BY ORDER OF THE
SECRETARY OF THE AIR FORCE

DEPARTMENT OF THE AIR FORCE
MANUAL 11-230

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Flying Operations

INSTRUMENT PROCEDURES

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This publication implements Air Force Policy Directive (AFPD) 11-2, *Aircrew Operations*. It provides guidance and procedures on developing, approving, revising, publishing and deleting instrument approach and departure procedures throughout the Department of the Air Force (DAF). This manual is applicable to the entire DAF, including all uniformed members of the Regular United States Air Force, United States Space Force (USSF), Air Force Reserve (AFR) and the National Guard Bureau (NGB) as it administers to the Air National Guard (ANG) and the performance of Terminal Instrument Procedure (TERPS) functions, and except where noted otherwise, all DAF civilian employees, and those with a contractual obligation to abide by the terms of DAF issuances. It applies to flying activities at all United States Air Force (USAF), USSF, ANG, and AFR airfields where USAF, USSF, ANG, AFR or DAF component of a unified command conducts or supports instrument flight. Users have 120 days from the day this version is released to ensure compliance with the guidance herein. Refer recommended changes and questions about this publication to the Office of Primary Responsibility (OPR) using DAF Forms 847, Recommendation for Change of Publication; route DAF Form 847 from the field through the appropriate functional chain of command. This Department of the Air Force Manual (DAFMAN) may be supplemented at any level, but all supplements and interim changes to previously approved supplements must be routed to the OPR of this publication for coordination prior to certification and approval. The approval authority level for non-compliance with requirements in this publication is indicated by a tier ("T-0, T-1, T-2, or T-3") number following the compliance statement. See DAFMAN 90-161, *Publishing Processes and Procedures*, for a description of the authorities associated with the tier numbers. Submit requests for waivers through the chain of command to the appropriate tier waiver approval authority according to **paragraph 1.3** and **paragraph 1.4**, or alternatively, to the publication office of primary responsibility (OPR) for non-

tiered compliance items. Ensure all records generated as a result of processes prescribed in this publication adhere to Air Force Instruction (AFI) 33-322, *Records Management and Information Governance Program*, and are disposed in accordance with the Air Force Records Disposition Schedule, which is located in the Air Force Records Information Management System. See **Attachment 1** for a glossary of references and supporting information used in this publication. The use of the name or mark of any specific manufacturer, commercial product, commodity, or service in this publication does not imply endorsement by the Department of the Air Force.

SUMMARY OF CHANGES

This manual was substantially revised and needs to be completely reviewed. The rewrite of DAFMAN 11-230 adds major command (MAJCOM) specific instrument procedure areas of responsibility; realigns DAF foreign terminal instrument procedure (FTIP) program with Department of Defense (DoD) requirements; addresses customer feedback, and process improvements. Various policy directives, tables, figures, examples and checklists were also revised.

Major changes to **Chapter 1** included clarification of Air Force Flight Standards Agency (AFFSA) Chief, Safety of Navigation (XOS) TERPS and MAJCOM Areas of Responsibilities. Visual flight rule procedures, contingency operations, manual vegetation allowance, and map search were removed from Chapters **2** and **3**. Special Use Flight Operations was added to **Chapter 4**. Changes to Chapters **5** through **10** were in-line with current guidance from Federal Aviation Administration (FAA) Orders, Air Force Flight Standards Agency Division Chief, Flight Operations Policy and Standards (AFFSA/XO), and software updates. Chapters **11**, **12**, and **14** were updated to reflect current software processes. **Chapter 13** simplified the accreditation program language and removed redundant guidance.

Chapter 1

ADMINISTRATIVE

1.1. Overview. This publication provides guidance and assigns responsibility for instrument flight procedure (IFP) functions provided by the major command (MAJCOM) and unit level instrument procedure specialists (**Chapter 1** through **Chapter 3**), Special Use Procedures (**Chapter 4**) flyability check (**Chapter 5**), and instrument procedure flight inspection requirements (**Chapter 6**). It includes guidance for implementing Federal Aviation Administration (FAA) orders (**Chapters 7** through **Chapter 10**), International Civil Aviation Organization (ICAO) and North Atlantic Treaty Organization (NATO) agreements as pertains to instrument procedure criteria (**Chapter 11**). Additionally, instrument procedure automation guidance (**Chapter 12**), host nation acceptance processes (**Chapter 13**), and requirements for the validation and processing of the Foreign Terminal Instrument Procedure (FTIP) (Chapter 14) are included. The use of AFFSA TERPS throughout this DAFMAN is a reference to Air Force Flight Standards Agency (AFFSA) Chief, Safety of Navigation (XOS). AFFSA/XOS section assigned Lead Command responsibilities for DAF TERPS programs under the authority of Air Force Mission Directive (AFMD) 27 and as defined in this manual. Reference to MAJCOM throughout this DAFMAN includes the TERPS functions of USAF, USSF, AFRC, ANG and of a DAF component of a unified command.

1.1.1. Apply the guidance in this DAFMAN in conjunction with the guidance provided in each of the following approved and adopted publications. Unless otherwise addressed in an AFFSA/XO message, the applicable version of each publication is in accordance with the most current AF Global Procedure Designer (GPD) software distribution:

1.1.1.1. FAA Order 8260.3, *United States Standard for Terminal Instrument Procedures (TERPS).* **Exceptions**: See **Chapter 7** of this DAFMAN;

1.1.1.2. FAA Order 8260.19, *Flight Procedures and Airspace.* **Exceptions**: See **Chapter 8** of this DAFMAN;

1.1.1.3. FAA Order 8260.46, *Departure Procedure (DP) Program.* **Exceptions**: See **Chapter 9** of this DAFMAN;

1.1.1.4. FAA Order 8260.58, *United States Standard for Performance Based Navigation (PBN) Instrument Procedure Design.* **Exceptions**: See **Chapter 10** of this DAFMAN;

1.1.1.5. STANAG 3759, NATO Supplement to ICAO Document (Doc) 8168 OPS/611 *Volume II, for the Preparation of Instrument Approach and Departure Procedures – Allied Air Traffic Control Procedures (AATCP-1)*; and

1.1.1.6. ICAO Doc 8168 – *Procedures for Air Navigation Services – Air Operations (PANS-OPS); Volume II, – Construction of Visual and Instrument Flight Procedures*. **Exceptions**: See **Chapter 11** of this DAFMAN.

1.1.2. When there is a conflict between guidance in this DAFMAN and any of the documents listed in **paragraph 1.1.1** or as a reference in **Attachment 1**, apply the guidance in this DAFMAN.

1.2. Roles and Responsibilities.

1.2.1. HQ AF/A3:

1.2.1.1. Collaborates with MAJCOM commander (or a designated representative) on MAJCOM initiated waivers to Tier 1 compliance items within this DAFMAN; and

1.2.1.2. Delegates the authority for approving standard instrument flight procedures to the respective MAJCOM, National Guard Bureau, and DAF component of a unified command director of operations.

1.2.2. AFFSA TERPS:

1.2.2.1. Manages DAF TERPS Program in support of DAF instrument flight procedure requirements;

1.2.2.2. Provides direction and information through the issuance of administrative changes, interim changes, guidance memorandums, or via a complete rewrite of this manual;

1.2.2.3. Reviews MAJCOM supplements to this manual prior to certification and approval;

1.2.2.4. Approves/Denies MAJCOM initiated waivers on non-tiered items within this DAFMAN. Reviews MAJCOM initiated waivers on Tier 0, Tier 1, and Tier 2 compliance items; makes recommendations to MAJCOM waiver authority or HAF, as appropriate;

1.2.2.5. Manages DAF FTIP Acceptance Program;

1.2.2.6. Serves as lead agency for the DoD FTIP Working Group;

1.2.2.7. Develops and maintains agreements with the National Geospatial-Intelligence Agency (NGA), Jeppesen® and/or commercial enterprises outlining DAF requirements and the data required for publication and maintenance of DAF developed instrument flight procedures and DAF approved FTIP;

1.2.2.7.1. Informs NGA which DAF elements may send instrument flight procedures for publication or revision.

1.2.2.7.2. Reviews, approves, and forwards MAJCOM initiated Special Military Requests to NGA.

1.2.2.7.3. Coordinates policy and practices with Jeppesen® and/or commercial enterprises for the exchange and implementation of DAF TERPS data.

1.2.2.8. Manages, evaluates, and approves GPD automation tool for use in developing instrument flight procedures and air traffic control (ATC) charts;

1.2.2.9. Develops and maintains TERPS Self-Assessment Communicator;

1.2.2.10. Monitors and manages AFFSA TERPS helpdesk;

1.2.2.11. Posts applicable deliverables to AFFSA Flight Operations and Standards SharePoint®. See DoD Flight Information Publication, *General Planning* (GP) Chapter **11-2** for the most current AFFSA TERPS contact information, SharePoint® and Help Desk links;

1.2.2.12. Maintains liaison, effects coordination, and serves on committees and working groups with other agencies within the United States (US) Government, industry, and international civil and military organizations on matters relating to instrument procedure publication and criteria. See **Attachment 2** for AFFSA TERPS panels, working groups and assemblies;

1.2.2.13. Develops and maintains agreements with the Aeronautical Information Services office of FAA outlining the processing of DAF instrument flight procedure requirements at US civil and joint-use bases per FAA Order 8260.32, *U.S. Air Force Terminal Instrument Procedures Service*;

1.2.2.14. Clarifies and expands FAA instrument procedure criteria that are not complete or are open to interpretation and provides optional formulas and sample calculations that may be used when developing instrument flight procedures manually;

1.2.2.15. Manages DAF Terminal Instrument Procedures Fundamentals Course.

1.2.2.16. Manages DoD ICAO PANS-Ops Differences Course;

1.2.2.17. Consolidates DAF Terminal Aeronautical Global Navigation Satellite System Geodetic Survey (TAGGS) data requirements and priorities from MAJCOM then submits the requirements to AFFSA Safety of Navigation for staffing to Headquarters Air Force (HAF);

1.2.2.18. Provides epoch year Magnetic Variation (MV) values to MAJCOM/Units per FAA Order 8260.19;

1.2.2.19. Manages FTIP SharePoint® for use by DoD TERPS, aircrews, and mission planners;

1.2.2.20. DAF representative to the North Atlantic Treaty Organization Standard, Allied Flight Procedures Publication Supplement to International Civil Aviation Organization Document 8168 Volume 1 *Flight Procedures and the Allied Air Traffic Control Procedures (AATCP-1)*. Supplement to ICAO 8168 Volume II *For the Preparation of Instrument Approach and Departure Procedures* and;

1.2.2.21. Manages HQ Air Force Obstruction Evaluation / Airport Airspace Analysis (OE/AAA) program.

1.2.3. MAJCOM TERPS Areas of Responsibility (AOR). MAJCOM TERPS functions indicated in the following paragraphs are responsible to fulfill all DAF TERPS requirements in their respective areas defined. Where practical, these AORs are aligned with the associated Combatant Commands (CCMD) boundaries (See example **Figure 1.1**.). Exceptions to AOR not outlined below must be documented in each applicable MAJCOM supplement to this manual or in a formal agreement between MAJCOM Directors of Operation involved. Each MAJCOM participating in such an agreement must retain a current, MAJCOM Director of Operation signed and dated copy of the agreement on file at MAJCOM TERPS function. Provide a current digital copy of the agreement to AFFSA TERPS office.

1.2.3.1. Air Combat Command (ACC) is OPR for instrument and radar procedure requirements at installations under their operational control. Excluding those locations operated by other MAJCOMs, ACC is also responsible for fulfilling TERPS requirements

in NORTHCOM AOR. Exceptions to NORTHCOM AOR, Alaska is delegated to Pacific Air Force, and Mexico is delegated to Air Mobility Command.

1.2.3.2. Air Force Central (AFCENT) is OPR for instrument and radar procedure requirements in the geographical area covered by the US Central Command (CENTCOM) AOR. **Exception:** ACC provides management, oversight, review, and quality assurance of AFCENT TERPS programs.

1.2.3.3. Air Force Materiel Command (AFMC) is OPR for instrument and radar procedure requirements at installations under their operational control and for all installations operated by US Space Force.

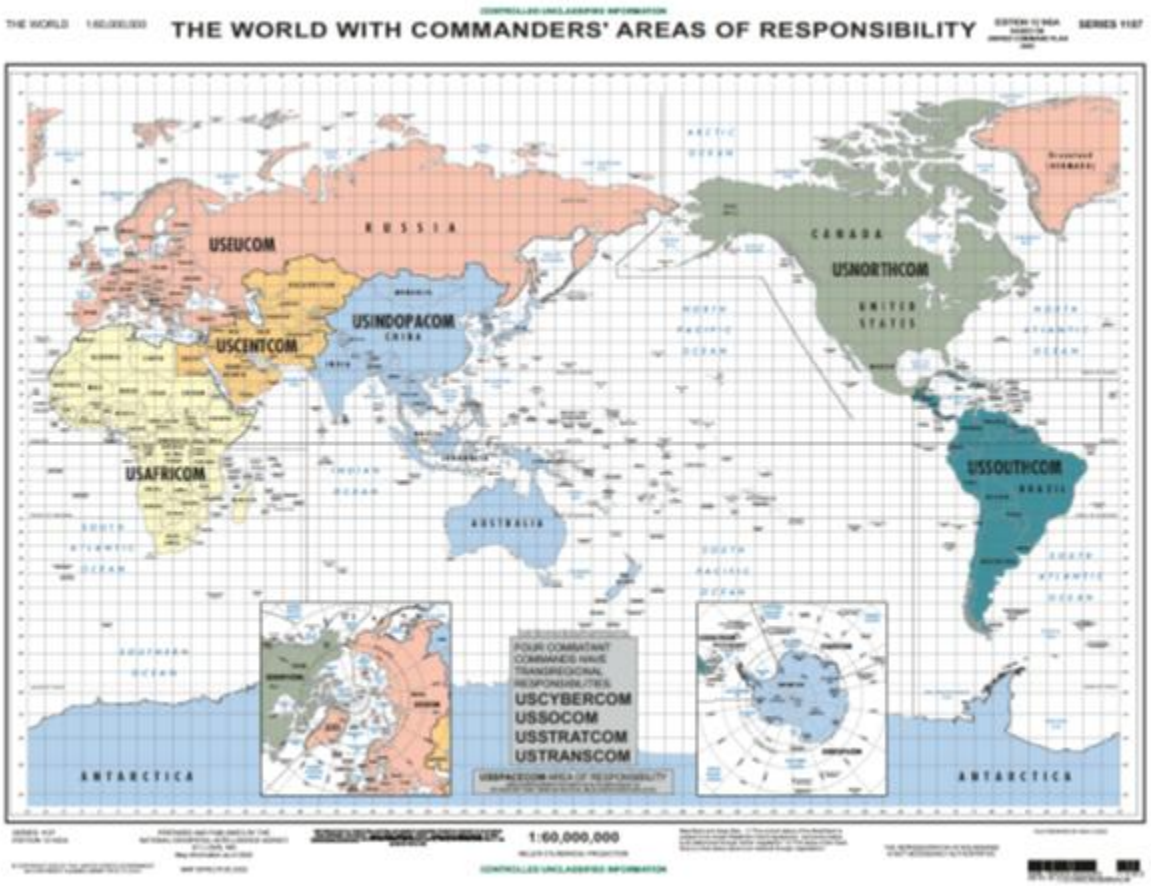
1.2.3.4. Air Education and Training Command (AETC), Air National Guard (ANG), Air Force Reserve Command (AFRC), Air Force Global Strike Command (AFGSC), and Air Force Special Operations and Air Force Special Operations Command (AFSOC) are the OPRs for installations under their operational control.

1.2.3.5. Air Mobility Command (AMC) is responsible for locations under their operational control and for instrument and radar procedure requirements in the geographical area covered by USSOUTHCOM AOR and Mexico.

1.2.3.6. Pacific Air Forces (PACAF) is responsible for instrument and radar procedure requirements in the geographical area covered by USPACOM AOR. **(T-1) Exception:** PACAF TERPS is OPR for the state of Alaska.

1.2.3.7. United States Air Forces in Europe (USAFE)-Air Force Africa (AFAFRICA) is responsible for instrument and radar procedure requirements in the geographical area covered by USEUCOM and USAFRICOM. **Exception:** Greenland’s Space Force Base Pituffik is delegated to AFMC.

Figure 1.1. MAJCOM Areas of Responsibility.



