.

A6.4.4.3. **(Added-USAFE) Squadron Supervision**. Squadron supervisors recalled to perform supervisory/ SOF duties during an actual alert scramble do not need to meet crew rest requirements for that duty. However, they must obtain required crew rest before returning to duty if scheduled to fly.

Attachment 7 (Added-USAFE)

FUNCTIONAL CHECK FLIGHT (FCF)/OPERATIONAL CHECK FLIGHT (OCF) GUIDANCE

A7.1. (Added-USAFE) General. Guidance in this attachment is in addition to AFI 21-101_COMBATAIRFORCESUP_I, Chap 8, and TO 1-1-300. In addition to the aircraft listed in AFI 21-101 (C-130, C-135), units with OSA/VIP/SAM aircraft rarely perform FCFs. When an FCF is needed the OG/CC issues temporary written certification designating the most highly qualified crews available (also reference AFI 11-2MDS guidance on FCFs).

A7.2. (USAFE) Responsibilities: :

A7.2.1. **(Added-USAFE) OG/CC will:**

A7.2.1.1. **(Added-USAFE)** Appoint an FCF program manager.

A7.2.1.2. **(Added-USAFE)** Select only highly qualified individuals as FCF flight crews.

A7.2.2. **(Added-USAFE) FCF OIC will** (at OG/CC discretion, any of these items may be delegated to a squadron-level FCF OIC):

A7.2.2.1. **(Added-USAFE)** Ensures a standard FCF profile and associated procedures are established for each type of assigned aircraft IAW TO 1-1-300.

A7.2.2.2. **(Added-USAFE)** Ensure the FCF certification and training program consists of: aircraft review of applicable FCF publications, local FCF procedures for the type of aircraft being flown, applicable -6 TO worksheets, and procedures for aircrew training devices (ATD) if applicable.

A7.2.2.3. **(Added-USAFE)** Develop a written examination of no less than 25 questions based on applicable FCF publications.

A7.2.2.3.1. **(Added-USAFE)** Passing grade is 85% with any missed questions corrected at the time of grading.

A7.2.2.3.2. **(Added-USAFE)** The exam will be administered and filed (the PEX Stan/Eval module may be used) by OGV. The exam will be reviewed and rewritten annually.

A7.2.2.3.3. **(Added-SPANGDAHLEMAB)** All initial training events for certification will be documented on the pilot's certification letter and all currency events will be documented and tracked via Patriot Excalibur (PEX).

A7.2.2.4. **(Added-USAFE)** Review FCF results quarterly for trends, identifies deficient areas, and forwards recommendations for improvements to applicable OG leadership for review or action.

A7.3. (Added-USAFE) FCF Aircrew Management. Reference AFI 11-2MDSV1 certification and currency guidance. If no guidance exists, the following will be used.

A7.3.1. **(Added-USAFE) FCF Aircrew Designation**. Unless otherwise stipulated in AFI 11-2MDS volumes, use the following minimum hourly criteria, including UPT time for pilots, to nominate aircrew for FCF certification:

A7.3.1.1. **(Added-USAFE)** 750 hours total and 200 hours PAA time.

A7.3.1.2. **(Added-USAFE)** 650 hours total and 300 hours PAA time.

A7.3.1.3. **(Added-USAFE)** 575 hours total and 400 hours PAA time.

A7.3.1.4. **(Added-SPANGDAHLEMAB)** All 52 OG FCF pilots will accomplish, at a minimum, initial ground training, closed book written examination, FCF simulator, and a FCF checkout flight. Exception: Those individuals who were previously FCF certified in the same Mission Data System can accomplish an abbreviated upgrade program with 52 OG/CC approval.

A7.3.1.5. **(Added-SPANGDAHLEMAB)** Initial ground training will consist of the following:

A7.3.1.5.1. **(Added-SPANGDAHLEMAB)** A comprehensive review of procedures in this AFI, AFI 21-101_COMBATAIRFORCESUP (USAFE)_I, *Aerospace Equipment Maintenance Management,* Technical Order (T.O.) 1-1-300, *Acceptance/Functional Check Flight and Maintenance OPR Checks*, T.O. 00-20-1, *Aerospace Equipment Maintenance Inspection, Documentation, Policies, and Procedures*, Dash 6 and TOs, Dash 6 worksheets and local FCF policies and procedures for type of aircraft being flown.

A7.3.1.5.2. **(Added-SPANGDAHLEMAB)** All FCF pilots will adequately prepare for training and performing actual FCF flights by reviewing the FCF information file and reviewing Air Force Technical Order Form (AFTO) 781, *Mission Data,* associated with the FCF aircraft.

A7.3.1.6. **(Added-SPANGDAHLEMAB)** Interview with 52 OG/OGV FCF Program Manager.

A7.3.1.7. **(Added-SPANGDAHLEMAB)** FCF Situational Emergency Procedures Training Simulator.

A7.3.1.8. **(Added-SPANGDAHLEMAB)** Initial FCF.

A7.3.1.8.1. **(Added-SPANGDAHLEMAB)** Initial checkout for pilots will include a complete FCF profile.