1.2.4. MAJCOM Director of Operations (or equivalent):

1.2.4.1. May delegate approval authority for standard, unit or MAJCOM developed IFPs, ATC charts, and diverse vector areas (DVA) to MAJCOM TERPS function under their direction;

1.2.4.2. Authorizes use of special use IFP by DAF units and other DoD components not specifically noted on the instrument flight procedure;

1.2.4.3. Has waiver authority for live (airborne) flyability and flight inspection requirements and;

1.2.4.4. Approves waiver of FTIP validation when in the grade of O-8. When not an O-8, the first O-8 in the command chain has this authority;

1.2.5. MAJCOM terminal instrument procedure manager. MAJCOM terminal instrument procedure manager is responsible for:

1.2.5.1. All DAF instrument and radar flight procedure requirements at locations under their operational control;

1.2.5.2. Confirms unit level compliance with all standards required in this DAFMAN. **Note:** MAJCOMs that have assumed their supported unit TERPS function also assume all base/unit level TERPS function responsibilities described in **paragraph 1.2.6**.;

1.2.5.3. Ensures review and approval of standard instrument flight procedures, ATC charts, and, as applicable, each supported unit's Master Obstruction Chart (MOC) and diverse vector area;

1.2.5.4. Establishes and implements a quality control program that ensures standardization and validates the accuracy, adequacy, safety, and practicality of each chart, instrument or radar approach procedure and each standard instrument departure (SID) or obstacle departure procedure (ODP), to include FTIP, as applicable.

1.2.5.5. Provides technical and procedural development assistance when requested by supported units;

1.2.5.6. Ensures a familiarization site visit to each supported unit at least once every twelve months when MAJCOM has assumed the supported unit's TERPS function;

1.2.5.7. Performs host nation accreditation as prescribed in **Chapter 13** of this manual;

1.2.5.8. Implements FTIP criteria validation processes prescribed in **Chapter 14** of this manual;

1.2.5.9. Administers to FAA Order 8260.32 with respect to MAJCOM coordination as applicable;

1.2.5.10. Ensures the current version of GPD software is installed according to AFFSA TERPS message announcing the next version release for use;

1.2.5.11. Reviews and submits instrument flight procedures designated for flight inspection as prescribed in **Chapter 6** of this manual;

1.2.5.12. After conducting a MAJCOM quality control review, submits required documentation from unit TERPS functions within MAJCOM TERPS AOR to NGA and Jeppesen® when necessary per **paragraph 2.2** of this manual;

1.2.5.13. Forwards aeronautical source information congruent with documentation described in **paragraph 1.2.5.12**. to Jeppesen® for establishing, amending, or deleting IFPs;

1.2.5.14. As MAJCOM OPR, retains supporting documentation for all TERPS publications;

1.2.5.15. Create and maintain a MAJCOM supplement to this DAFMAN when more restrictive or organization-specific guidance is warranted. Guidance on supplements is provided for in DAFMAN 90-161;

1.2.5.16. When instrument procedure development and maintenance responsibility is assumed by the supporting MAJCOM, coordinate with the Operations Group Commander on all procedural requirements, procedural amendments or for the removal of instrument flight procedures as prescribed in **paragraph 2.4** of this manual and;

1.2.5.17. Special Departure Procedure Support. DAF instrument procedure specialists support operator development of One Engine Inoperative/Special Departure Procedures at

fixed base locations. MAJCOM TERPS function should establish processes to ensure receipt of all manual edits made to the OBS.txt file of each instrument procedure for each of their locations. MAJCOM TERPS function forwards these edits in a new GPD OBS.txt file to Air Mobility Command Chief, Terminal Instrument Procedures (AMC/A3AT) at **amc.terps@us.af.mil** not later than three business days prior to the beginning of the next Digital Vertical Obstruction File (DVOF) cycle.

1.2.6. Base and unit level TERPS functions will:

1.2.6.1. Initiate actions essential to the fulfillment of TERPS program objectives assigned by the local Operations Group Commander (or equivalent) and the applicable MAJCOM TERPS function.

1.2.6.2. Develop, process, and maintain instrument flight procedures, diverse vector areas, and ATC charts.

1.2.6.2.1. Prepare and maintain procedure packages for each instrument flight procedure, diverse vector area, and ATC chart using the most current version of GPD software or manual methods, as applicable, to support local flight operations.

1.2.6.2.2. Coordinate new, revised, and deleted instrument flight procedures with all required signatory agencies.

1.2.6.2.3. Submit requests to delete, publish, or amend instrument flight procedures, terminal area fixes, diverse vector areas, and ATC charts to MAJCOM instrument procedure function for MAJCOM quality control review.

1.2.6.2.4. Develop Minimum Safe Altitude Warning and Low Altitude Alerting System (LAAS) submissions as required by location in coordination with the facility Chief Controller. **(T-3)** See AFFSA SharePoint® for LAAS Information Pamphlet.

1.2.6.3. Provide required data and assistance to support development of products such as AN/GPA-134 and Digital Bright Radar Indicator Tower Equipment maps, Microprocessor En Route Automated Radar Tracking System maps, and Standard Terminal Automation Replacement System (STARS) maps.

1.2.6.4. Report changes to navigational aid (NAVAID) and radar data, per FAA Order 7900.2, *Submitting Aeronautical Data to Aeronautical Information Services in Support of the National Airspace System (NAS)*, and **paragraph 1.6.3** of this manual.

1.2.6.5. Prepare Expanded Service Volume (ESV) requests, as required. **(T-3)**

1.2.6.6. Perform review of flight information publications and other TERPS related data according to **paragraph 2.6** of this manual.

1.2.6.7. Maintain aeronautical source data sufficient to meet instrument flight procedure design responsibilities; and

1.2.6.8. Review the National Flight Data Digest (NFDD), as required to ensure FAA registered information/action is in concert with MAJCOM approved publications.

1.3. Waiver Authority. According to DAFMAN 90-161, directive guidance (for example, “will” and “must”) throughout this DAFMAN is tiered at the end of each directive statement, sentence,

or paragraph, as applicable, to indicate waiver authority level. Also comply with **paragraph 1.4** of this manual for processing deviations to instrument procedure criteria.

1.3.1. The FAA delegates waiver authority for mitigating nonstandard conditions in instrument flight procedures developed by the military and based on FAA criteria to the US Military Service responsible for developing the instrument procedure. The DAF has approved and adopted FAA and ICAO criteria except as noted in this DAFMAN. IFPs that deviate from standards because of operational necessity, and in which an equivalent level of safety is not achieved, must be marked "NOT FOR CIVIL USE."

1.3.2. At civil or joint use airports where FAA is responsible for IFP development and maintenance, FAA will process deviations to TERPS criteria. See FAA Order 8260.32 *U.S. Air Force TERPS Services* for roles and responsibilities.

1.3.3. MAJCOM Commander (delegable no lower than MAJCOM Director) is the waiver authority for all violations of ICAO Doc 8168 Vol II (PANS-OPS) and NATO STANAG 3759 *AATCP-1* where USAF has design authority, and for FTIP based on Non-Accredited host nation source *and* being published in the DoD Flight Information Publican (FLIP) (Terminal).

1.3.3.1. FTIP based on USAF Accredited or DoD Accepted Host Nation source does *not* require waiver authority consideration for violations to any instrument procedure criteria.

1.3.3.2. FTIP criteria violations documented during a review do *not* require waiver authority consideration. See **Chapter 14**, FTIP for documenting deviations to standards.

1.4. Documenting and Processing Nonstandard Instrument Flight Procedures (Waiver Requests).

1.4.1. Document waivers on DAF Form 679, *Air Force Publication Compliance Item Waiver Request/Approval*. When determining package content, refer to **Table 2.1**.

1.4.2. For approval consideration, unless otherwise noted within this DAFMAN, coordinate deviation(s) from instrument procedure criteria and/or standards to the appropriate waiver authority prescribed in **paragraph 1.4.7** of this manual. This requirement applies to instrument flight procedures developed by DAF and published in DoD FLIP (Terminal), to DAF published FTIP based on Non-Accredited host nation source and/or publication via loose-leaf format.

1.4.3. Unless restricted in **paragraph 1.4.5**, approved waivers apply to all DoD and civil aircraft using the procedure. In conjunction with the appropriate standardization and evaluation function, evaluate each nonstandard condition for an equivalent level of safety and the potential application of operational note/caution/warning to be charted on the instrument flight procedure publication. The waiver authority assumes responsibility for each nonstandard condition approved for use with the instrument flight procedure.

1.4.4. Provide a justification for each listed violation in GPD produced Deviations section of the build or publication report. Specify the reason(s) an exception to criteria is required in each justification. A brief description of the operational gain is required. Example: “Holding pattern obstacle clearance was reduced from 2000 feet to 1000 feet to meet descent gradient criteria between the initial approach fix and the intermediate fix.” **Note**: Phrases such as “Operationally advantageous”, “Provides an operational advantage” or “Because the pilots want to do this” do not meet this requirement.

1.4.5. The waiver authority may restrict or limit the use of a nonstandard procedure. The waiver authority may require the planview be annotated per FAA Order 8260.3, ("**NOT FOR CIVIL USE**") or with the specific MAJCOM or flying unit approved use of the procedure as follows: "**FOR USE BY** (specific MAJCOM or flying unit(s), exercise or operation, as appropriate) **ACFT ONLY**."

1.4.6. Multiple nonstandard conditions on a single instrument flight procedure. Make every effort to eliminate all nonstandard conditions from the instrument flight procedure. When multiple nonstandard conditions (multiple criteria references) exist on a single instrument flight procedure, ensure each nonstandard condition is defined by one specific paragraph of instrument flight procedure criteria. Enter a mitigation (equivalent level of safety) into item 11 on DAF Form 679 for each nonstandard condition. Retain waiver documentation in the procedure package and route each nonstandard condition to the appropriate tier waiver authority.

1.4.7. Tier Waiver Authority guidance is from DAFMAN 90-161. Waiver approval authority should be placed at the lowest appropriate level. This regulation contains examples of all 5 possible tiering levels (Non-tiered, T-0, T-1, T-2, T-3). Use DAFMAN 11-230 **paragraphs 1.4.7.1** through **1.4.7.5**, and DAFMAN 90-161, Table A10.1, for a description of the authorities associated with each Tier:

1.4.7.1. Non-tiered. AFFSA/XOS is the waiver authority for DAFMAN 11-230 non-tiered items. Staff the waiver package through the appropriate MAJCOM channels to AFFSA/XO. AFFSA/XO will review and provide approval/denial for the waiver request within 30 days of submission. Denials will include a brief explanation.

1.4.7.2. Tier-0. When the waiver approval authority is external to the Department of the Air Force, DAF cannot approve a waiver to the specific requirement because the directive/requirement is driven by an outside authority (FAA, NATO, ICAO). FAA and ICAO delegates waiver authority for mitigating nonstandard conditions in instrument flight procedures developed by the military to the US Military Service responsible for developing the instrument procedure.

1.4.7.2.1. Staff a waiver package through the appropriate MAJCOM channels to AFFSA TERPS prior to submitting to the waiver authority.

1.4.7.2.2. AFFSA TERPS will review the package and provide remarks/recommendations as needed. When required, AFFSA TERPS will coordinate with external agencies during waiver consideration and communicate with the waiver OPR for MAJCOM waiver authority action. The waiver authority for all items which the FAA/ICAO has delegated authority is MAJCOM commander (MAJCOM/CC) (delegable no lower than the MAJCOM Director).

1.4.7.3. Tier-1. MAJCOM/CC may approve waivers after consulting with the department- or service- level two-letter that issued the direction.

1.4.7.3.1. Staff a T-1 waiver package through the appropriate MAJCOM channels to AFFSA TERPS prior to submitting to the waiver authority. AFFSA TERPS reviews the package, makes comments/recommendations as needed, and submits the package to the Deputy Chief of Staff, Operations (Approving Official) with recommendation(s).

1.4.7.3.2. AFFSA TERPS will provide coordination results to the waiver OPR for MAJCOM waiver authority action. MAJCOM/CC (delegable no lower than MAJCOM Director) or NGB/CF (delegable no lower than ANGRC/CC), with coordination of the publication's Approving Official, is the appropriate waiver authority for all T-1 items.

1.4.7.4. Tier-2. MAJCOMs may issue waivers to deviate from standard practices. Staff a waiver package through the appropriate MAJCOM channels to AFFSA TERPS prior to submitting to the waiver authority. MAJCOM/CC (delegable no lower than the first general officer in the chain of command or personnel meeting T-1 delegation authorization) or NGB/CF (delegable no lower than ANGRC/CC or appropriate NGB Director) is the appropriate waiver authority for all T-2 items.

1.4.7.5. Tier-3. Commanders and directors (or equivalents) may issue waivers to deviate from standard practices. Staff T-3 waiver request according to Wing/Direct Reporting Unit/Field Operating Agency (as applicable) guidance. The wing commander, equivalent or higher echelon if applicable, (delegable no lower than the squadron commander or equivalent) or ANG State Adjutant General or Commanding General (delegable no lower than the wing commander) is the appropriate waiver authority for all T-3 items.

1.4.8. Complete waiver authority approval processing for each nonstandard condition prior to flight inspection of IFP and provide AFFSA TERPS a copy of each signed/approved waiver regardless of tiering.

1.5. Special Use Airspace and Adjacent ATC Airspace.

1.5.1. To the maximum extent possible, develop and establish instrument flight procedure primary obstacle clearance areas, to include holding patterns, within the lateral and vertical airspace boundaries assigned to DAF ATC facility. When required, primary obstacle clearance areas may overlap special use airspace when one or more of the following conditions in **paragraph 1.5.1.1** through **paragraph 1.5.1.3** exist:

1.5.1.1. The ATC facility with control responsibility for the instrument procedure is designated as the controlling agency for the special use airspace.

1.5.1.2. ATC radar is operational and used to ensure separation from the special use airspace; or

1.5.1.3. A satisfactory airspace usage agreement has been established between ATC facility with control responsibility for the instrument procedure and the controlling agency for the special use airspace. Facility managers must ensure the usage agreement details all actions required by both parties to ensure separation between participating aircraft in the special use airspace (or the special use airspace itself) and non-participating aircraft. **(T-3)** Coordinate with the local military airspace manager for matters concerning special use airspace.

1.5.2. A special use airspace check must be performed on all instrument flight procedures developed using GPD prior to export (not applicable to ATC charts). Review local Controlled Firing Area procedures annually for boundary changes that affect instrument flight procedures and document results in the procedure log. **Note**: Controlled Firing Areas are not published in the Digital Aeronautical Flight Information File (DAFIF®) and must be manually entered into GPD. **(T-2)**

1.5.3. When GPD special use airspace check indicates a violation that is justifiable with one or more of the conditions in **paragraph 1.5.1.1** through **paragraph 1.5.1.3**, enter the details in GPD Justification Tab. For example: "XYZ Approach Control is the controlling agency for R-3202A and for the instrument procedure." Completion of the Alternative Tab, Equivalent Tab, or Organization Tab is only required when pursuing a waiver to criteria.

1.5.4. Avoid developing instrument flight procedures that require ATC radar service. When the primary obstacle clearance area of any procedure segment extends into adjacent DAF, FAA, or host nation airspace, notify the appropriate ATC facility management and coordinate the flight profile with the adjacent facility management or host nation airspace authority, as applicable for approval of the overlap condition. Ensure the note "**RADAR required**" is charted (published) on the instrument flight procedure unless there is agreement between the applicable ATC facilities outlining coordination procedures and control responsibilities during non-radar operations. Ensure graphics detailing the penetration or overlap of the instrument procedure's primary obstacle clearance area into the adjacent facility's airspace are available as support for the agreement.

1.6. Processes, Forms and Publications.

1.6.1. FAA orders concerning instrument procedure criteria (typically "8260-series" orders) and other FAA orders referenced in this manual are approved for DAF use. **Note:** AFFSA TERPS approval is required prior to use of any guidance or criteria in FAA Policy Memorandums or from FAA TERPS instruction letters.

1.6.2. **Chapter 7** through **Chapter 10** of this DAFMAN provide supplemental guidance to FAA orders for DAF use when developing instrument flight procedures. Specific FAA guidance that does not apply to DAF is also indicated in these chapters. When "approval of appropriate military authority", "military authority approval", or similar phrases are used in FAA orders, MAJCOM TERPS function determines the appropriate approval agency and level of authority required. Disregard "requires FAA flight standards approval" or similar phrases used in FAA orders; this approval is not required for DAF developed instrument flight procedures.

1.6.3. Aeronautical Data.

1.6.3.1. When available, use TAGGS data to complete the applicable facility data blocks. **(T-3)** Document the specific data and all other source data used to populate FAA Facility Data Form in the "Remarks" section of the applicable form. **(T-3)** Do not consider previous facility data forms as source material. Retain all source documentation used to complete the form. **(T-3)**

1.6.3.2. Submit aeronautical data per FAA Order 7900.2. Document Information for each DAF owned and operated NAVAID to include DAF locations outside of the Continental US, via the Airport Data Changes (Military). **(T-0)** See DoD FLIP General Planning Guide Chapter 11 for instructions on accessing FAA Aeronautical Information Portal to update the Aeronautical Information Services (AIS).

1.6.3.3. The National Airspace System Resource (NASR) System provides FAA with the means for storing and maintaining a reference database with descriptive details of the National Airspace System's (NAS's) aeronautical information. Submit changes to

applicable airport, fix and navigational aid information via Aeronautical Information Portal. **(T-3)**

1.6.3.4. FAA Form 8260-2, *Radio Fix and Holding Data Records*, ensure the aeronautical data submitted is contained in the NASR prior to submitting any FAA Form 8260-2 based on updated information. **(T-0)** Guidance for documenting navigational fixes is in FAA Order 8260.19 *Flight Procedures and Airspace*. Also see the *FAA Form 8260-2, Radio and Holding Fix Information Pamphlet,* stored on the AFFSA TERPS SharePoint®

1.6.3.5. Ensure aeronautical data contained in a submitted GPD publication report matches the information stored in the (NASR) database. **(T-3)** Source data exceptions must be recorded in the procedure designer notes section of GPD publication report. **(T-0)**

1.6.3.6. Digital FAA Data Forms are not required on host nation owned and operated NAVAIDs. When these NAVAIDs are used to develop DAF instrument procedures, completion of the appropriate type of digital form is encouraged for documentation purposes. Include any known or published restrictions to the host NAVAID. Ensure changes to the host NAVAID data are provided to FAA, as necessary, with any subsequent flight inspection requests. Either complete a digital form or provide a list consisting of the following data to FAA no later than 3 weeks prior to a scheduled flight inspection:

1.6.3.6.1. NAVAID location (World Geodetic System [WGS]-84 Latitude/Longitude);

1.6.3.6.2. Magnetic variation assigned to the NAVAID (if any);

1.6.3.6.3. NAVAID frequency and channel;

1.6.3.6.4. Facility class for Very high frequency Omni-directional Range station (VOR), Tactical Air Navigation (TACAN), collocated VOR and TACAN (VORTAC) facilities, and Non-Directional Radio Beacon (NDB);

1.6.3.6.5. NAVAID owner (state, country, private company name, etc.); and

1.6.3.6.6. Mean sea level (MSL) elevation at the base of the NAVAID's antenna and the vertical datum used to determine this elevation.

1.6.3.7. In addition to the general data above, provide the following specific information for host nation Instrument Landing System (ILS) documentation:

1.6.3.7.1. Equipment Type (localizer);

1.6.3.7.2. Antenna Type (localizer);

1.6.3.7.3. Distance to Approach End of Runway (localizer array or azimuth antenna);

1.6.3.7.4. Distance to Departure End of Runway (localizer array or azimuth antenna);

1.6.3.7.5. Course Width (localizer monitor limits);

1.6.3.7.6. Ground Elevation (glide slope);

1.6.3.7.7. Glide Angle (glide path);

1.6.3.7.8. Antenna Type (glide slope);

1.6.3.7.9. Distance to Approach End of Runway (glide slope antenna); and

1.6.3.7.10. Distance/Direction from Antenna to Runway Centerline (glide slope).

1.6.3.8. Review the revised data prior to submission and establish an effective date. Enter the effective date in the appropriate block. Submit required updates to AIS via the Aeronautical Information Portal. A link is prescribed in DoD FLIP GP guide **Chapter 11**. Fill out all required fields for the type of data being changed as identified on the web-based form. **Note:** Supplemental information may be uploaded as an attachment to the web-based FAA 7900-series form.

1.6.3.9. When updating the airport magnetic variation of record (not available on a specific digital FAA 7900-series form), submit update via the Aeronautical Information Portal (Military) Airport Data Change as prescribed in **paragraph 8.3** of this manual.

1.6.4. *Safe Effective Use and Preservation of Navigable Airspace,* 14 C.F.R. § 77*,* requires individuals and companies (proponents) planning construction projects to notify FAA when proposed construction or alteration of structures might present a hazard to flight. In turn, FAA administers the Obstruction Evaluation/Airport Airspace Analysis (OE/AAA) program as a way to solicit comments and concerns about these proposed construction projects from various aviation stakeholders. DAF TERPS is one such stakeholder. Additional procedures and requirements apply to analysis of proposed energy development projects, as required by 10 U.S.C. Sec. 183(a), Military Aviation, and Installation Assurance Clearinghouse for review of mission obstructions, and implemented under32 C.F.R. § 211, *Mission Compatibility Evaluation Process*.

1.6.4.1. DAF TERPS functions evaluate OE/AAA studies on an as needed basis. When notified of a new study, evaluate the proposal for impact to current and proposed terminal area Instrument Flight Rules (IFR) aircraft operations, instrument procedures, and minimum IFR altitudes.

1.6.4.2. Document all aspects of the impact in detail, determine alternatives, and recommend coordination of results with wing flying officials (Airfield Operations Flight Commander, Operations Group Commander, standardization and evaluation, etc.) and the Installation Encroachment Management Team per AFI 90-2001, *Mission Sustainment*.

1.6.4.3. The response should clearly state the extent of the impacts and when possible, provide acceptable solutions such as limiting the height of the structure to a specified height or relocating the structure. Characterize evaluation results as one of the following:

1.6.4.3.1. "**No TERPS Objection**." Submit this response when the evaluation results in no impact to IFR operations;

1.6.4.3.2. "**No TERPS Objection with Provision**." Submit this response when the proposal impacts IFR operations unless some mitigating action is taken; or

1.6.4.3.2.1. The mitigation or 'provision' could include lowering the proposed height, relocating the structure, supplying a better survey accuracy, or ensuring marking and lighting per FAA Advisory Circular 70/7460-1M, *Obstruction Marking and Lighting*.

1.6.4.3.2.1.1. Suggested mitigations may be discussed with either the assigned FAA specialist for the project, or with the project developer/proponent shown on FAA Form 7460-1, *Notice of Proposed Construction or Alteration*, (for

renewable energy projects) as part of the Installation Encroachment Management Team process.

1.6.4.3.2.1.2. When requesting a better survey accuracy, do not ask for multiple surveys on identical structures (for example, each wind turbine in a wind farm) as this would be cost prohibitive for the proponent. Instead, ask for the better accuracy on the obstacle with the highest MSL elevation and apply the new accuracy to all like obstacles.

1.6.4.3.2.1.3. Include the specific impact being mitigated. For example: "**Current accuracy raises approach minimums from** (altitude) **to** (altitude) **for** (number) **air operations daily.**" **Note**: Recommend including a copy of the local traffic count to substantiate this statement (see FAA Order JO 7400.2, *Procedures for Handling Airspace Matters*, paragraph 6-3-4.).

1.6.4.3.2.2. Include the following statement in the response when the evaluation indicates an object may become the controlling obstacle in any segment of an instrument procedure: "**No Objection with Provision; request proponent contact** (responsible TERPS function) **at** (enter applicable email address) **within 7 days of start of construction.**"

1.6.4.3.2.3. After confirming construction has started, take the necessary actions to ensure all affected instrument flight procedures are amended, as required. **Note**: FAA Form 7460-2, *Notice of Actual Construction or Alteration*, can be found on the public OE/AAA site; click on the 'View Supplemental Notices (Form 7460-2)' tab on the left side of the page.

1.6.4.3.3. "**Objection**." Use this response when the proposed construction or alteration impacts IFR operations and mitigation is not possible. This response to a proposal should be used as a last resort when the construction project would have a substantial adverse impact upon IFR flight operations. Clearly define the adverse effect on the IFR aircraft operations; quantify the approximate number of operations affected (weekly or monthly). **Note**: Endorsement of this response by wing flying officials (Director of Operations, standardization and evaluation, etc.) is highly recommended.

1.6.4.3.3.1. Document "Substantial Adverse Impact" (a significant number of aeronautical operations being impacted) and the reason(s) why the impact in this specific area rises to the level of being significant. Examples: An obstruction that would raise the minimum descent altitude (MDA) or decision altitude (DA) on several instrument flight procedures; an obstruction that would penetrate the 40:1 obstacle clearance surface (OCS); an obstruction that would penetrate the visual portion of the final approach 20:1 obstacle identification surface (OIS).

1.6.4.3.3.2. Conversely, an obstruction that requires amending an altitude in the intermediate or initial approach segment would not be considered to have a substantial adverse effect unless doing so would cause a nonstandard condition.

1.6.4.4. OE/AAA Data. Instrument procedure specialists assess the effect of construction proposals upon existing or proposed terminal area IFR operations. Temporarily adding an obstruction to GPD database for evaluation purposes is authorized. Do *not* amend an

instrument flight procedure or ATC chart based on TERPS evaluation until it is determined that actual construction has started.

1.7. Procedural Information. Procedural information includes the following instrument flight procedure data: fix; radial; bearing; course; track; route; distance; altitude; minima; controlling obstacle; holding pattern; climb table; time/distance table; changes to any procedure identification; any operational note; or to any caution note depicted on an instrument flight procedure, including FTIP. All other information is considered non-procedural information. Changes made to procedural information are referred to as 'procedural changes' throughout this DAFMAN. Also refer to the current version of the Memorandum of Understanding between the National Geospatial-Intelligence Agency (NGA) and US Army Aeronautical Services Agency (USAASA), Naval Flight Information Group (NAVFIG), and Air Force Flight Standards Agency (AFFSA) for processing instrument flight procedures available from AFFSA TERPS SharePoint®. See DoD FLIP GP Chapter 11-2 AFFSA TERPS for the most current SharePoint® address.

1.8. AFFSA TERPS Helpdesk. Submit requests for GPD license keys, magnetic variation information, information on FAA NAVAIDs (to include magnetic variation and any other data), initial and revalidation requests for host nation accreditation, and suspected problems or recommendations for GPD software enhancements via TERPS helpdesk. See DoD FLIP GP Chapter 11-2 for the most current AFFSA TERPS helpdesk address. DAF Form 847, Recommendation for Change of Publication, may also be submitted via TERPS helpdesk as an attachment to an incident when requesting changes to DAFMAN 11-230. Submit requests directly to AFFSA TERPS by phone or email when the helpdesk is not operational. Contact information is published in DoD FLIP GP Chapter 11-2 AFFSA TERPS.

1.9. Transfer of Instrument Flight Procedure Responsibility. Only one instrument procedure authority should be developing, publishing, and/or maintaining instrument flight procedures at a single location/airport. Do not solicit or enter into an agreement with another instrument procedure authority (to include another military department, FAA, NGA or Jeppesen®) to develop, publish and/or maintain instrument flight procedures where DAF is currently responsible for these processes unless the senior airport authority changes from one military service to another.

1.9.1. Except as stated in **paragraph 1.9**, instrument flight procedure responsibility may be temporarily delegated or permanently transferred from one MAJCOM (transferring agency) to another MAJCOM (receiving agency). **(T-1)** MAJCOMs participating in authorized instrument flight procedure responsibility delegation/transfer agreements (to include FTIP locations) must ensure transfer only after the requirements in the following paragraphs have been met. **(T-1)**

1.9.2. Transfer of FTIP from DAF to another military service or to NGA must be accomplished according to the *Memorandum of Agreement between the US Army Aeronautical Services Agency (USAASA), Naval Flight Information Group (NAVFIG), Air National Guard (ANG), Air Force Flight Standards Agency (AFFSA), and the National Geospatial-Intelligence Agency (NGA-SFA) for Review, Maintenance, and Publication of Foreign Terminal Instrument Procedures (FTIP)* available from the AFFSA TERPS SharePoint® address published in the DoD FLIP GP Chapter 11-2 AFFSA TERPS. **(T-1)**

1.9.3. Document office of primary responsibility transfer of each location or country, as applicable, in a MOA or in a Memorandum for Record (MFR). **(T-1)** Include the effective date of transfer and the following items at a minimum:

1.9.3.1. The office within the receiving agency to which the transfer of responsibility is being made;

1.9.3.2. All instrument flight procedures, airports, and/or host nation locations/countries, as applicable, being transferred;

1.9.3.3. A list of functions, limitations, and products required of the receiving agency. Reference FTIP locations, also specify the organization responsible for conducting FTIP criteria validation at the transferred location(s);

1.9.3.4. All maintenance responsibilities that are being transferred to include the DoD NOTAM office of primary responsibility being transferred to the receiving agency;

1.9.3.4.1. When a transferred instrument flight procedure or FTIP can no longer be maintained according to the MOA or MFR, the receiving agency notifies the transferring agency and the instrument flight procedure or FTIP must be identified unusable via Notice to Air Missions (NOTAM) as soon as practical, if not immediately. **(T-2)**

1.9.3.4.2. When maintenance cannot be restored within 60 calendar days by the receiving agency, a complete instrument procedure evaluation must be conducted before reinstatement of the instrument procedure. **(T-2)** When unable to meet this requirement, the instrument flight procedure must be cancelled and removed from DoD FLIP (Terminal). **(T-2)**

1.9.3.5. Coordination processes that ensure all applicable parties agree on the effective date of transfer or deletion of instrument flight procedures from DoD FLIP (Terminal).

1.9.4. Transfer instrument flight procedure documentation to include any/all applicable FAA forms, DAF forms, GPD produced documentation, and general correspondence that apply. This includes documentation on periodic reviews, NOTAMs, Obstruction Evaluation studies, and periodic flight inspection, as applicable. It is the receiving agency's responsibility to ensure transferred instrument flight procedures are current and acceptable. When the transferring and receiving agencies agree to the effective date of transfer and the instrument flight procedure documentation is accepted by the receiving agency, the transferred instrument flight procedures become the responsibility of the receiving agency.

1.9.5. Retain a signed and dated copy of MOA or MFR on file at MAJCOM TERPS function and provide a digital copy to AFFSA TERPS.

1.9.6. One-time (one mission; one exercise; etc.) transfer of instrument flight procedure responsibility for the purpose of performing FTIP criteria validation at one or more host nation locations needs to be documented by the transferring agency. Both the transferring and receiving agencies need to agree on the scope and termination date of this limited transfer of responsibility. This temporary, limited transfer of instrument flight procedure responsibility may be made via MFR or email between the two agencies; a MOA is not required.

1.9.7. DAF MAJCOMs will only transfer FTIP locations that are on DoD Accepted Host Nation List to NGA. **(T-1)** The DoD Accepted Host Nation List is administered to by AFFSA TERPS office and stored on their SharePoint®. See DoD FLIP GP guide Chapter 11-2 for the SharePoint® address.

1.9.8. DAF will not transfer any DAF fixed base operations instrument procedure program to NGA. **(T-1)**

Chapter 2

PROCESSING INSTRUMENT FLIGHT PROCEDURES

2.1. Identifying Instrument Flight Procedure Requirements. MAJCOM TERPS function establishes guidance for users to request new instrument flight procedures and for revising or cancelling existing instrument flight procedures. Include the following items (at a minimum) in this guidance.

2.1.1. Name of the airfield or location;

2.1.2. Types of instrument flight procedures required;

2.1.3. Identification of runway(s) requiring new or amended instrument flight procedures;

2.1.4. Required aircraft categories;

2.1.5. Specific features or capabilities required. For example: termination fix for a departure, fix at which the instrument procedure should commence, avionics features that influence procedure design, etc.;

2.1.6. Date procedure is required, or when appropriate, date no longer needed;

2.1.7. Operations Group Commander's (or equivalent) designation and endorsement/concurrence, contact information of organizations or units requesting the procedure; and

2.1.8. Email address of where to send instrument flight procedures distributed via loose-leaf format.

2.2. Requesting or Amending Instrument Flight Procedures at Civil or at Joint-use Airports. per FAA Order 8260.32, a requesting agency may recommend, with justification, the inclusion of existing civil instrument flight procedures and publication of new instrument flight procedures at domestic civil airports.

2.2.1. AFFSA TERPS is the primary Action Office for processing submissions via FAA IFP Information Gateway.

2.2.2. MAJCOMs are responsible to enact protocols to notify AFFSA TERPS of requests for IFP development and/or amendments changes to their 8260.32 procedures.