A7.3.1.8.2. **(Added-SPANGDAHLEMAB)** Fly 2 sorties. The first flight will be in the rear cockpit of a D-Model with a FCF certified pilot in the front cockpit. The second flight will be in a D-model with a FCF-certified pilot in the rear cockpit. Upgrade flights will not be in aircraft requiring an FCF or operational check.

A7.3.1.8.2.1. **(Added-SPANGDAHLEMAB)** During the winter flying months (Oct-Apr), the first sortie may be substituted with an additional simulator with 52 OG/CC approval. This will be annotated on the pilot's certification letter.

A7.3.1.8.3. **(Added-SPANGDAHLEMAB)** FCF pilots will fly their FCF upgrade sortie with a qualified FCF pilot in a chase aircraft. Upgrade flights will not be in aircraft requiring an FCF or operational check.

A7.3.1.9. **(Added-SPANGDAHLEMAB)** Upgrading Pilots will document upgrade training on the 52 OG certification letter and maintain the certification letter in their gradebook.

A7.3.1.10. **(Added-SPANGDAHLEMAB)** Upon completion of training, squadrons will designate FCF certified crewmembers on the Letter of X's, and maintain a record of all testing in PEX.

A7.3.2. **(Added-USAFE) Currency.** In addition to performing an actual FCF flight, FCF currency may be updated by accomplishing an FCF profile in an MTC, UTD, or equivalent, but aircrew must be under the supervision of an FCF-certified aircrew (either in the sim or on the console). FCF currency may also be updated by flying an FCF training profile with a certified FCF aircrew either as chase or in the rear cockpit (if equipped).

A7.3.2.1. **(Added-USAFE)** FCF pilot currency for single seat aircraft is 90 days.

A7.3.2.2. **(Added-USAFE)** FCF pilots of single-engine aircraft must maintain a 30-day simulated flame-out (SFO) landing currency. Currency shall be updated/regained IAW AFI 11-2MDSV1 (i.e. updating currency may be done in an MTC, but regaining lost currency must be done in-flight).

A7.3.2.3. **(Added-USAFE)** Non-current FCF aircrew will not perform actual FCF flights until currency is achieved. To regain currency, FCF aircrew must accomplish either:

A7.3.2.3.1. **(Added-USAFE)** An FCF profile in an MTC, UTD, or equivalent under the supervision of an FCF-certified aircrew (either in the sim or on the console).

A7.3.2.3.2. **(Added-USAFE)** Flying an FCF training profile with a certified FCF aircrew either as chase or in the rear cockpit (if equipped)

A7.3.2.4. **(Added-USAFE)** If an FCF aircrew remains non-current for more than six months, an FCF certification program will be reaccomplished. Waiver authority is the OG/CC, or designated representative.

A7.3.2.5. **(Added-USAFE)** At OG/CC discretion, currently active-duty but previously-certified FCF aircrew may be designated as FCF sim supervisors for the purposes of updating/regaining currency. Document designations via official memo and archive with FCF OIC program information.

A7.3.2.6. **(Added-SPANGDAHLEMAB)** The 52 OG/CC may certify highly qualified, previously FCF certified simulator instructors as qualified to perform FCF pilot duties for the purposes of FCF ground, to include simulator, instruction and training. The FCF program manager will keep a letter of qualification on file.

A7.3.3. **(Added-USAFE)** If an FCF is needed during a TDY and an FCF crew is not available, the SQ/CC or designated representative, may issue temporary certification, designating the most highly qualified aircrew available to perform FCF duties. The certification will terminate upon completion of the TDY.

A7.3.4. **(Added-SPANGDAHLEMAB)** Transient Aircraft FCF procedures will be in IAW AFI 21-101_COMBATAIRFORCESUP_SPANGDAHLEMABSUP.

A7.4. (Added-USAFE) Flight Requirements.

A7.4.1. **(Added-USAFE)** Do not shut down engines while airborne unless the requirement is explicitly identified in the -6 and -1 TOs.

A7.4.2. **(Added-USAFE)** Fly FCFs under IFR to the maximum extent practical. If required to perform an FCF under VFR, then radar flight following (or HN equivalent) will be used to maximum extent practical.

A7.4.3. **(Added-USAFE)** A supervisor of flying (SOF) will be in the control tower for all fighter aircraft FCFs conducted at home station or deployed locations (i.e. SOF not required for FCFs conducted at European depot locations).

A7.4.4. **(Added-SPANGDAHLEMAB)** F-16 FCFs will be flown with a completely clean aircraft to the max extent possible. Additional, FCF configuration requirements and fuel load requirements will be in IAW AFI 21-101_COMBATAIRFORCESUP_SPANGDAHLEMABSUP.

A7.4.5. **(Added-SPANGDAHLEMAB)** Ground procedures will be IAW aircraft specific Dash 1 and Dash 6 T.O.s. Additionally, FCF pilots will review 52 OG/OGV approved, 52d Maintenance Group (52 MXG) FCF and High-Speed taxi checklists maintained by 52 MXG Quality Assurance (52 MXG/MXQ).

A7.4.6. **(Added-SPANGDAHLEMAB)** Non-qualified FCF pilots will not fly as crewmembers during actual FCFs without a 52 OG/CC waiver.

A7.4.7. **(Added-SPANGDAHLEMAB)** 52 OG/CC approval is required if FCFs are to be conducted with weather below:

A7.4.7.1. **(Added-SPANGDAHLEMAB)** 2,000 ft ceiling and 5,000 m visibility.

A7.4.7.2. **(Added-SPANGDAHLEMAB)** 8,000 ft ceiling and 8,000 m visibility no lower than 4,000 ft ceiling and 5,000 m visibility.

A7.4.8. **(Added-SPANGDAHLEMAB)** FCFs will only be accomplished between the hours of sunrise and sunset.

A7.4.9. **(Added-SPANGDAHLEMAB)** OCF flights will be flown by an experienced Combat Mission Ready/Basic Mission Capable (CMR/BMC) pilot. OCF flights may be flown in conjunction with other missions and varied weather conditions as long as the Ops Sup and pilot in command determine that the issue requiring the OCF flight does not interfere with safe operations.

A7.4.10. **(Added-SPANGDAHLEMAB)** High-Speed Taxi Procedures.

A7.4.10.1. **(Added-SPANGDAHLEMAB)** In the event of a check-out that requires the aircraft to run at higher than normal taxi speeds but not fly, only experienced CMR/BMC pilots will be used and the checkout will be accomplished on a runway.

A7.4.10.1.1. **(Added-SPANGDAHLEMAB)** Higher than normal taxi speed is defined as operations above 30 knots straight ahead, 10 knots turning, or other technical order guidance, whichever is slower.

A7.4.10.2. **(Added-SPANGDAHLEMAB)** Pilots will utilize 52 OG/OGV approved, 52 MXG/MXQ high speed taxi checklists.

Attachment 8 (Added-USAFE)

OPERATIONS NEAR VOLCANIC ACTIVITY

A8.1. (Added-USAFE) The guidance in this attachment is derived from experiences during recent volcanic eruptions within the USAFE AOR (e.g. Iceland, Sicily) as well as reference to UK Civil Aviation Administration (CAA), EUROCONTROL, and ICAO documentation. Reference the following documents/links for more information (if a link does not work, perform an internet search of the link title).

A8.1.1. **(Added-USAFE)** London Volcanic Ash Advisory Center (VAAC): **http://www.metoffice.gov.uk/aviation/vaac/**

A8.1.2. **(Added-USAFE)** Toulouse VAAC: **http://www.meteo.fr/vaac/evaa.html**

A8.1.3. **(Added-USAFE)** UK CAA: Impacts of Volcanic Ash on Aviation Safety: **http://www.caa.co.uk/default.aspx?catid=2011&pagetype=90**

A8.1.4. **(Added-USAFE)** EUROCONTROL document library:

http://www.skybrary.aero/index.php/Volcanic_Ash

A8.2. (Added-USAFE) Definitions. Ash concentration levels of "low", "medium", and "high" are IAW the definitions in the ICAO EUR/NAT Volcanic Ash Contingnecy Plan (ICAO EUR Doc 19 and NAT Doc 06 Part II, December 2010 edition), found at the following link: **http://www.paris.icao.int/documents_open/files.php?subcategory_id=63.**

A8.2.1. **(Added-USAFE) Volcanic Activity**. Both the volcano itself (i.e. the volcanic eruption) and any noticeable indications of volcanic ash (e.g. visible ash, acrid odors, etc.) as well as any actual or forecast areas of "medium" or "high" ash contamination.

A8.2.2. **(Added-USAFE) Volcanic Activity Buffer Zone (VABZ)**. The zone outside of volcanic activity where ash is forecast, but may not be seen with the naked eye. Additionally, the effects of volcanic ash will likely not be immediately noticeable (if at all). This zone implies an increased level of ORM, vigilance to aircraft performance during flight, and post flight reporting requirements.

A8.2.2.1. **(Added-USAFE)** The VABZ includes any actual or forecast areas of "low" ash contamination.

A8.2.2.2. **(Added-USAFE) NOTE**. A VAAC may also produce a "Volcanic Ash Advisory Graphic" with lines depicting ash concentrations at various altitudes (see **Figure A8.1 (Added)** ***Sample London VAAC Ash Advisory Graphic*** **and Figure A8.2 (Added)** ***Sample Toulouse VAAC Ash Addvisory Graphic***). The lines depicted on this chart are rough equivalents of the VABZ boundary (areas of medium/high ash concentration are not depicted), but DO NOT depict the boundary of "Volcanic Activity".

A8.2.3. **(Added-USAFE) Terminal Area.** For the purpose of this guidance, the *Terminal Area* is defined as within the boundaries, both laterally and vertically, of Class B, C, or D airspace depending on the class of field where operations are being conducted.