2.3. Requesting Publication of Instrument Flight Procedures in DoD FLIP (Terminal).

2.3.1. Unless otherwise stipulated in this manual, instrument flight procedures will be flight inspected satisfactorily and the procedure package will have all required signatories processed prior to publication. **(T-2)** MAJCOM TERPS functions are responsible for submitting requests for new or amended instrument flight procedures to NGA flight information publications mailbox at **taps@nga.mil** and Jeppesen® at **BGSDENDOCCTRL@boeing.com**. Apply guidance from **paragraph 2.2** and from the current version of the *Memorandum of Understanding between National Geospatial-Intelligence Agency (NGA) and US Army Aeronautical Services Agency (USAASA), Naval Flight Information Group (NAVFIG), and Air Force Flight Standards Agency (AFFSA) for processing instrument flight procedures.*

2.3.1.1. Include the required documentation from **Table 2.1**.

Table 2.1. Minimum Instrument Flight Procedure/ATC Chart Package Content.

Coordinating Function ↓	Standard IFPs (Notes 4 & 6) ↓	Nonstandard IFPs (Notes 4 & 6) ↓	Standard FTIP (Notes 3, 5 & 6) ↓	Nonstandard FTIP (Notes 3, 5 & 6) ↓
Major Command Terminal Instrument Procedures Function	GPD Signature Page	GPD Signature Page	GPD Signature Page	GPD Signature Page
	Maps/Charts & Drawings	Maps/Charts & Drawings	Maps/Charts & Drawings	Maps/Charts & Drawings
	ESV Document (as required)	ESV Document (as required)	- - - -	- - - -
	FAA Form 8260-2	FAA Form 8260-2	- - - -	- - - -
	Supporting Documents (Note 1)	Supporting Documents (Note 1)	Supporting Documents (Note 1)	Supporting Documents (Note 1)
	Procedure Log (Note 2)	Procedure Log (Note 2)	Procedure Log (Note 2)	Procedure Log (Note 2)
	AF Form 3992/3993 (as required)	AF Form 3992/3993 (as required)	AF Form 3992/3993 (as required)	AF Form 3992/3993 (as required)
	AF Form 813 (or per host nation)	AF Form 813 (or per host nation)	- - - -	- - - -
	- - - -	AF Form 679	- - - -	AF Form 679
	FAA Form 8200-17	FAA Form 8200-17	- - - -	- - - -
National Geospatial-Intelligence Agency and Jeppesen®	NGA Tasking Letter	NGA Tasking Letter	NGA Tasking Letter	NGA Tasking Letter
	FLIP graphic depiction	FLIP graphic depiction	FLIP graphic depiction	FLIP graphic depiction
	GPD Publication Report	GPD Publication Report	GPD Publication Report	GPD Publication Report
	Signed FAA Form 8260-2(s)	Signed FAA Form 8260-2(s)	- - - -	- - - -
	ARINC 424 Coding (when applicable)	ARINC 424 Coding (when applicable)	ARINC 424 Coding (when available)	ARINC 424 Coding (when available)

Note 1. Supporting documentation includes coordination letters, maps, flight inspection reports, manual computations not on AF Forms, build reports, etc. Include clarification when sources of obstacle data, computed values, and nonstandard criteria may cause misunderstanding. Appropriate host nation Aeronautical Information Publication (AIP) data and information obtained by agreement with the host nation are also considered FTIP supporting documentation. Ensure all host nation source not published in English is translated according to **paragraph 14.10**; include a copy of the translation in the procedure package.

Note 2. The procedure log is required to track procedural changes and to document all actions taken to keep the instrument procedure current. Include NGA tasking letters, FLIP reviews, and Automated Evaluation results.

Note 3. Listed package content requirements are the minimum for FTIP based on Non-Accredited host nation source. See **paragraph 14.18** for additional package content requirements.

Note 4. See **paragraph 2.4.5** of this DAFMAN for instrument flight procedures developed by FAA in accordance with FAA Order 8260.32.

Note 5. Do not send any FTIP to Jeppesen®.

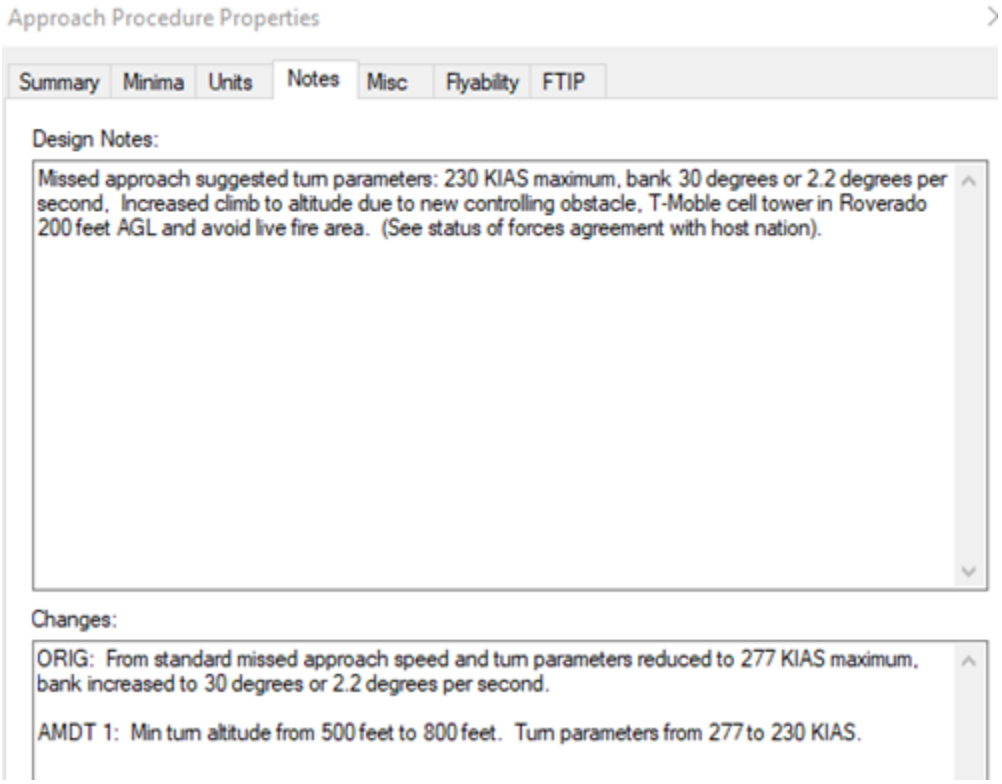
Note 6. See **paragraph 6.2** for Flight Inspection Procedure Package content requirements.

2.3.1.2. As integral parts of USAF Safety of Navigation (SoN) Enterprise Solution, it is essential to ensure the Jeppesen® world-wide IFP library and military navigation database are kept current. TERPS authorities must notify Jeppesen® of every change to all USAF developed IFPs. This includes all correspondence with NGA via TAS letters and all subsequent corrections or alterations to TAS letters. Send all Jeppesen® correspondence to **BGSDENDOCCTRL@boeing.com** from a MAJCOM TERPS organization email account. Submitting aeronautical data from an organization box strengthens exchange

traceability and helps prevent unauthorized personnel from making changes to DAF IFPs and data.

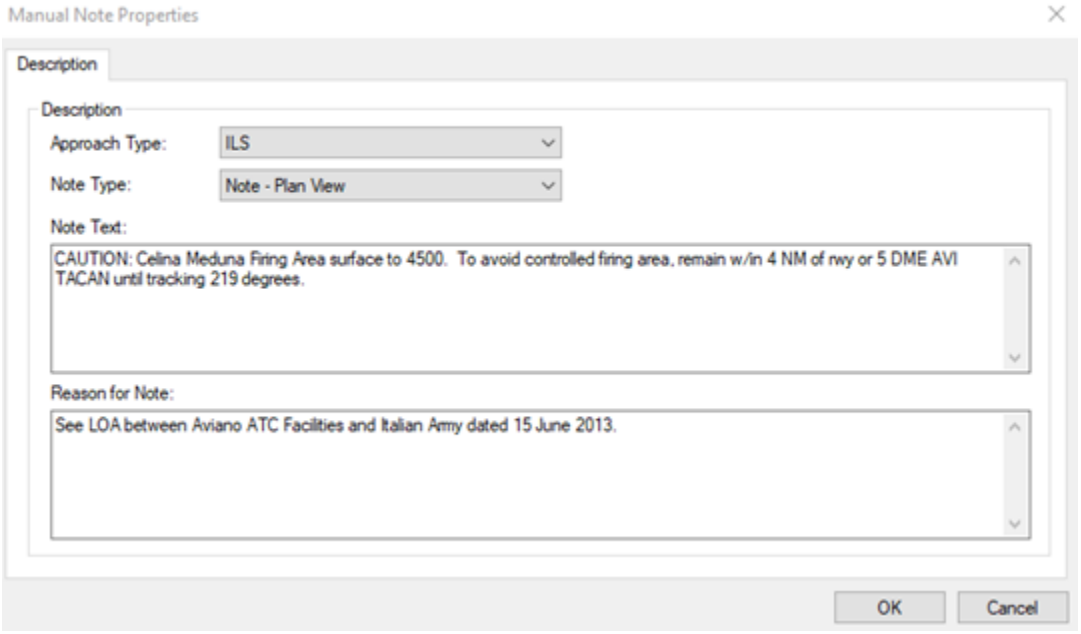
2.3.1.3. For each procedure published in DoD FLIP or as a loose-leaf product, maintain an instrument flight procedure package (IFPP) as a standalone product. When procedure design is predicated on LOAs, MOUs, noise abatement, flight inspection reporting and alike, annotate in the "Approach Procedure Properties," "Design Notes" and include source documents in the procedure package. Track changes to procedures and circumstances for min/max altitudes, speed restrictions, bank angle etc. See **Figure 2.1** example Design Notes.

Figure 2.1. Approach Procedure Properties.



2.3.1.4. Ensure all applicable information published on the plate for each procedure that is not auto generated by GPD software is manually entered in "Manual Note Properties." See **Figure 2.2** example Manual Note Properties.

Figure 2.2. Manual Note Properties.



2.3.1.5. When submitting a climb rate to NGA, add a line to the planview section of the tasking letter indicating the climb rate value for 60 knots only, rounded up to the next whole 1-foot value.

2.3.2. Requests to NGA for the initial publication of new instrument flight procedures should include the instrument flight procedure identification to be published, an effective date, and a point of contact in a cover letter format. Include in the request directions for NGA to annotate the instrument flight procedure as original and the criteria in the margin information.

2.3.3. The instrument procedure specialist must establish the effective date for each new, revised, or cancelled instrument flight procedure and navigational fix. **(T-3)**

2.3.3.1. The effective date for instrument flight procedures, aeronautical data, and navigational fixes must coincide with the effective dates established according to the Aeronautical Information Regulation and Control (AIRAC) system. **(T-2)** A description of AIRAC system can be found in DoD FLIP, *General Planning (GP)*, Chapter 3, paragraph 3-1., *General*. Effective dates can be found in DoD FLIP, *General Planning (GP)*, Chapter 11, paragraph 11-10., *Revision Schedules*. Establish a new publication date and ensure all affected agencies are advised of the new timeline when the effective date needs modification after coordination but prior to publication.

2.3.3.2. Coordinate the effective date with all concerned agencies (NGA, Jeppesen®, FAA and when applicable host nation, etc.) to ensure aeronautical charts and supporting data are not published in DoD FLIP (Terminal) until after a successful flight inspection and all published procedural data has been validated and coordinated with air traffic management.

2.3.3.3. Except in extreme circumstances when safety of flight dictates, do not request an effective date that falls on the change notice cycle date for SIDs, Standard Terminal Arrivals (STARs), or graphic ODPs with center-assigned codes.

2.3.4. When requesting procedural change(s) to an instrument flight procedure distributed via loose-leaf format or published in DoD FLIP (Terminal), include the following, as necessary: above ground level (AGL) and MSL heights; obstacles; Approach Lighting System inoperative notes; etc. Be as specific as possible to increase the accuracy of the final product.

2.3.5. Include a copy of each applicable, approved, and signed FAA Form 8260-2 for each fix. When there is an operational requirement to publish an instrument procedure prior to any fix effective date, apply the guidance from **paragraph 2.2.6**.

2.3.6. Ensure the caveat "**EFFECTIVE BY NOTAM**" is charted on the instrument flight procedure for a period not to exceed 90 consecutive days whenever an instrument flight procedure is being published in DoD FLIP (Terminal) under any of the conditions below:

2.3.6.1. Before any new or revised fix data are published in NFDD;

2.3.6.2. Before a required flight inspection;

2.3.6.3. Before required waiver approval; or

2.3.6.4. Before DAFIF® data is updated to match the data used to develop the instrument flight procedure.

2.3.6.4.1. DAFIF® cannot contain multiple instrument flight procedures with the same identification. Apply FAA Order 8260.3, paragraph **1-6-2**.d. Add an instrument flight procedure alphabetical suffix to the identification of the current instrument flight procedure and to the amended instrument flight procedure when publishing amendments by NOTAM results in duplicate instrument flight procedure identifications.

2.3.6.4.2. Once the amended instrument flight procedure becomes effective by NOTAM, ensure the suffix is removed from the amended instrument flight procedure and the original instrument flight procedure is deleted from DAFIF® and DoD FLIP (Terminal).

2.3.7. Issue a NOTAM immediately following successful flight inspection and all of the following have been completed. Include any changes required by flight inspection or the waiver approval authority in the NOTAM. **Note**: See AFI Interservice Publication 11-208, *Department of Defense Notice to Airmen System*, for additional guidance:

2.3.7.1. Verification that all requested DAFIF® updates have been made;

2.3.7.2. Waiver approval; and

2.3.7.3. Publication of all required fixes in NFDD.

2.3.8. Publication of radar procedures. Publish Precision Approach Radar (PAR) and Airport Surveillance Radar (ASR) approaches in text format in the "RADAR INSTRUMENT APPROACH MINIMUMS" section of DoD FLIP (Terminal). Publish them in the graphic format when operationally required.

2.3.8.1. Do not develop or publish a descent angle or a descent gradient for ASR approaches.

2.3.8.2. Unless published in the graphic format, do not develop or publish an Emergency Safe Altitude (ESA) or a Minimum Safe/Sector Altitude (MSA) for any radar procedure.

2.4. Documentation Requirements. Maintain all hard copy (paper) or soft copy (electronic) data (including airport data) that supports the original or new instrument flight procedure or ATC chart. See **Table 2.1** for minimum documentation required for charts and instrument flight procedures (manually developed and automated).

2.4.1. For DAF developed instrument flight procedures, except as noted elsewhere in this DAFMAN, the following are the minimum required coordination signatures.

2.4.1.1. Instrument procedure specialist;

2.4.1.2. Airfield Operations Flight Commander (or designated representative);

2.4.1.3. Senior Operational Commander (or designated representative); and

2.4.1.4. MAJCOM TERPS.

2.4.1.5. Flight Inspection must provide an approved FAA Form 8200-17, *Flight Inspection Procedure Control (FIPC)* (**Figure 5.1**).

2.4.2. Retain all source documentation relating to aeronautical or obstacle data revisions pertinent to the instrument flight procedure. Include correspondence between the unit and MAJCOM TERPS function that provides rationale for any change(s). Also, retain all significant correspondence concerning the currently published version of the instrument flight procedure with the procedure package.

2.4.3. GPD export documentation includes the following mandatory files:

2.4.3.1. [workspace name]-wks.pdf;

2.4.3.2. [procedure name]-[date]-DEF.ipd;

2.4.3.3. [procedure name]-BLD.pdf;

2.4.3.4. [procedure name]-FLIP.pdf;

2.4.3.5. [procedure name]-Flyability.pdf (when required);

2.4.3.6. [procedure name]-OBS.txt (only applicable when manual obstacle changes have been made);

2.4.3.7. [procedure name]-PUB.pdf;

2.4.3.8. [procedure name]-Waiver.pdf (when applicable). GPD produces one waiver document for each nonstandard condition and multiple conditions are labeled sequentially. Retain this waiver documentation as part of the procedure package; **(T-3)**

2.4.3.9. [procedure name]-AutoEval.pdf;

2.4.3.10. [procedure name]-AERO.xml;

2.4.3.11. [procedure name]-ARI;

2.4.3.12. The following Fix and Holding Data Records:

2.4.3.12.1. [fix name].rtf;

2.4.3.12.2. [fix name].xml;

2.4.3.12.3. [procedure name].ARINC.pdf;

2.4.3.12.4. [procedure name].glyr;

2.4.3.12.5. [procedure name]-Aeronautical Associations.log; and

2.4.3.12.6. Flight_Inspection folder, [procedure name].kmz

2.4.4. GPD export documentation includes all of the geometry files, specifically the .kml, shape, and shape layer files.

2.4.5. Maintain documentation relative to each instrument procedure developed by FAA per FAA Order 8260.32 at domestic civilian airports and subsequently published in DoD FLIP (Terminal). Include the initial letter requesting development of the instrument procedure and all succeeding forms and paperwork.