Figure A8.1. (Added) ***Sample London VAAC Ash Advisory Graphic***

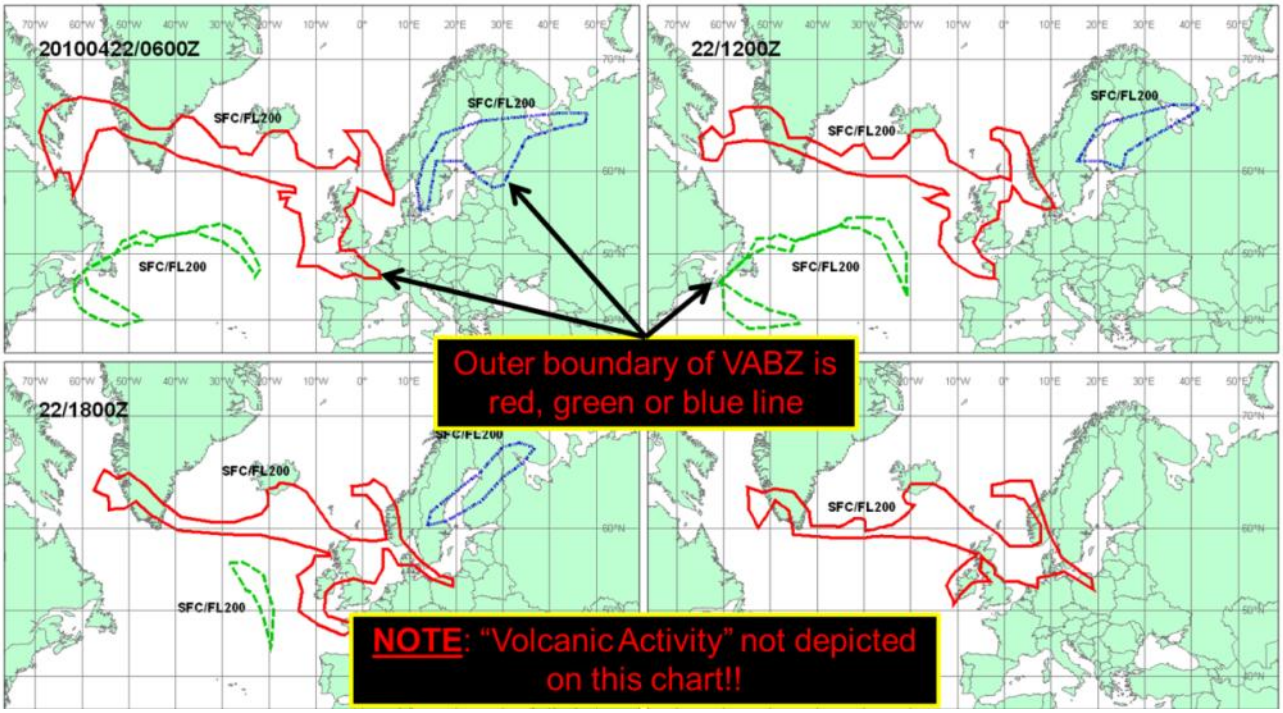
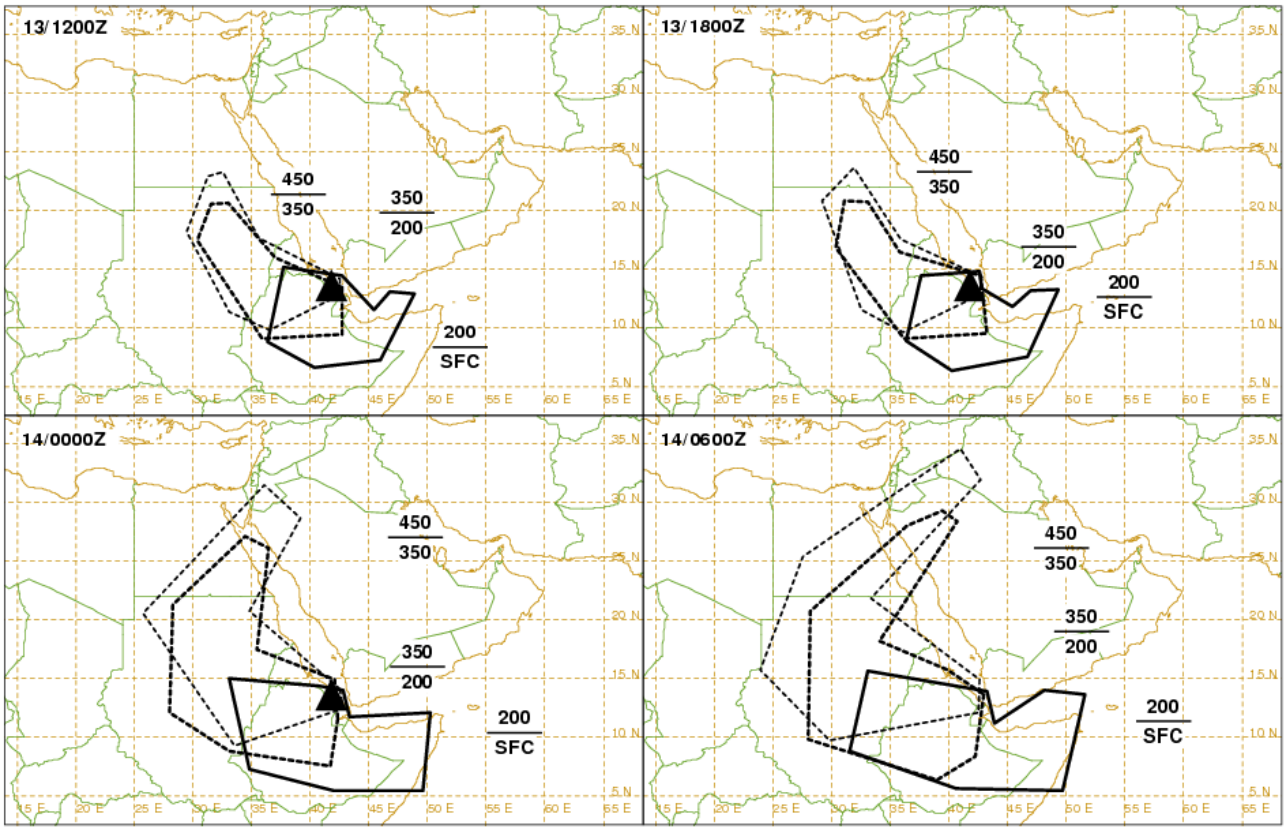


Figure A8.2. (Added) ***Sample Toulouse VAAC Ash Advisory Graphic***



A8.3. (Added-USAFE) Operational Guidance.

A8.3.1. **(Added-USAFE)** Volcanic Activity.

A8.3.1.1. **(Added-USAFE)** IAW **paragraph 5.26.5**, Flight in/through/over/under *Volcanic Activity* is prohibited, "Unless conducting rescue operations or when authorized by the MAJCOM/A3," (see **paragraph A8.6 (Added)**).

A8.3.1.2. **(Added-USAFE)** Accomplish post-flight reporting of any activity in/through/over/under *Volcanic Activity* IAW **paragraph A8.5** below.

A8.3.2. **(Added-USAFE) VABZ.** Flight operations in/through/over/under the VABZ are allowed at OG/CC discretion; however, aircrew/units must accomplish post-flight reporting IAW **paragraph A8.5** below (flights over/under the VABZ do not require reporting).

A8.3.3. **(Added-USAFE) Visible Ash.** In all cases, aircrew will not fly through visible ash regardless of the forecast ash contamination level.

A8.3.3.1. **(Added-USAFE)** If aircrew witness unforecasted visible ash they will avoid it by a minimum of 5000' vertically or 60NM laterally and make every effort to issue a PIREP for follow-on flights. If aircrew are within these limits at the time of ash encounter, they will take the most expeditious routing to achieve these limits or greater recognizing that higher power settings associated with climbs may exacerbate ash damage to the engines).

A8.3.3.2. **(Added-USAFE)** If overflying unforecast visible ash, aircrew will brief contingency plans for emergencies that may require immediate descents.

A8.3.4. **(Added-USAFE)** Terminal Area Operations.

A8.3.4.1. **(Added-USAFE) In/near *Volcanic Activity* and/or visible ash**. USAFE missions may operate DAY-ONLY without a waiver under the following provisions **(**waiver authority is HQ USAFE/A3—see **paragraph A8.6**):

A8.3.4.1.1. **(Added-USAFE)** The PIC determines that the approach, missed approach, and/ or departure can be flown while avoiding *Volcanic Activity* and/or visible ash by at least 10NM.

A8.3.4.1.2. **(Added-USAFE)** The area of *Volcanic Activity* and/or visible ash is not forecast or observed to be moving in the direction of the approach/departure/missed approach corridor.

A8.3.4.2. **(Added-USAFE) In/Near the VABZ.** No restrictions. Post fight reporting may be required (see **paragraph A8.3.2** and **A8.5**)

A8.3.5. **(Added-USAFE) Operations during HN airspace closure.**

A8.3.5.1. **(Added-USAFE)** If HN civil/military airspace is closed due to observed or suspected volcanic ash (regardless of VAAC product depictions), USAFE flight operations will also be suspended in that airspace..

A8.3.5.2. **(Added-USAFE)** If civil/military airspace opens but HN is not providing IFR services, USAFE aircraft are permitted to conduct VFR operations IAW AF 11-202V3, Chapter 7 and this attachment.

A8.3.5.3. **(Added-USAFE)** Case-by-case waivers may be granted by USAFE/A3 to operate in/through airspace closed by the HN, but will be limited only to Urgent Aeromedical Evac and SAR or SAR-support missions (see **paragraph A8.6**).

A8.4. (Added-USAFE) Operational Risk Management (ORM). Before allowing flights in/through their airspace, certain European ATC agencies may require proof of an ORM assessment regarding flight operations in forecast volcanic ash (as depicted by VAAC products). Units will therefore, at a minimum, accomplish the following items.

A8.4.1. **(Added-USAFE)** Add an item in unit-standard pre-flight ORM assessments when flying IAW **paragraph A8.3**. Units will assign a severity index consistent with unit ORM standards IAW with the following hierarchy (from most severe to least severe):

A8.4.1.1. **(Added-USAFE)** In *Volcanic Activity*

A8.4.1.2. **(Added-USAFE)** Within 60 NM of *Volcanic Activity*

A8.4.1.3. **(Added-USAFE)** Inside the VABZ, but outside 60 NM from *Volcanic Activity*

A8.4.2. **(Added-USAFE)** Insert the following statement in the comments section of the DD Form 1801 flight plan, "Risk assessment for flight operations in forecast volcanic ash is on file with aircraft's assigned unit."

A8.5. (Added-USAFE) Preflight Weather Assistance. Your AF weather flight will provide appropriate ash forecast information with preflight weather briefings. Additionally, the 21 OWS website (**https://ows.sembach.af.mil**) will post relevant links and information.

A8.5.1. **(Added-USAFE)** Additional products based on the data from the responsible VAAC (e.g. London VAAC for any Iceland volcano) may be used for added situational awareness to include Air Force Weather Agency products (AFWA) that are based on VAAC analysis.