2.5. Revising Instrument Flight Procedures. Submit requests for revisions to procedural information on currently published instrument flight procedures to NGA and Jeppesen®. When making multiple changes, document each change individually in the request. Establish a process to coordinate and respond to requests from local flying organizations and ATC facilities for new instrument procedure development or changes to currently published instrument flight procedures. When changing the depiction of the instrument flight procedure in either the planview or profile, inclusion of an annotated graphic is encouraged to assist NGA make all required changes.

2.5.1. When amending instrument and radar approaches, multiple changes to an individual instrument flight procedure may be made in one request to NGA and Jeppesen® as a single amendment. Ensure the request includes directions for NGA to change 'Original' to 'Amendment 1' or, for example, to increase the amendment number from 'Amendment 2' to 'Amendment 3'.

2.5.2. Textual ODPs also require the 'Original' or 'Amendment (number)' notations. Apply the naming guidance from FAA Order 8260.46 when amending graphic ODPs and SIDs. **Note:** When validating changes to host nation instrument flight procedures, do not modify the instrument procedure name; in these cases, amendment numbers would be appropriate for tracking changes.

2.5.3. A NOTAM may be issued that amends the instrument flight procedure prior to flight inspection only under the following conditions:

2.5.3.1. When increasing the landing minima; increasing a fix crossing altitude; changing the visual descent point (VDP) location or the descent angle; changing an operational or caution note;

2.5.3.2. The Airfield Operations Flight Commander, Operations Group Commander and MAJCOM TERPS function, as applicable, are notified of the procedural change(s) prior to issuing the NOTAM; and

2.5.3.3. The required change does not create a nonstandard condition. **Note:** When changes are permanent, process an amended instrument flight procedure and ensure the NOTAM is cancelled when all requested changes are published without error.

2.5.4. After the revised instrument flight procedure has been flight inspected, a NOTAM may be used to amend the currently published instrument flight procedure with the required change(s) prior to the revised version being published in DoD FLIP (Terminal).

2.5.4.1. Specify the name of the instrument approach procedure, radar approach procedure, or the textual ODP being amended by NOTAM. Include the current amendment number or 'Original', as appropriate. Use the currently published name of the graphic ODP or SID when amending these procedures via NOTAM.

2.5.4.2. Identify the procedural changes in the NOTAM followed by the phrase "**THIS IS** (procedure identification) **AMDT** (next amendment number in sequence)." Ensure this NOTAM is cancelled when the amended instrument flight procedure is published in the DoD FLIP (Terminal).

2.5.4.2.1. Example NOTAM #1: **VOR RWY 31 AMDT 6. S-31 MDA 720/HAT 693 ALL CATS. VIS CAT C 2, CAT D 2-1/2. CIRCLING MDA 720/HAA 692 ALL CATS. VIS CAT C 2, CAT D 2-1/2. THIS IS VOR RWY 31 AMDT 7**.

2.5.4.2.2. Example NOTAM #2: **ILS RWY 10R ORIG. CIRCLING MDA 1420/HAA 559 ALL CATS. THIS IS ILS RWY 10R AMDT 1**.

2.5.5. When amending an instrument flight procedure, processing of a revised instrument procedure package through all signatories is not required. Include the following items in the affected instrument procedure package:

2.5.5.1. The revised GPD Publication Report;

2.5.5.2. An additional Approach/Departure Signature Page;

2.5.5.3. The updated, GPD produced, flight information publication depiction;

2.5.5.4. All updated flight inspection maps showing the location of the new controlling obstacle; and

2.5.5.5. An updated FAA Form 8260-2 when the new controlling obstacle is located in a holding segment.

2.5.6. Retain the original signature page GPD Publication and Build Reports with the instrument procedure package along with the updated documentation from **paragraph 2.4.5**. The new signature page for the amendment(s) only needs the following approval authority signatures:

2.5.6.1. The instrument procedure specialist; and

2.5.6.2. MAJCOM TERPS.

2.5.7. Provide written notification (MFR or similar type of written notification) of the amendment(s) to the following (retain a copy of this notification with the instrument procedure package):

2.5.7.1. Airfield Operations Flight Commander (or designated representative);

2.5.7.2. Civil Engineering (Environmental & Air Installation Compatible Use Zone);

2.5.7.3. FAA or host nation (as applicable); and

2.5.7.4. Senior Operational Commander (or designated representative).

2.5.8. MAJCOM instrument procedure function responsibilities:

2.5.8.1. Develop MAJCOM quality control review. Perform an in-depth review of new or revised air traffic control chart, instrument flight procedure, radar approach procedure or departure/ODP. At a minimum, the review will ensure;

2.5.8.1.1. Design is according to approved national or international criteria;

2.5.8.1.2. All aeronautical and airfield data is current;

2.5.8.1.3. An appropriate equivalent level of safety is provided and documented when deviations to criteria are necessary;

2.5.8.1.4. Manual calculations were performed without error and;

2.5.8.1.5. All required documentation is complete and included in the procedure package (to include all required approval signatures).

2.5.8.1.6. MAJCOM quality control review must be completed by a qualified instrument procedure specialist other than the specialist who designed the procedure. When there is no qualified specialist available locally to conduct the quality control review, coordinate with another MAJCOM or other qualified TERPS authority to accomplish this review.

2.5.8.1.7. The authority conducting this review signifies the reviewed procedure or chart meets the requirements of MAJCOM quality control review by signing DAF GPD produced signature page under “MAJCOM TERPS”. The same person may not sign the signature page under “MAJCOM TERPS” *and* as the “Instrument Procedure Specialist”.

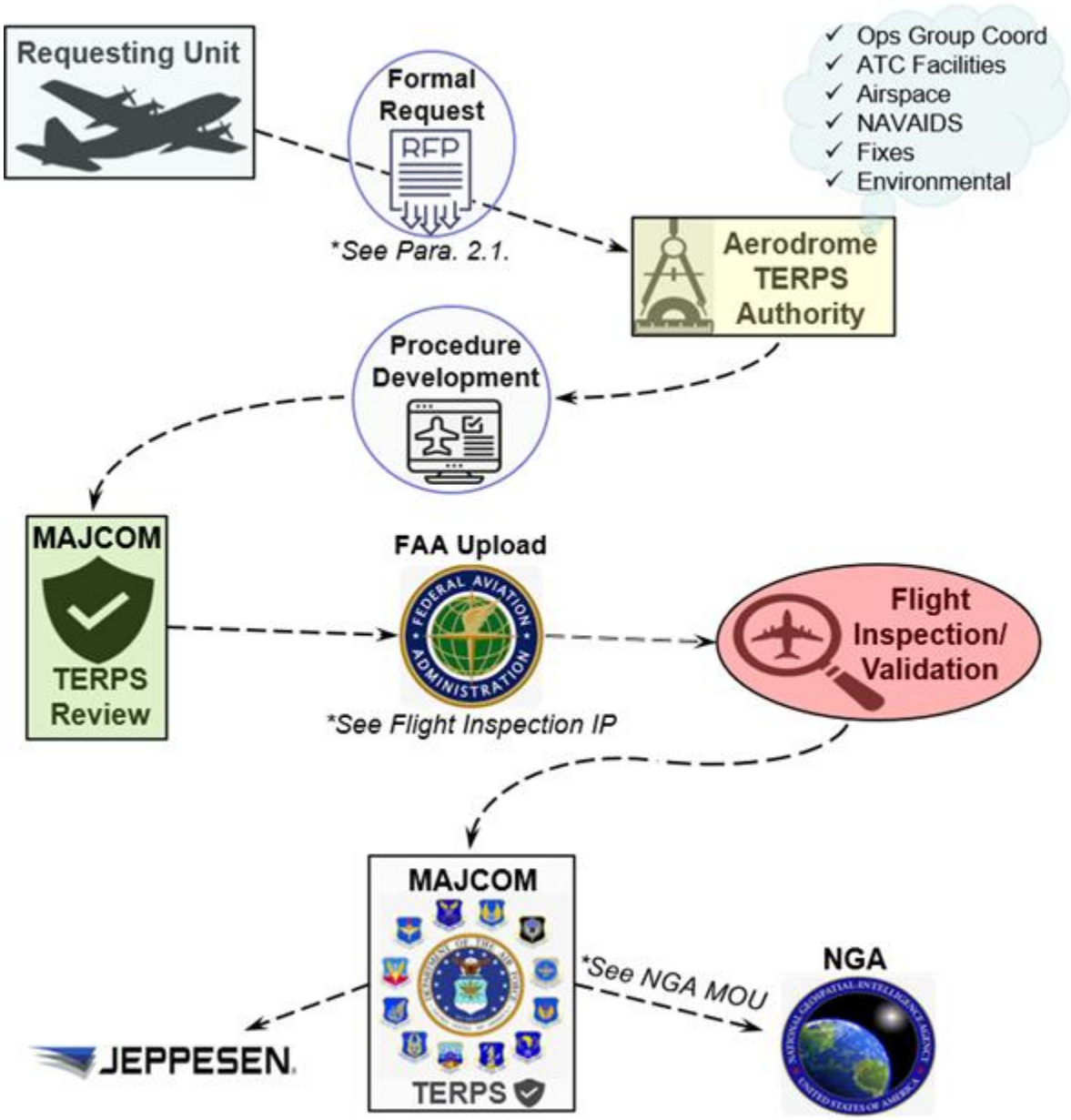
2.5.8.1.8. When performing MAJCOM quality control review, consider any supplemental criteria contained in the current MAJCOM supplement to this manual.

2.5.8.2. Process the new controlling obstacle data with FAA when it changes FAA Form 8260-2 holding documentation (as applicable);

2.5.8.3. Forward a complete flight inspection package to Flight Inspection; and

2.5.8.4. When the controlling obstacle changes in the final approach segment, forward a request to NGA and Jeppesen® for charting of the new controlling obstacle. The final approach segment controlling obstacle must be charted on the instrument flight procedure, except Adverse Assumption Obstacle (AAO). Charting other obstacles is at the discretion of MAJCOM TERPS authority.

Figure 2.3. Instrument Flight Procedure Processing for new and amended IFPs.



2.6. Post Publication Review of Flight Information Publications and Other TERPS Related Data. As an integral part of USAF Safety of Navigation (SoN) enterprise solution, it is essential to ensure the IFP libraries and military navigation databases are kept current.

2.6.1. A thorough review of new or revised instrument flight procedures is required prior to DoD FLIP (Terminal) (paper or electronic version) publication and Jeppesen® effective dates to ensure the information produced by NGA and Jeppesen®/Boeing® foreflight applications match the instrument flight procedure package (IFPP) information. **(T-3)**

2.6.2. When responsible for development and maintenance of instrument flight procedures at a location, to include loose-leaf formatted publications, complete a post publication review

(PPR) as defined in **Attachment 1** prior to the effective date. **(T-3)** Validate the published IFP is an accurate representation of DAF TERPS intent.

2.6.3. When errors are found or when omissions are discovered in procedural information, regardless of the version in which the error or omission was made, take the following actions:

2.6.3.1. Initiate the appropriate NOTAM per AFI 11-208;

2.6.3.2. Forward a post publication review letter to NGA (**taps@nga.mil**) and Jeppesen® (**BGSDENDOCCTRL@boeing.com**) that addresses disparities, corrects error(s) or omission(s); and

2.6.3.3. Document flight information publication review results according to specific MAJCOM guidance.

2.7. Flight Information Publication Maintenance.

2.7.1. Establish a flight information publication maintenance system. Ensure all instrument flight procedures (including FTIP) published in DoD FLIP (Terminal) remain current and meet applicable criteria. The information required to keep instrument procedures current, to include pertinent changes to the airfield environment, should be specified in MAJCOM guidance. The supporting MAJCOM TERPS function is responsible for maintaining instrument flight procedures at locations where a unit instrument procedure specialist is not assigned (or available).

2.7.1.1. Establish a method to track each instrument flight procedure, each fix, current magnetic variance of record, and each waiver to criteria applicable to the instrument flight procedures published in MAJCOM TERPS area of responsibility. **Note:** MAJCOM TERPS Manager is responsible for each DAF owned navigational fix published within the applicable TERPS area of responsibility.

2.7.1.2. Track instrument flight procedures developed at domestic civil airports by FAA per FAA Order 8260.32 and published in DoD FLIP (Terminal).

2.7.2. Initiate GPD Automated Evaluation (AutoEval) application on each workspace and all currently published or pending instrument flight procedures after ingest of new aeronautical data (that is; Digital Terrain Elevation Data [DTED], DVOF, DAFIF®, or Shuttle Radar Topography Mission [SRTM] data) or after manual edits are processed. Results of the AutoEval must be documented as an official record. **(T-3)**

2.7.3. Establish a host nation point of contact for coordinating changes and resolving questions when publishing IFPs for locations where DAF is responsible for TERPS and when publishing FTIP in DoD FLIP (Terminal).

2.7.3.1. Review host nation source documentation for any required procedural changes to instrument flight procedures published in DoD FLIP (Terminal).

2.7.3.2. Compare new information against the old information and against what is currently published in DoD FLIP (Terminal) or posted on USAF Foreign Terminal Instrument Procedures (FTIP) SharePoint® site and HQ AMC Global Decision Support System (GDSS). Check the following source documents on a daily basis for aeronautical information changes, deletions, and new instrument procedures:

2.7.3.2.1. Host nation Aeronautical Information Publication (AIP);

2.7.3.2.2. US and host nation NOTAMs; and

2.7.3.2.3. Host nation AIRAC amendments.

2.7.3.3. Document all discrepancies found, corrective actions taken, and the review completion date on the procedure log. Maintain as much source information as possible in the applicable procedure package.

2.7.3.4. Whenever possible, perform a full review of host nation source documentation in advance of its effective date. Notify NGA of any procedural changes to published instrument procedures required prior to the applicable cut-off dates established in DoD FLIP GP, Chapter 11, *Revision Schedules*. To the maximum extent possible, ensure DoD procedure is published and effective on the same date as the host nation procedure.

2.8. Removing Instrument Flight Procedures from DoD Publications.

2.8.1. When a request to cancel an instrument flight procedure is received, coordinate deletion of the instrument flight procedure from DoD FLIP (Terminal) with other agencies and using organizations (transient and tenant flying units, MAJCOM, other DoD service providers, host nation, Jeppesen® etc.). The FAA must be notified when cancelling instrument flight procedures published within NAS. **(T-1)** **Note:** Do not consider the absence of a reply as concurrence; follow-up with each agency or using organization at least once for a response before deleting the instrument procedure.

2.8.2. When an DAF developed and maintained instrument flight procedure is no longer required, send the request for deletion to NGA and Jeppesen® at **BGSDENDOCCTRL@boeing.com**.

2.8.3. When requesting deletion of multiple instrument flight procedures from a single location, identify the airport, the instrument flight procedure(s) to be deleted, the effective date, and a point of contact in the request. List each instrument flight procedure being deleted individually in the body of the letter or MFR.

2.9. Special Notation Requirements. Special aircrew, aircraft certification, and authorization requirements are the responsibility of the flying unit or MAJCOM flying authority. Except for Category II and Category III procedures, when any special aircrew, aircraft certification, or authorization notes are annotated on the instrument flight procedure, ensure a method to contact the unit or MAJCOM flying authority is also annotated on the instrument flight procedure.

2.9.1. All Category II and Category III ILS procedures (excluding FTIP) require the following special notation: "**CAT II** (or CAT III) **ILS – Special Aircrew and Aircraft Certification Required**."

2.9.2. Instrument flight procedures published in true headings instead of magnetic headings are not considered nonstandard and do not require waiver authority consideration. Include the following note in the planview of all instrument flight procedures developed and published by DAF that use true headings: **"All Bearings and Directions are True."**

2.9.3. Where grid navigation is used to depict grid bearings on instrument flight procedure charts, orient these charts to Grid North. This note, "**All Bearings and Directions are Grid**", must be included in the planview of all instrument procedures developed, published, or reviewed by DAF that use grid bearings.