A8.5.2. **(Added-USAFE)** If "VA" (Volcanic Ash) is included in the METAR/TAF, the intent is to ensure aircrew reference the appropriate volcanic ash charts to determine operational constraints consistent with the guidance in this attachment. "VA" in and of itself *does not* communicate an operational restriction.

A8.6. (Added-USAFE) Reporting.

A8.6.1. **(Added-USAFE)** Whenever flight through *Volcanic Activity* occurs (either by flying through the area described in **paragraph A8.2.1 (Added)** or by encountering conditions as published in TO and/or AFI 11-2MDSV3 guidance, aircrew will report flight details (see below) as a Code 3 in the aircraft forms.

A8.6.2. **(Added-USAFE)** Whenever flight through the VABZ occurs aircrew are to record flight details (see below) as an "info-note" in the aircraft forms. The effects of long term low-concentration ash exposure will be analyzed based on the reported data; therefore, aircrew must ensure reporting is as accurate as possible.

A8.6.3. **(Added-USAFE)** In all cases, report flight details in an Ops-maintained activity log (see **paragraph A8.6.6 (Added)**). Units will ensure the recorded information is made available to wing safety offices and archived for at least one year from the date of the flight.

A8.6.4. **(Added-USAFE)** Flight details to record:

A8.6.4.1. **(Added-USAFE)** Approximate Location (Lat/Long if known, or general geolocation if Lat/Long not available).

A8.6.4.2. **(Added-USAFE)** Time (zulu) and duration (to the nearest tenth, e.g. 1.4) in *Volcanic Activity* and/or the VABZ.

A8.6.4.3. **(Added-USAFE)** Altitude, speed, type maneuvering (e.g. cruise, tactical, etc.)

A8.6.5. **(Added-USAFE)** NLT 1500Z on the first Friday of the month (Thursday if Friday is a holiday), Wings will provide a roll-up (see **paragraph A8.6.6 (Added)**) of the previous month's *Volcanic Activity* and VABZ flight details to the "USAFE/A3TV (Workflow)" organizational account (**usafe.a3tv@ramstein.af.mil**) with totals for the following (**if no flights were logged, no report is needed**):

A8.6.5.1. **(Added-USAFE)** Flights in *Volcanic Activity*

A8.6.5.2. **(Added-USAFE)** Average duration of exposure to *Volcanic Activity*

A8.6.5.3. **(Added-USAFE)** Flights in the VABZ

A8.6.5.4. **(Added-USAFE)** Average duration of exposure to the VABZ

A8.6.6. **(Added-USAFE)** For unit recording of Volcanic Activity and VABZ flight operations as well as to submit the monthly roll-up, use the "USAFE Volcano Flight Activity Log" under the "*Misc Information & Guidance*" folder on the USAFE/A3TV ICE (link: **https://ice.usafe.af.mil/sites/A3/A3T/A3TV_External/default.aspx**)

A8.7. (Added-USAFE) Requesting Waivers. Submit waiver requests IAW **paragraph 1.6.1.5 (Added)** using the HQ USAFE/A3TV Volcanic Activity Waiver Template found under the "*Waivers*" folder on the USAFE/A3TV ICE.

Attachment 9 (Added-USAFE)

USAFE MODE S OPERATIONS AND ADDRESS MANAGEMENT

A9.1. (Added-USAFE) Purpose. This attachment outlines Mode S capabilities, address (both default and dynamic) distribution and management, and usage by USAFE and USAFE-gained aircraft. For more information on country-specific employment guidance and restrictions reference the USAFE Mode S CoP (link: https://afkm.wpafb.af.mil/community/views/home.aspx?Filter=OO-OP-FE-33)

A9.2. (USAFE) Basic Mode S Capabilities. A "Default" address is assigned to each Mode S transponder when it is installed in an aircraft. ***No two aircraft should ever have the same default address.***

A9.2.1. **(USAFE)** . (Added) Mode S transponders in most military aircraft are equipped with the ability to accept a different address than the default to increase Operational Security (OPSEC). This address is called a *dynamic address* and as with the default address, ***no two aircraft should ever fly with the same address***.

A9.2.2. **(Added-USAFE)** The dynamic address does not overwrite the default since the default, in most case, is either hardwired into the Mode S transponder or exists in non-volatile memory. The dynamic address will simply override the default address until electrical power is removed from the aircraft.

A9.2.3. **(Added-USAFE)** For most aircraft, once electrical power is reapplied, the default address will automatically be set into the transponder. Reference aircraft-specific TOs for details on individual system's capabilities.

A9.3. (Added-USAFE) Threat Assessment.

A9.3.1. **(Added-USAFE)** Mode S transponders currently do not have a military application; however, equipment necessary to interrogate Mode S transponders and consolidate the information received from Mode S interrogations is readily available.

A9.3.2. **(Added-USAFE)** An adversary could match the default address to information about the aircraft, such as type, tail number, unit, and base, in a manner similar to that used to map internet sites to their locations and owners. With a database of default addresses, an adversary would be able to track movements of specific aircraft.

A9.3.3. **(Added-USAFE)** Using the military-only capability of setting a dynamic address that cannot be tied to a particular aircraft may make it more difficult for adversaries to profile USAFE aircraft.

A9.3.4. **(Added-USAFE)** Changing the address will have no effect on the *ability* to track aircraft using SSRs, air defense radar, or airborne platforms (through TCAS/ACAS) due to the unsecured transmission of Mode S data; however, changing codes may inhibit an adversary from developing a database of USAFE aircraft.

A9.3.5. **(Added-USAFE)** ***Neither Mode S Addresses themselves nor an association of a Mode S address with a particular aircraft is classified; however, to aid in OPSEC, default and dynamic addresses assigned to each USAFE flying wing should be kept For Official Use Only (FOUO) as well as any documentation that lists them.***

A9.4. (Added-USAFE) Address Distribution and Management

A9.4.1. **(Added-USAFE) Default Address Assignment**.

A9.4.2. **(Added-USAFE)** The **default address** is assigned to a tail number by the SPO for that MDS and will stay with that aircraft as long as it is still under US registry. Should a Mode S transponder be removed from an aircraft, the default address would stay with the aircraft even if a new transponder is installed.

A9.4.3. **(Added-USAFE) Default Address Management**.

A9.4.3.1. **(Added-USAFE) Aircraft Forms**. The **default address** will be annotated in block 9 of the aircraft AFTO Form 781F, *Aerospace Vehicle Flight Report and Maintenance (Front Cover)*, as follows: "**Aircraft Mode Select (S) Default Address: XXXXXXXX**."

A9.4.3.2. **(Added-USAFE) MAF Only**. The **default address** will be posted in the cockpit so as to be readily viewable by aircrew during flight (e.g. placarded next to aircraft tail number). This requirement may be met electronically if the default address can be viewed through the FMS.

A9.4.4. **(Added-USAFE) Dynamic Address Assignment**. HQ USAFE/A3TV will be the OPR for dynamic address assignment. In order to ensure deconfliction of dynamic addresses, HQ USAFE/A3TV will maintain a database of which dynamic addresses are assigned/available for each USAFE flying wing.

A9.4.4.1. **(Added-USAFE)** Dynamic address usage is mandatory for CAF units, optional for MAF. MAF units desiring to use dynamic addressing will notify A3TV through their respective OGVs.

A9.4.4.2. **(Added-USAFE)** USAFE/A3TV will distribute a number of addresses equal to twice the number of PAA at each participating wing.

A9.4.4.3. **(Added-USAFE)** Those flying wings that desire more addresses than twice their PAA will request the specific number from USAFE/A3TV.

A9.4.5. **(Added-USAFE) Dynamic Address Management (N/A for units not employing dynamic addressing).** Management of dynamic addresses at the unit level will be IAW the following guidance with the overriding objective that ***no two aircraft should EVER fly with the same address*.**

A9.4.5.1. **(Added-USAFE)** Each unit is responsible for distributing their HQ USAFE-assigned block of dynamic addresses to their respective squadrons. Once the unit distributes the dynamic addresses, squadrons will not share addresses except when same-MDS squadrons are conducting combined operations, then only the host squadron's dynamic addresses will be used.

A9.4.5.2. **(Added-USAFE)** *Dynamic addresses will be associated with the maintenance line numbers on the daily schedule.*

A9.4.5.2.1. **(Added-USAFE)** Squadron flying supervision is responsible for tracking the dynamic addresses that have been assigned to each line number.

A9.4.5.2.2. **(Added-USAFE)** Squadrons will distribute the dynamic addresses to aircrew NLT when the aircrew step to their assigned aircraft (**CAF**: NLT the step brief).

A9.4.5.2.3. **(Added-USAFE)** Dynamic addresses will not be flown on the same aircraft twice in one day (**Exception**: Hot Pitting, engine(s) running on the ground between flights, or multiple legs of a continuous mission).

A9.4.5.2.4. **(Added-USAFE)** Once aircrew have stepped to their aircraft, they will retain their assigned dynamic address until the mission is complete or canceled.

A9.4.5.2.5. **(Added-USAFE)** If an aircraft must divert and land at other than the planned destination (i.e. home station for local training sorties), aircrew will cease using dynamic addressing once at the divert filed and use ONLY the default address for any other flights needed to return the aircraft to home station.

A9.4.5.3. **(Added-USAFE)** Units will "shift" dynamic addresses at least once every quarter on the first flying day of the month starting with Jan (i.e. 1 Jan, 1 Apr, 1 Jul, 1 Oct) by moving the last dynamic address to the top of the list and all subsequent addresses down one line.

A9.4.5.4. **(Added-USAFE)** For continuous off-station training sorties (i.e. non-contingency deployments/cross-countries), flying supervision for the deployment/cross-country will take twice as many dynamic addresses as the number of jets flown. Except for ensuring that both home station and deployed dynamic addresses are fully deconflicted and tracked, off-station dynamic address management is the same as home-station.

A9.4.5.5. **(Added-USAFE)** If there is any confusion over the correct dynamic address to use or whether or not aircrew are authorized to use a dynamic address, aircrew will consult with squadron flying supervision or resort to using the default address.

A9.4.5.6. **(Added-USAFE)** Aircrew will refrain from transmitting dynamic addresses over a non-secure radio and at no time will associate a dynamic address with a tail number or aircraft call-sign.