2.9.4. Special Authorization (SA) Category I Procedures. Apply FAA Order 8400.13E, *Procedures for the Evaluation and Approval of Facilities for Special Authorization Category I Operations and All Category II and III Operations* (*except* paragraph 4.b.) and FAA Order 8260.3, Section 10-4. When the Category II height above touchdown (HAT) is less than 150 feet, increase HAT up to a minimum of 150 feet. Publish each SA Category I procedure as a stand-alone procedure. To be eligible for SA Category I approaches as low as a 150 foot HAT and runway visual range (RVR) 1400, runways must have or be qualified for an IFR approach. **(T-1)** When ILS has restrictions, SA Category I is not authorized.

2.9.4.1. The chart note "**Not for Civil Use**" is required on SA Category I procedure when the glidepath angle is other than 3 degrees.

2.9.4.2. The chart note "**Requires specific OPSPEC, MSPEC, or LOA approval and use of HUD to DA**" is *not* published when the approach is marked "**Not for Civil Use**."

2.9.4.3. Ensure all DAF developed SA Category I procedures contain the following notes:

2.9.4.3.1. **Procedure N/A when the ATC tower is closed** ; and

2.9.4.3.2. **Requires Major Command flying authority approval and use of HUD to DA** .

2.10. Publishing ILS Restrictions. Ensure permanent, flight inspected restrictions to ILS facilities, as documented in the flight inspection report, are published in the planview as a caution note or as requested by flight inspection. Inform all other signatories on the procedure of these restrictions. Examples: **CAUTION: ILS GS unusable below 3100 MSL** or **CAUTION: Autopilot coupled operations NA past DA**. Process new restrictions from the flight inspection as procedural changes.

2.11. Published Altitudes. Ensure the minimum required obstacle clearance (plus adjustments when applicable), appropriate to the segment or sector, is applied to all published altitudes. This policy applies to all instrument flight procedure segments, all MSA and ESA sectors, and to all ATC chart sectors, *regardless of established altitude rounding guidance*. Unless required otherwise, ensure all altitudes established on an instrument flight procedure are charted as an "at or above" altitude. Document rationale used for charting an altitude as an "at" altitude in the procedure package. Do not use "at or below" altitudes; use "block" altitudes when required.

Table 2.2. Map Scales Required for FTIP Criteria Validation or Instrument Flight Procedure Publication in DoD FLIP (Terminal).

Item/Segment to be Evaluated	Map Scale Required
Intermediate – Final – Missed Approach – Circling – Initial Climb Area (ICA)	1:20,000 to 1:100,000 (1:250,000 scale maps may be used when 1:20,000 to 1:100,000 scale maps are not available)
Minimum Safe/Sector Altitudes	1:250,000
Initial Segment – Holding	1:500,000

Emergency Safe Altitudes (When applicable)	1:500,000 to 1:1,000,000
Departure Procedures (excluding ICA)	1:20,000 to 1:500,000

Chapter 3

TERPS DATA MANAGEMENT

3.1. Digital Data. Digital products that support FTIP criteria validation and instrument flight procedure development and maintenance include DAFIF®, DVOF, DTED (Level 1 or Level 2, as required). Use Shuttle Radar Topography Mission (SRTM) data when DTED is not available or when operationally advantageous. NGA distributes DAFIF® and DVOF every 28 days. DTED and other products are updated as necessary by NGA.

3.1.1. Review Base Civil Engineering Comprehensive Planning Maps (and/or geographic information systems equivalent) and GeoBase Common Installation Picture Foundations at least once every 12 months. Look for planned or completed changes in airfield layout, facilities, lighting, etc. Determine the effect of new information on current and proposed instrument flight procedures.

3.1.2. The TERPS specialist will provide updated vertical obstruction data (revised description, height, coordinates, etc.) to NGA at **aerohelp@nga.mil**.

3.1.3. When submitting revision or publication requests, include updates to DAFIF® and any other aeronautical data used in the development of an instrument flight procedure that are not reflected in data currently available from NGA.

3.1.3.1. Airport magnetic variation changes, NAVAID magnetic variation updates must be documented by the instrument procedure specialist on FAA hosted Airport Data Change (ADC) website (**https://www.faa.gov/air_traffic/flight_info/aeronav/aero_data/**). **(T-3)** Supporting documents may be attached if necessary. AFFSA Safety of Navigation processes the form and notifies the office of primary responsibility with a confirmation of receipt. Retain the processed copy with the instrument flight procedure documentation. **Note:** AFFSA Safety of Navigation enters the effective date from the appropriate revision schedule published in the current DoD FLIP GP guide.

3.1.3.2. Ensure all requested data changes have been made and all DAFIF® data matches the data used to develop the published instrument flight procedure. Resolve all data discrepancies between DAFIF® and corresponding data in GPD publication report with NGA on or before the procedure effective date.

3.1.3.3. Notify AFFSA Safety of Navigation when requested changes to DAFIF® are not complete or made in error. Ensure all required NOTAMs are issued on the published instrument flight procedure. A new submission to FAA hosted Airport Data Change website is not required; AFFSA Safety of Navigation re-processes the original submission. **Note**: DAFIF® data is used to populate various DoD aircraft navigation databases. When using data other than the data contained in DAFIF® to develop instrument procedures, the published paper product will not match the digital data used by the aircraft for navigation. Tracking changes and updating the data in DAFIF® when developing or maintaining instrument flight procedures is essential to flight safety.

3.1.3.4. Using GPD Data Manager application, import updates to aeronautical and obstacle data upon receipt. **Note**: When using DTED disk to update GPD, ensure the disk being used is current by checking the disk's National Stock Number against the Defense

Logistics Agency, The Nation's Combat Logistic Support Agency web page listing for that disk at **https://www.dla.mil/Aviation/Offers/Mapping/Digital-Products/**.

3.1.3.4.1. Make manual edits as necessary based on Obstruction Evaluation/Airport Airspace Analysis (OE/AAA) case studies, new construction, NAVAID changes, host nation Aeronautical Information Publication (AIP) changes, NOTAMs, etc. After new data is imported and after manual edits are documented and processed, initiate GPD AutoEval application to check each saved procedure in the workspace for any required updating based on the new data. Annotate justification supporting manual edits and additions to obstacle data in GPD Obstacle Properties Notes tab.

3.1.3.4.2. When AutoEval indicates a change has taken place, restore the procedure using GPD's Instrument Procedure Designer application to determine the extent of the changes. AutoEval checks critical data elements (that is, minimum segment altitudes, courses, violations, etc.) recorded in the electronic procedure file compared against the same data elements from a "virtual" build of the saved procedures; it is not the same as restoring the procedure. Each time a procedure is opened and saved, it is 'restored' and re-evaluated based on the current data environment.

3.1.3.4.3. When procedural changes are necessary, export the procedure and process an amendment. Document the completion of the AutoEval.

3.2. Geospatial Information and Services Data.

3.2.1. Geodetic surveys establish source documentation for obstructions, topographic data, and aeronautical data. They are required at all DAF owned or operated locations within the Continental US and outside of the Continental US where DAF develops and maintains instrument flight procedures (not including FTIP locations). Use current source data relating to aeronautical or ATC and landing systems surveys, NAVAID and radar siting, obstructions (on-aerodrome and off-aerodrome), and all correspondence relating to manual revisions to aeronautical data. TAGGS data should be used when available.

3.2.2. Whenever survey data not derived from a TAGGS is needed to support DAF instrument flight procedures, submit a copy of the survey to NGA as an attachment to a Special Military Request requesting the survey data be added to DAFIF®. **Note**: The agency originating this Special Military Request is responsible for the quality and currency of the survey data from that point forward.

3.2.3. AFFSA TERPS tasks each MAJCOM to identify survey requirements to assist in establishing a schedule for the next calendar year. MAJCOM input is required to validate the need for geodetic surveys and to establish priority. When necessary, coordinate with AFFSA TERPS well ahead of proposed airfield construction projects that conflict with the scheduled survey dates so that adjustments to the survey schedule can be made.

3.2.4. The responsible TERPS function should coordinate with local Airfield Management and Civil Engineering to confirm items to be surveyed (for example, runway threshold location, runway edges, NAVAIDs, airfield obstacles, etc.) prior to the arrival of TAGGS team. **Note**: Survey specifications are contained in NGA Airfield Survey Specification Document for TAGGS Program. Current geodetic airfield surveys and the Airfield Survey Specification Document for TAGGS program may be downloaded from **https://aeronautical.nga.mil/**, Mission Planning.

3.3. Obstacle accuracies. When a vertical accuracy value is not applied to a manually added obstacle, GPD automatically adds 125 feet to the obstacle height entered. To prevent this automatic addition, manually input an accuracy value and annotate the source the adjustment.

3.4. Adverse Assumption. The instrument procedure specialist will apply adverse assumption when determining the most critical height of un-measurable objects (trees, power poles, power lines, etc.) and document the source(s) used to determine the assumed values. **(T-3)** Apply adverse assumption to vegetation, as appropriate, when using DTED or map products. When evaluating terrain around an above ground object to determine the MSL elevation of the object where only the AGL height of the object is reported, ensure hilltops and draws are considered.

3.5. Master Obstruction Chart Data. The MOC is used to assist in the identification of obstructions on or near the airfield that are not normally included in digital products imported by GPD.

3.5.1. A MOC is required when establishing a new instrument procedure program at locations where DAF is responsible for development, publication, and maintenance of instrument flight procedures and when DAF has obtained approval from host nation aviation authorities to develop, maintain, and publish instrument flight procedures (to include circling). **Note:** A MOC is *not* required when developing ATC charts and *not* required when performing FTIP validation reviews.

3.5.2. When developing a MOC, use a workspace large enough to encompass an area at least 5 NM beyond the area to be protected for the furthest segment or sector of any instrument procedure or chart developed.

3.5.3. Using GPD Chart Designer tool, develop a MOC centered on the aerodrome reference point and extended to include the area within 1.5 NM (2.8 kilometers) around each runway threshold, to the perimeter of the airfield, or to the extent of the Civil Engineering maps or airport obstruction charts, whichever is greater. **Note:** Digital maps, digital geographic information systems or GeoBase Common Installation Picture (CIP) maps may also be used for obstacle searches and to develop MOCs.

3.5.3.1. Draw a line originating from the airport reference point extending out to the map edge. Repeat the line every 5° until the entire map has been covered (360° – 72 lines).

3.5.3.2. Construct concentric circles, each centered on the airport reference point, in 0.25 NM intervals (0.25 NM, 0.50 NM, 0.75 NM, 1.0 NM, etc.) outward to the map edge (GPD defaults to 5 NMs). When the edge of the map extends beyond 10 NM, limit this search area to 10 NM from the airport reference point.

3.5.3.3. Each 5° by 0.25 NM splay area represents an area for obstacle search and identification. Identify the object (obstacle, terrain or vegetation) with the highest MSL elevation within each splay area. It is not necessary to include obstacles with a MSL elevation below the lowest threshold elevation.

3.5.3.4. Enter all identified obstacles, terrain points and vegetation into GPD obstacle database (avoid duplicating previously accounted for obstacles). Obstacles may be ignored when means are established to control their height and/or location. Vehicular traffic on a perimeter road equipped with traffic lights controlled by ATC is one example. Ensure procedures for control of these types of obstacles are outlined in a Local Operating

Procedure. The instrument procedure specialist will document the locations and heights of the following items within the splays depicted on MOC consistent with airfield geometry (runway/ taxiway/ramp layout). **(T-3)**

3.5.3.4.1. Man-made items (buildings, antennas, light poles, jet blast barriers, etc.);

3.5.3.4.2. Taxiing aircraft, parked aircraft, and aircraft parking spots. Add the aircraft tail height to the obstacle database with a 3-foot vertical accuracy and a horizontal accuracy equal to the greater of the fuselage length, or the wingspan of the type aircraft;

3.5.3.4.3. Terrain points. GPD evaluates terrain from DTED, SRTM data, and manually entered terrain data. When using digital terrain data from DTED or SRTM in GPD, there is no requirement to manually search hard copy maps to identify terrain within MOC. The use of digital map products is authorized to validate obstacle data and terrain points only. Do not use Compressed Arc Digitized Raster Graphics maps to validate values on contour lines as they are not easily discernable. Ensure terrain lines and obstacles on the borders of the trapezoids are considered during the manual map study; and

3.5.3.4.4. Vegetation. When vegetation is present within the search area covered by MOC, identify the location and elevation of this vegetation. Also, account for vegetation outside the MOC by adding it to procedure and chart properties or manually entering an obstacle (vegetation) with the required allowance.

3.5.3.4.5. GPD has the capability to add a vegetation allowance to the terrain model however, the increased MSL elevation for vegetation is *not* applied to the Terrain Adjustment Exclusion Area (TAEA). The default TAEA is a circular area centered on the runway threshold with a radius corresponding with **Table 3.1**.

Table 3.1. GPD Default Radius used for Terrain Adjustments Exclusion Areas.

Criteria and Procedure Type	Default
TERPS RNAV Approach	1.0 NM
TERPS Non-RNAV Approach	1.5 NM
TERPS Departure	1.0 NM
PANS-OPS RNAV Approach	2.0 km
PANS-OPS Non-RNAV Approach	2.8 km
PANS-OPS Departure	1.75 km

3.5.3.4.6. TAEA will eliminate vegetation allowance penetrations to vertically guided approaches and in the initial portion of departures. During obstacle and terrain analysis, TAEA is applied to the following segments with sloping surfaces:

3.5.3.4.6.1. Vertically Guided Final Segment.

3.5.3.4.6.2. Precision, LPV, and LNAV/VNAV Missed Section 1.

3.5.3.4.6.3. RNP Missed Section 1a & 1b.

3.5.3.4.6.4. VGS and VSS-OCS surfaces.

3.5.3.4.6.5. 20:1, 34:1, and VSS surfaces.

3.5.3.4.6.6. Departure ICA and Departure Initial Straight Subsegment (TERPS).

3.5.3.4.6.7. Departure Area 1 & 2 (PANS-OPS/MIPS).

3.5.3.4.7. Because vegetation allowance is *not* applied to terrain exclusion areas, a manual search for vegetation for addition to MOC and entry into GPD obstacle database is essential.

3.5.4. To accurately account for trees, determine the maximum height of the tallest tree species indigenous to the area by contacting the State Forestry Division or host nation equivalent. When desired or necessary, instrument procedure specialists may reduce the maximum tree height when a lower height can be verified by a qualified source or survey (that is, the Forestry Division confirms vegetated area does not include largest indigenous tree species, or qualified survey source determines actual tree height).

3.5.4.1. When electing to reduce the maximum tree height, consider annual rate of growth and update the tree or vegetation height annually. The instrument procedure specialist will document the addition of the annual rate of growth in TERPS records. **(T-3)**

3.5.4.2. When a vegetated (tree covered) area is identified within the obstacle identification splay, the instrument procedure specialist must document the location of the vegetation as the point closest to the edge of the runway and identify the obstruction as multiple trees or tree line whichever best describes the area. **(T-3)**

3.5.5. MOCs must be reviewed and approved by MAJCOM TERPS authority. **(T-3)** Once the obstacle data (vegetation, buildings, towers, terrain points, etc.) identified on MOC is included in GPD obstacle database, a copy of the original MAJCOM approved MOC is stored either electronically or hard copy for future continuity.

Chapter 4

SPECIAL USE FLIGHT OPERATIONS

4.1. Special Use Instrument Flight Procedures. Special use procedures developed for a unique operational requirement must comply with regulatory guidance specified in this DAFMAN.

4.1.1. Special Use IFPs are *not* always considered non-standard. When an IFP does *not* meet applicable criteria or procedure development takes exception to established policy, process IFPP to obtain waiver authority approval prior to publication or use.

4.1.2. Special Use procedures may be published in DoD FLIP (Terminal), posted to GDSS, or distributed in a loose-leaf format.

4.1.3. MAJCOM TERPS Manager must document an established process for tracking, maintaining validity, and terminating the use of published special use information.

4.1.4. When publishing special use procedures, ensure the note "**FOR USE BY** (specific **MAJCOM** or flying unit(s), exercise or operation, as appropriate) **ACFT ONLY**" is placed in the planview. Also, add the contact information for the agency identified in this note (the approval authority) in the planview.

4.1.5. Those aircraft and DoD components that are *not* specified in the "**FOR USE BY**" note, may use the procedures only after:

4.1.5.1. Coordinating for use of the procedure with the originating approval authority and;

4.1.5.2. Obtain aircrew command approval. In this case, until the "FOR USE BY" note can be updated, record of aircrew command approval coordination for use will supersede the note on the plate.