A9.5. (Added-USAFE) Mode S Usage.

A9.5.1. **(Added-USAFE) Flight Plans.** Use the following guidance when preparing 1801s or using stereo flight plans for flights within the USAFE AOR.

A9.5.1.1. **(Added-USAFE)** DD Forms 1801 must be filled out correctly to reflect both Mode S capability (e.g. "/S" in block 10) and a correct Aircraft ID. See Appendix A, GP Chapter 4, and AP/2 for more information.

A9.5.1.2. **(Added-USAFE)** Airfield management personnel should ensure that stereo flight plans currently in use by USAFE flying wings are entered into the ATC system correctly with respect to Mode S capability and callsign.

A9.5.1.3. **(Added-USAFE)** The DD Form 1801 aircraft identification (block 7) MUST match what the Flight/Aircraft ID entered into the Mode S transponder.

A9.5.2. **(Added-USAFE) Flight ID Entry**. Use the following rules when entering Flight IDs into the Mode S transponder.

A9.5.2.1. **(Added-USAFE)** The first digit is always the first letter of the callsign.

A9.5.2.2. **(Added-USAFE)** No spaces, dashes or special characters should be in between digits.

A9.5.2.3. **(Added-USAFE)** If the callsign is not a complete 7-digits, then leave spaces at the end (i.e. SPAR11_, not SPAR_11).

A9.5.3. **(Added-USAFE) Default/Dynamic Address Entry**. Use the following guidance when inputting the Mode S address into the Mode S transponder.

A9.5.3.1. **(Added-USAFE)** Enter either the default or dynamic address into the Mode S transponder IAW AFI 11-2MDSV3, local, and TO guidance.

A9.5.3.2. **(Added-USAFE)** Regardless of the aircraft, in order to maximize OPSEC, ensure the Mode S transponder is OFF prior to address entry. This will minimize any attempt to correlate the address with a specific aircraft.

A9.5.3.3. **(Added-USAFE)** ***Loss of power via generator failure, power interruption, or upon turning the equipment off may cause the loss of the dynamic address and automatic reversion to and subsequent transmission of the default address. It is imperative aircrew check their Mode S transponders after a loss of power to be aware of which address and Flight/Aircraft ID is being transmitted.***

A9.5.4. **(Added-USAFE) Peacetime/Non-Contingency**.

A9.5.4.1. **(Added-USAFE)** Default or dynamic addresses assigned by USAFE units will be used anytime the aircraft is flying under USAFE OPCON anywhere in the world.

A9.5.4.2. **(Added-USAFE)** Mode S will be ON/selected for all missions utilizing either the default or dynamic address. At a minimum, Mode S will be on from takeoff through landing, but may also be on during ground operations.

A9.5.4.2.1. **(Added-USAFE)** To the maximum extent practical (mandatory for all home station sorties), all USAFE aircraft will perform a Mode S ground check with the first available agency that can confirm the proper Flight ID is being received (N/A for those locations that do not possess a Mode S-capable radar).

A9.5.4.3. **(Added-USAFE) MAF**. Reference AFI 11-2MDSV3, local, and TO guidance for Mode S usage guidance during flight. At a minimum, be prepared to have Mode S ON/selected whenever actively squawking Mode 3/A/C or when the aircrew would normally squawk Mode 3/A/C even if no Mode 3/A/C code is issued.

A9.5.4.4. **(Added-USAFE) CAF**. Regardless of the following guidance, turn Mode S ON/OFF if specifically requested by ATC.

A9.5.4.4.1. **(Added-USAFE)** Members within a formation will squawk Mode S anytime when actively squawking Mode 3/A/C or when the aircrew would normally squawk Mode 3/A/C even if no Mode 3/A/C code is issued. *NOTE: Some ATC radar systems within Europe may transition to Mode S-only interrogators, therefore, a traditional Mode 3/A/C code may or may not be issued, but aircrew are still expected to have Mode S ON/selected. If in doubt, keep Mode S ON/selected unless/until the ATC controllers asks for it to be "strangled".*

A9.5.4.4.2. **(Added-USAFE)** Do not use Mode S during CORONET movements (i.e. deployments and redeployments) or anytime while formating with a tanker.

A9.5.4.4.3. **(Added-USAFE)** DO NOT change the Mode S address while airborne. If after airborne it is determined that an incorrect address has been entered into the transponder shut off the Mode S transponder and troubleshoot once back on the ground (***do NOT try to troubleshoot a Mode S transponder in the air***).

A9.5.5. **(Added-USAFE) Contingency Airspace.**

A9.5.5.1. **(Added-USAFE)** Until incorporated into SPINS/ROE, ensure Mode S is turned OFF/deselected by any means available while in contingency airspace.

A9.5.5.2. **(Added-USAFE)** Once Mode S is incorporated into SPINS/ROE, address management and usage will be through the ATO in conjunction with other IFF codes.

A9.5.6. **(Added-USAFE) Change of Operational Control (CHOP)**. USAFE aircraft CHOPed to another MAJCOM may use dynamic addresses issued by that MAJCOM as long as the gaining MAJCOM has procedures in-place to ensure dynamic address deconfliction. In the event of confusion regarding address assignment, USAFE aircraft will revert to using their default address, if practical, until the situation is resolved.