4.1.6. When a special use instrument flight procedure is produced and distributed in a loose-leaf format, ensure the effective start and termination dates are charted in the margin area.

4.1.7. When flight profiles are published via loose-leaf format, send *all* requests for procedural *and* non-procedural changes to NGA.

4.2. Contingency Operations. When developing an IFP within sovereign host nation airspace, ensure coordination with host nation aviation and diplomatic officials is completed as prescribed in **paragraph 14.15** of this manual. Process requests for instrument flight procedures in support of contingency operations according to this chapter and see AFTTP 3-2.23, *JATC, Multi-Service Tactics, Techniques, and Procedures for Joint Air Traffic Control,* for policy and doctrine concerning terminal instrument procedures in a joint, expeditionary environment.

4.2.1. MAJCOM performing the contingency TERPS tasking develops and processes the required instrument flight procedure(s) and is responsible for maintaining the instrument flight procedure(s) for the duration of the operation.

4.2.1.1. Request NGA publish these procedures in DoD FLIP (Terminal) or in a loose-leaf format. Annotate in NGA tasking letter when a loose-leaf product requires DAFIF® coding.

4.2.1.2. Coordinate all required instrument flight procedure changes with the original requesting agency for as long as necessary to support the operation.

4.2.2. Minimum instrument flight procedure documentation requirements for contingency TERPS tasks are the same as those found in **Table 2.1**. Forward NGA produced loose-leaf instrument flight procedures to the requesting agency. The requesting agency is responsible for distribution of loose-leaf products.

4.2.3. MAJCOM TERPS functions may submit a Crisis/Combat Support request to NGA when there is an urgent need for a published procedure. Identify the request as a "**TERPS Crisis/Combat Support Request**" in the subject line of the tasking letter.

4.2.3.1. NGA provides a copy of the instrument flight procedure to the requesting MAJCOM for review and approval. Distribute the final, approved, instrument flight procedure in the loose-leaf format. When the instrument flight procedure is required on a permanent basis, send a request to NGA for publication in the DoD FLIP (Terminal) and to Jeppesen®. **Note**: Do not request instrument flight procedures in loose-leaf format to circumvent the normal production process outlined in DoD FLIP GP.

4.2.3.2. When NGA is unable to support a request, MAJCOMs may produce, locally process, and use the required instrument flight procedure until NGA product is available. Ensure locally produced and published instrument flight procedure(s) match DoD flight information publication format (planview, profile, minima data block, etc.), contain an expiration date, a TERPS point of contact, an operation name (when applicable), and the unit designation(s) of authorized users.

4.2.4. Use of NGA provided Airfield Foundation Data. During contingency operations or at locations where geodetic survey data sources are not available, obtain Airfield Foundation Data. For guidance on accessing Airfield Foundation Data, see DoD FLIP GP Chapter 11 SPECIAL MILITARY REQUEST (SMR) and the instructions on completing the Special Aeronautical Information Request Form.

4.3. Self-Contained Approach (SCA). SCAs are considered special use procedures. In accordance with this manual, Airborne Radar Approach (ARA) is the only applicable SCA a TERPS specialist is authorized to develop. TERPS nor PANS-OPS criteria supports SCA profiles therefore, MAJCOM flying authorities are responsible for the safety and flyability of SCAs developed by the aircrew. Other than an ARA, TERPS specialists will not develop or publish SCAs. **(T-2)**

4.4. Airborne Radar Approach (ARA). ARAs procedures are restricted to aircraft with MAJCOM approved airborne systems under the command of the approving authority. Flight inspection is not required; however, a live flyability check and operational command approval is required prior to use in IMC. **(T-3)** At a minimum, an intermediate segment, a final segment, and a missed approach segment should be developed.

4.4.1. Initial Approach Segment (as required). Apply FAA Order 8260.3, **Chapter 2**, Section 2-4.

4.4.1.1. Satisfactory terminal area fixes (FAA Order 8260.3, **Chapter 2**, Section 2-9) may be depicted on an ARA and used to facilitate use of en route navigation systems prior to the initial approach fix.

4.4.1.2. Ensure altitudes in the initial segment are not established below the minimum vectoring altitude (with ATC radar) or below MSA (without ATC radar).

4.4.2. Intermediate Approach Segment. Apply FAA Order 8260.3, **Chapter 2**, Section 2-5. When an initial approach segment is not developed, ensure altitudes in the intermediate segment are not established below the minimum vectoring altitude (with ATC radar) or below MSA (without ATC radar).

4.4.3. Final Approach Segment. Apply FAA Order 8260.3, **Chapter 2**, Section 2-6. **Exceptions**: See paragraphs **4.4.3.1** through **4.4.3.3.3**.

4.4.3.1. Alignment. Align the final approach course to the extended runway centerline. When there are no 20:1 or 34:1 OIS penetrations, obtain standardization and evaluation concurrence when establishing a VDP; justify VDP violations on ARA procedures in GPD with this paragraph. **Note**: Waiver authority consideration is not required;

4.4.3.2. Obstacle Clearance. The minimum required obstacle clearance in the primary area is 300 feet. The minimum required obstacle clearance in the secondary area is 300 feet at the primary boundary, tapering uniformly to zero at the outer edge; and

4.4.3.3. Area. The area considered for obstacle clearance begins at PFAF, ends at the runway threshold, and is centered on the final approach course. The minimum length is 6 NM and maximum length is 10 NM.

4.4.3.3.1. The primary area width at the runway threshold is 1.7 NM each side of the runway centerline.

4.4.3.3.2. The primary area expands uniformly to 4 NM each side of the extended runway centerline (8 NM total width) 10 NM from the runway threshold.

4.4.3.3.3. The secondary areas are zero miles wide at the runway threshold and expand uniformly on each side of the extended runway centerline to 1 NM at 10 NM from the runway threshold.

4.4.4. Circling Approach. Apply FAA Order 8260.3, **Chapter 2**, Section 2-7.

4.4.5. Missed Approach Segment. Apply FAA Order 8260.3, **Chapter 2**, Section 2-8. Whenever possible, develop a missed approach that is not based exclusively upon the airborne equipment.

4.4.6. Landing Minimums. Apply FAA Order 8260.3, **Chapter 3**, Section 3-1, Section 3-2, and Section 3-3. Do not apply FAA Order 8260.3, **Chapter 3**, Section 3-4 or Section 3-5.

4.4.7. MSA. Develop a single sector (360°) MSA using the runway threshold as the origin. If there is an operational necessity to sectorize MSA, coordinate a multiple sector MSA with the requesting agency prior to implementation to ensure the users can identify multiple sectors. Waiver authority consideration is not required. In GPD, for multi-sector violations on ARA procedures, use this paragraph in the rational and document the agency coordination in the risk mitigation.

4.4.8. Define all fixes by navigational equipment onboard the aircraft (Global Positioning System [GPS], radar, or other sensors). Annotate all named turn points and fixes associated with an ARA as RNAV waypoints. Include RNAV waypoints on ARA procedures to assist aircrews in maintaining situational awareness.

4.4.8.1. Fix error for all ARA fixes is ± 0.5 NM.

4.4.8.2. Request each RNAV waypoint be added to DAFIF® in the publication tasking letter to NGA.

4.4.8.3. Document waypoints associated with the published ARA on FAA Form 8260-2 per FAA Order 8260.19 and this manual.

4.4.9. Apply FAA Order 8260.3, paragraph **11-2-5** when publishing recommended altitudes on final.

4.4.10. Ensure the specific equipment used to support the approach is clearly annotated on the published plate. Example note: "**FOR USE BY AIRCRAFT EQUIPPED WITH AIRBORNE RADAR**."

Chapter 5

FLYABILITY CHECKS

5.1. Purpose. The intent of a flyability check is to determine whether an instrument flight procedure is consistent with good operating procedures, flyable, and safe for a pilot flying under instrument meteorological conditions (IMC). An instrument procedure flyability check is not required when the instrument flight procedure has been flight inspected and will be published in DoD FLIP (Terminal).

5.2. Methodology. Flyability checks are not official flight inspections and do not require any special crew qualification or certification unless directed by the flight crew's MAJCOM. There are three acceptable methods for conducting flyability checks; live (airborne), simulator evaluation, and tabletop review. Live flyability checks are performed by a current and qualified pilot flying an aircraft equipped with the appropriate IFR instrumentation. Each method may be used individually or in combination with one or both of the other methods to complete this check. Each segment of an instrument flight procedure, including the missed approach segment and all holding patterns are required to be evaluated prior to being published.

5.3. Live (airborne) Flyability Checks.

5.3.1. This check is basically equivalent to ICAO flight validation. The pilot conducting a live flyability check should simulate the most restrictive aircraft category while evaluating the entire procedure. The objectives of the live flyability check are to:

5.3.1.1. Provide assurance that adequate obstacle clearance has been provided;

5.3.1.2. Verify the procedure is operationally sound and required aircraft maneuvering is consistent with established operating practices;

5.3.1.3. Conduct an assessment of flyability and cockpit workload to determine the acceptability of the procedure by a low time pilot with minimal IFR/IMC experience;

5.3.1.4. Verify that the navigation data to be published, as well as that used in the design of the procedure, is correct and can be easily interpreted; and

5.3.1.5. Verify the procedure provides for safety of navigation using the guidance in AFMAN 11-202V3, *Flight Operations,* or as explained in the procedure.

5.3.2. Live flyability checks should be flown under day visual meteorological conditions (VMC) by a DoD aircrew to the maximum extent possible. MAJCOM Director of Operations (or equivalent) may approve live flyability checks by aircrews under his/her operational control at night after Operational Risk Management (ORM) considerations when needed to meet mission requirements. While conducting the live flyability check, the crew should be vigilant for obstructions that are not charted/depicted but could be hazardous. The live flyability check should carefully evaluate the final approach course alignment to ensure the pilot is able to maneuver the aircraft safely to touchdown.

5.3.3. When conducting live flyability checks, aircrews may find it difficult to evaluate all segments of the procedure. Assessment of segments and holding patterns not flown may be completed via simulator evaluation or tabletop review methods in accordance with **paragraph 4.4**. For FTIP flyability reporting, also see **Chapter 14** for supplemental guidance.

5.3.4. The flyability check pilot should also consider the following human factor items when conducting the flyability check:

5.3.4.1. Complexity. The procedure should be as simple as possible; it should not impose excessive cockpit workload;

5.3.4.2. Interpretability. The NAVAID that provides information for the final approach course should be clearly identified; and

5.3.4.2.1. NAVAIDs may be located on or near the final approach course that are not part of the final approach segment; they are often subject to being misinterpreted as part of the instrument approach procedure.

5.3.4.2.2. The depicted procedure should clearly indicate all circling restrictions.

5.3.4.3. Memory Considerations. An aeronautical chart is a storehouse of information. The aircrew should be able to extract and decipher essential data quickly and accurately.

5.4. Simulator Evaluation and Tabletop Review. Satisfactory completion of a simulator flyability check or a tabletop review may be accomplished to meet the flyability check requirement. Unit or MAJCOM standardization and evaluation personnel perform simulator evaluation or tabletop reviews when a live flyability check cannot be conducted or when all segments of the instrument flight procedure cannot be assessed. For example: NAVAID is not available or has not been commissioned, lack of locally assigned aircraft, etc. Live flyability checks should be conducted on subsequent missions on those segments or holding patterns not originally assessed to ensure obstacle assessment is eventually conducted and documented.

5.5. Requirements. Ensure any flyability check considerations are addressed by the flight inspection pilot on the flight inspection report. A flyability check and associated flyability form are *not* required when:

5.5.1. A new or original instrument flight procedure is scheduled for flight inspection/validation before initial publication in DoD FLIP (Terminal).

5.5.2. Changes to a currently published instrument flight procedure are scheduled for flight inspection/validation.

5.6. Documentation. Flyability checks are documented on AF IMT 3992, *Instrument Procedure Flyability Check Instrument Approach Procedure (IAP),* or AF IMT 3993, *Instrument Procedure Flyability Check Departure Procedure (DP),* as appropriate. Maintain these completed and signed forms with the TERPS procedure package. When the flyability check requirement is fulfilled by a commissioning flight inspection, ensure the flight inspection pilot addresses any instrument procedure specialist concerns on the flight inspection report. In this instance, AF IMT 3992 or AF IMT 3993 is not required; maintain the flight inspection report with the TERPS package.

5.6.1. Instrument procedure specialist concerns documented on the flyability check form should be reviewed by the aircraft commander before the flyability check is flown. When runway markings or course alignment are questionable, particular attention should be given to those aspects of the procedure during the flyability check; ensure the results are annotated on AF Form 3992 or AF Form 3993 or on the flight inspection report, as appropriate.

5.6.2. When either the “simulator” or “tabletop reviews only” block is checked, explain in the appropriate comments section why this option was used. Example: **Tabletop review conducted due to airport having routine 14 C.F.R. § 121 air carrier operations**.

5.6.3. The flyability check pilot is responsible for completing and signing the applicable flyability check form (see examples below in **Figure 5.1., Figure 5.2, and Figure 5.3**.). Aircrew comments should be recorded in the appropriate comments section. Whenever possible, the pilot performing the check should personally debrief the instrument procedure specialist responsible for the procedure. AFMAN 11-202 Volume 3 describes aircrew requirements to conduct FTIP flyability checks.

Chapter 6

FLIGHT INSPECTION

6.1. Flight Inspection of Instrument Procedures. The FAA Flight Inspection Central Operation (FICO), Mission Control Team (MCT) is the primary agency that provides centralized scheduling, coordination, flight planning, and flight following for all FAA and DAF flight inspection activities. Except as indicated in this DAFMAN, instrument flight procedures developed or amended by DAF for use under IFR must be flight inspected/validated per FAA Order 8200.1, *United States Standard Flight Inspection Manual* or ICAO Doc 9906. **(T-1)** FAA flight inspections outside of NAS are predicated and prioritized on mission requirements. Notably, mission scheduling may be delayed or prohibited due to diplomatic clearances therefore, coordinate requirements and suspense with MCT well in advance (50 days) to allow for scheduling and processing of active and/or pending data.

6.1.1. To obtain and/or validate AirNav Datasheets, email **9-AMC-AJV-DataSheets@faa.gov** with your contact information and include:

6.1.1.1. Airport NFDC or ICAO identifier, if other than U.S. must have country code; and

6.1.1.2. Navaid identifier and type system (ILS/NDB/VOR_DME – etc.), with country code if other than U.S.

6.1.2. To determine whether or not a procedural amendment requires an actual flight inspection/validation, refer to FAA Order JO 8200.44, *Flight Inspection Services Instrument Flight Procedure Coordination*.

6.1.3. When a MAJCOM obtains the authority to develop and publish instrument flight procedures at a host nation location; apply **paragraph 1.6.3.6**, as required. **(T-2)**

6.1.4. When a NAVAID flight inspection suitability is jeopardized, see FAA Order 8200.1 *United States Standards Flight Inspection Manual* for NOTAM requirements.

6.2. Flight Inspection Procedure Package (FIPP). Develop, arrange and process a FIPP. FAA Order JO 8200.44 contains guidance on this process, and it is further amended in this chapter. FIPPs will include all associated electronic instrument flight procedure documents prior to upload to FAA Knowledge Service Network (KSN). **(T-2)**

6.2.1. Flight inspection procedure package cover letter. Arrange the cover letter per FAA Order JO 8200.44 military guidance and when applicable, include the following:

6.2.1.1. When the procedure package is developed using pending data, that is data that hasn't yet been processed for approval or flight inspected satisfactorily, but which is expected in the future, ensure the pending data is identified on the cover letter. Pending data is information being processed that requires validation and has an effective date.

6.2.1.2. When underlying data has changed due to a new survey but no NAVAIDs were physically moved, include a general statement to address the data changes in the cover letter. Example: “New survey - elevation changes required adjustments to HAT and HAA values.”

6.2.1.3. When publishing DPs, indicate whether the procedure will be in either a graphic or a textual format.

6.2.2. Flight Inspection Graphic. Ensure one of the following notes is prominently printed on the planview: "**PROTOTYPE, NOT FOR NAVIGATIONAL USE**"; or "**FOR USE BY FLYABILITY OR FLIGHT CHECK AIRCREW ONLY**."

6.2.3. Procedure Publication Report. When multiple signature pages or manual documents are generated during procedure package processing/staffing to obtain the appropriate coordination/approval, ensure all computer-generated time/date stamp references match all applicable documents.

6.2.4. For nonstandard procedures, the applicable waiver documentation must be included in FIPP prior to uploading and scheduling a flight inspection. **(T-0) Exception**: when waiver mitigation requires flight inspection remarks for an equivalent level of safety and/or adjudication, coordinate with MCT on the nonstandard circumstances prior to uploading and scheduling flight inspection.

6.2.5. Along with flight inspection segment and controlling obstacle maps per FAA Order JO 8200.44, include GPD generated .KMZ file, located in the exported Flight Inspection folder and the .ARI file.

6.2.6. Upload FIPP to KSN. A FIPP must include all required signatories. For assistance with preparing the required FIPP files for upload via FAA KSN/FICO Mission Control Team website, go to AFFSA TERPS SharePoint® for a "how to" USAF Flight Inspection Procedure Package Information Pamphlet.

6.3. Flight Inspection of Special Use Instrument Flight Procedures.

6.3.1. Special use instrument flight procedures require flight inspection unless each of the four following conditions can be met to achieve an equivalent level of safety:

6.3.1.1. The special use procedure has received a live (airborne) flyability check that verifies the controlling obstacle and NAVAID reception (NAVAID reception N/A to RNAV), in each segment of the procedure;

6.3.1.2. The flyability check form must be annotated by the flyability check crew that this was completed satisfactorily. **(T-3)** Brief the controlling obstacle verification process to the aircrew prior to the flyability check;

6.3.1.3. The special use procedure uses NAVAIDs that have been flight inspected (RNAV N/A); and

6.3.1.4. All segments and all fixes depicted on holding patterns of the special use procedure are within the standard service volume of the applicable ground-based NAVAID(s). **Exception**: This restriction does not apply to self-contained approach, ASR or PAR procedures.

6.3.2. MAJCOM Director of Operations (or equivalent), the Joint Force Air and Space Component Commander (or equivalent), or the Combined Force Air and Space Component Commander (or equivalent), may waive the flight inspection requirement whenever the special use instrument flight procedure is essential due to a military emergency or an urgent military necessity. Subordinate unit commanders retain this authority for aircraft under their operational control. The planview of the instrument flight procedure will be annotated with the specific MAJCOM or flying unit approved to use the procedure as follows: "**FOR USE BY** (specific MAJCOM or flying unit(s), exercise or operation, as appropriate) **ACFT ONLY**." **(T-3)**

6.3.3. Military contingency flight inspection of NAVAIDs and instrument flight procedures, authority and requirements are addressed in FAA Order 8200.1 **Chapter 24**. Notably, the controlling military commander may authorize continued use of a facility and subsequently IFPs "**For** (specific MAJCOM or flying unit(s), exercise or operation) **Use Only**." Facilities/Instrument flight procedures which have been placed in operation using **Chapter 24** guidance must be re-inspected to normal standards as soon as circumstances permit.

6.4. FTIP Flight Inspection Requirements. See **Chapter 14**.

Figure 6.1. FAA Form 8200-17, *FIPC Basic Form.*

FIPC BASIC FORM

PROCEDURE:	AIRPORT NAME:	AIRPORT ID:	SPECIAL CONTROL NO:
TACAN RWY 19 AMDT 1	DOVER AFB	KDOV	YP-06-194-17

FAC ID: DOV	CITY: DOVER	ST: DE	ORIG CHART DATE: 08/17/2017

DFL TYPE:	THIRD PARTY:	EST. TIME ON SITE:	REIMB. NUMBER:	PTS TASK ID:
PROC/A	☐ YES	0.4		

PREFLIGHT NOTES

REVIEWER:	DATE:
COMMENTS:	CHECK ONE: ☐ FLT CK REQ ☐ NFCR ☐ REJECT

	YES	NO
CPV COMPLETE?		

PROCEDURE RESULTS

INSPECTION DATE:	CREW #:	N #:	INSTRUMENT PROCEDURE STATUS:	ARINC CODING:
08/16/2017	VN137	N81	☐ SAT ☒ SAT W/CHANGES ☐ UNSAT	☐ SAT ☐ SAT/GOLD ☐ UNSAT

FLIGHT INSPECTOR SIGNATURE:	PRINTED NAME:	NOTAM INITIATED?
bob s pressler @ 08/17/2017 07:43	PRESSLER, ROBERT STEPHEN	☒ YES ☐ NO

FLIGHT INSPECTOR REMARKS:
SAT W/ CHANGES
VCN TAC OTS: 07/215 (A0878/17) - VCN NAV TACAN AZM U/S. 13 JUL 11:56 2017 UNTIL PERM. CREATED: 13 JUL 11:56 2017
Remove all REF to VCN TAC. VCN VTAC/V use is SAT.
Procedure was published prior to FLT CHECK completing. VCN FEEDER R-241 to FIRER on AMDT1 published. Supporting doc's show VCN R-242 (No Change from ORIG)
NOTAM REQUIRED W/ MIL OPS at KDOV to correct.
MSG passed to KDOV LT NEUMAN 302-677-3261

IN-FLIGHT OBSTACLE REPORT

OBSTRUCTION ID #:	COORDINATES OR LOCATION:	GNSS ALTITUDE (MSL):	BAROMETRIC ALTITUDE (MSL):	HEIGHT ABOVE GROUND LEVEL:

FAA Form 8200-17 (12-2013)

Chapter 7

IMPLEMENTING FEDERAL AVIATION ADMINISTRATION ORDER 8260.3

7.1. Paragraph 1-2-3. Approval. For USAF specific guidance, refer to AFMAN 32-1040, *Civil Engineering Airfield Infrastructure Systems for Airfield Marking*, *and Visual Air Navigation Systems*. Refer to Unified Facilities Criteria (UFC) 3-260-01, *Airfield and Heliport Planning and Design*, UFC 3-260-04, *Airfield and Heliport Marking, Airfield and Heliport Planning and Design* and UFC 3-535-01, *Visual Air Navigation Facilities* as needed. These documents define requirements and establish standards for all visual air navigation facilities at DAF locations within the Continental US and at overseas locations supporting DAF flight operations. **Note:** Non-compliance with these directives may require waiver by Civil Engineering authorities but do not require TERPS waiver consideration.

7.2. Paragraph 1-3-1. Responsibility. Notify Flight Inspection Central Office's IFP Validation Team through the appropriate DAF Representative to FAA when instrument flight procedures within NAS are canceled at military airports and when military instrument flight procedures at civil airports are no longer required.

7.3. Paragraph 1-4-2. Nonstandard IFPs. Process violations to standard instrument procedure criteria according to **paragraph 1.3** and **paragraph 1.4** of this manual when developing instrument flight procedures or when validating FTIP based on Non-Accredited host nation source for publication in DoD FLIP (Terminal).

7.4. Paragraph 1-4-3. Amendments. Guidance on processing non-procedural changes is provided in DoD FLIP, *General Planning (GP),* Chapter 11 *Revisions*. Process procedural changes according to **paragraph 2.5** of this manual.

7.5. Paragraph 1-6-4. Combined Charting of Approach Procedures. Combining conventional instrument approach procedures for publication on a single chart is accomplished as a cartographic function by NGA. When excessive chart clutter results, do not request combined charting.

7.5.1. GPD will develop and combine multiple IFPs predicated on facilities that use the same final approach course, fix(s), altitude(s) and identical missed approach instructions into a single build for processing.

7.5.2. When an IFP is developed as a stand-alone procedure, ensure the following when combining multiple IFPs on a single chart:

7.5.2.1. Final approach courses and missed approach instructions are identical on each procedure;

7.5.2.2. Precise final approach fix (PFAF) location and altitude, any stepdown fixes and altitudes are identical on each procedure.

7.5.2.3. Each IFP is sent to flight inspection as a stand-alone procedure;

7.5.2.4. A request to combine the procedures on a single chart is included; and

7.5.2.5. Submit combined IFPs for flight inspection according to **paragraph 6.2** of this manual.

7.5.3. Apply FAA Order 8260.19, paragraph 8-6-7d.(1) to DAF developed ILS approach procedures published on the same chart with non-vertically guided procedures (localizer or azimuth) that require a stepdown fix in the final segment. Apply this guidance to LNAV instrument flight procedures with final segment stepdown fixes when published in conjunction with RNAV approaches with vertical guidance.

7.5.3.1. For RNAV stepdown fixes published in conjunction with vertically-guided minimums, the published altitude at the fix must be equal to or less than the computed glidepath altitude at the fix. **(T-1)** When no other option is practical and a stepdown fix altitude on a straight-in aligned procedure is above the vertical descent angle (VDA) from FAF to threshold crossing height (TCH), publish the greatest VDA along with TCH and associate it with the applicable stepdown fix (SDF) with a note on the approach plate. For example: ***SDF to MAP: 3.26/55** or ***LISSA to RW19L: 3.10/50**.

7.5.3.2. Fix altitudes published on the profile view of an ILS or a RNAV procedure between the FAF/PFAF and the runway threshold that is, stepdown fixes, are to be applied to the non-vertically guided (localizer, LNAV, or azimuth) procedure only.

7.6. Paragraph 2-1-4.b. Climbing on DP or missed approach. When a climb gradient in excess of the minimum climb gradient (200 feet per NM) is required to provide obstacle clearance, ensure the climb gradient is coordinated with local flying authorities and the applicable unit or MAJCOM standardization and evaluation function. Depict climb gradients greater than 200 feet per NM on the procedure as vertical velocity expressed as feet per minute in a minimum climb table and specify a "climb to" altitude or a fix where the minimum climb gradient can be resumed.

7.6.1. Departure climb gradients. Apply climb gradient guidance from FAA Order 8260.46, and FAA Order 8260.3, paragraph 13-1-5. DAF development of DPs and Diverse Vector Areas requiring climb gradient that exceed 500 feet per NM is authorized and waiver of TERPS criteria is not required. When obstacles penetrate the 40:1 OCS, calculate the climb gradient required to clear the obstacles using the Standard Formula from FAA Order 8260.3, paragraph 13-1-5.a. **Note:** When a lower climb gradient is desired and can be achieved, apply the Military Option from the same paragraph.

7.6.1.1. Annotate in the instrument flight procedure design notes when the Military Option is being applied. When using the Military Option formula within NAS, annotate the procedure "**NOT FOR CIVIL USE**" on the planview of the graphic and when applicable, in the IFR Takeoff Minimums and Departure Procedures section of DoD FLIP (Terminal).

7.6.1.2. Use the Military Option formula where DAF exercises TERPS authority at host nation locations and at all DAF locations outside of the Continental US; the Standard Formula is not authorized at these locations. The note "**NOT FOR CIVIL USE**" *is not required* on these procedures.

7.6.1.3. RNAV departure climb gradients. Apply guidance from FAA Order 8260.58. Multiple climb gradients higher than the minimum gradient and/or a climb gradient greater than 500 feet per NM are authorized. A waiver for TERPS criteria is not required.

7.6.1.4. Specify a climb-to-altitude (CTA) or fix where the standard climb gradients can be resumed whenever a climb rate (obstacle or ATC) higher than 200 ft/NM is published. **(T-3)**

7.6.1.5. When a climb gradient is required to avoid obstacles, it must be identified as a "Minimum Climb Rate." **(T-3)**

7.6.1.6. When a climb gradient is required for an ATC restriction or for noise abatement, it must be identified as an "ATC Climb Rate." **(T-3)**

7.6.1.7. An ATC climb gradient must not be published in lieu of an obstacle driven climb gradient that is also required. **(T-3)**

7.6.1.8. When it is necessary to publish an ATC climb gradient in conjunction with an obstacle driven climb gradient, ATC climb gradient must always be greater than the obstacle driven climb gradient. **(T-3)**

7.6.1.9. At FTIP locations where the host nation is the procedural OPR, chart ATC departure climb gradient per host nation source.

7.6.2. Precision missed approach climb gradients. Apply FAA Order 8260.3, paragraph **10**-**3**-**4**. DAF development and publication of precision procedures requiring missed approach climb gradient greater than 425 feet per NM is authorized and a waiver from TERPS criteria is *not* required. When climb gradients exceed 425 feet per NM, include the note "NOT FOR CIVIL USE."

7.6.3. Nonprecision missed approach climb gradients. Within the Continental US and at DAF fixed-base locations outside of the Continental US where US TERPS criteria is being applied, apply the applicable missed approach criteria from FAA Order 8260.3, Section 2-8. Except for the guidance pertaining to the completion of FAA forms, also apply FAA Order 8260.19, paragraph **8**-**6**-**6**f.(2) and paragraph **8**-**6**-**7**a through paragraph **8**-**6**-**7**.h.

7.6.3.1. Evaluate the missed approach segment to ensure obstacle clearance is provided. When obstacles penetrate the 40:1 OCS, take action to eliminate the penetration (that is, increase MDA, adjust the missed approach point (MAP) location, or develop a turning or a combination straight and turning missed approach). When these adjustments are not feasible or when adjustments do not eliminate the penetration, DAF development and publication of nonprecision missed approach procedures requiring climb gradient that exceeds 200 feet per NM (400 feet per NM for rotary wing) is authorized and waiver of TERPS criteria is not required. Use Formula 7.1 and the formulas in **paragraph 7.6.3.2** and **paragraph 7.6.3.3** to establish the climb gradient termination altitude and a missed approach climb gradient for these conventional, nonprecision approach procedures.

7.6.3.2. To determine the climb gradient termination altitude (where the minimum climb gradient can be resumed), use the following formula:

Formula 7.1. Missed Approach Climb Gradient Termination.

7.6.3.2.1. Round the result up to the next 100-foot increment when calculating the missed approach climb gradient (**paragraph 7.6.3.3**.).

7.6.3.2.2. Request publication of the note "**Missed Approach Minimum Climb of** (xxx ft/NM) **to** (rounded CG_{term} altitude)" above the minimum climb table.

7.6.3.3. To determine the missed approach climb gradient required to achieve the required obstacle clearance at the penetrating obstacle, use the following:

Formula 7.2. Missed Approach Climb Gradient Required:

7.6.3.3.1. The result of this calculation is the raw climb gradient at 60 knots indicated airspeed. Round this result up to the next whole 1-foot value.

7.6.3.3.2. Request publication of a minimum climb table only when the rounded value exceeds 200 feet per NM. Specify the rounded climb gradient value at 60 knots indicated airspeed in the planview section of the tasking letter. NGA calculates and publishes the subsequent vertical velocity values from 120 to 360 knots indicated airspeed, as required, for the table.

Figure 7.1. Nonprecision Missed Approach Climb Gradient Variables.

CG_{term} = climb gradient termination altitude

O_{elev} = obstacle elevation (mean sea level)* + vertical accuracy

MDA = minimum descent altitude

$OCS_{elevMAP}$ = MDA minus (final segment required obstacle clearance + adjustments)

D = shortest NM distance from the missed approach point to the obstacle

* Subtract the amount of secondary rise at the obstacle for an obstacle in the secondary area

7.6.4. When establishing or revising instrument flight procedures within NAS and unable to develop or publish minima to support the minimum missed approach climb gradient, annotate the procedure "**MISSED APPROACH NOT FOR CIVIL USE**" on the planview. **Note**: Do not apply this guidance to any published FTIP, FTIP review, or to DAF instrument flight procedures at DAF locations outside NAS.

7.6.5. RNAV missed approach climb gradients. Apply guidance from FAA Order 8260.58, Section 3-5.

7.7. Paragraph 2-1-6. Positive Course Guidance (PCG). Apply PCG when developing missed approach segments (**Figure 7.2**.). When PCG cannot be established within 10 NM of MAP or DA on straight missed approach segments or within 5.4 NM after completion of the first turn on a turning missed approach, annotate the procedure with the following note "**RNAV or RADAR required for missed approach**" is published. **Note**: This guidance is not applicable when publishing FTIP in the DoD FLIP (Terminal) or when validating FTIP for a FTIP review.

7.8. Section 2-2. Standard Terminal Arrival (STAR) Procedures. When there is a requirement for STAR procedures within NAS and FAA *cannot* support, develop STAR procedures only when feeder routes and initial approach segments do not suffice.

7.8.1. Use FAA Form 8260-17.1, STANDARD TERMINAL ARRIVAL (STAR) or FAA Form 8260-17.2, STAR (DATA RECORD) for RNAV STARs, as applicable, for documenting and processing STAR procedures. These FAA Forms are available from AFFSA Airfield Operations Directorate SharePoint®. See FAA Order 8260.19, **Chapter 4**, Section 4-5 for STAR documentation guidance.

7.8.2. This guidance is not applicable when publishing FTIP STAR procedures in DoD FLIP (Terminal) or when validating FTIP STAR procedures, or DAF instrument flight procedures at DAF locations outside NAS.

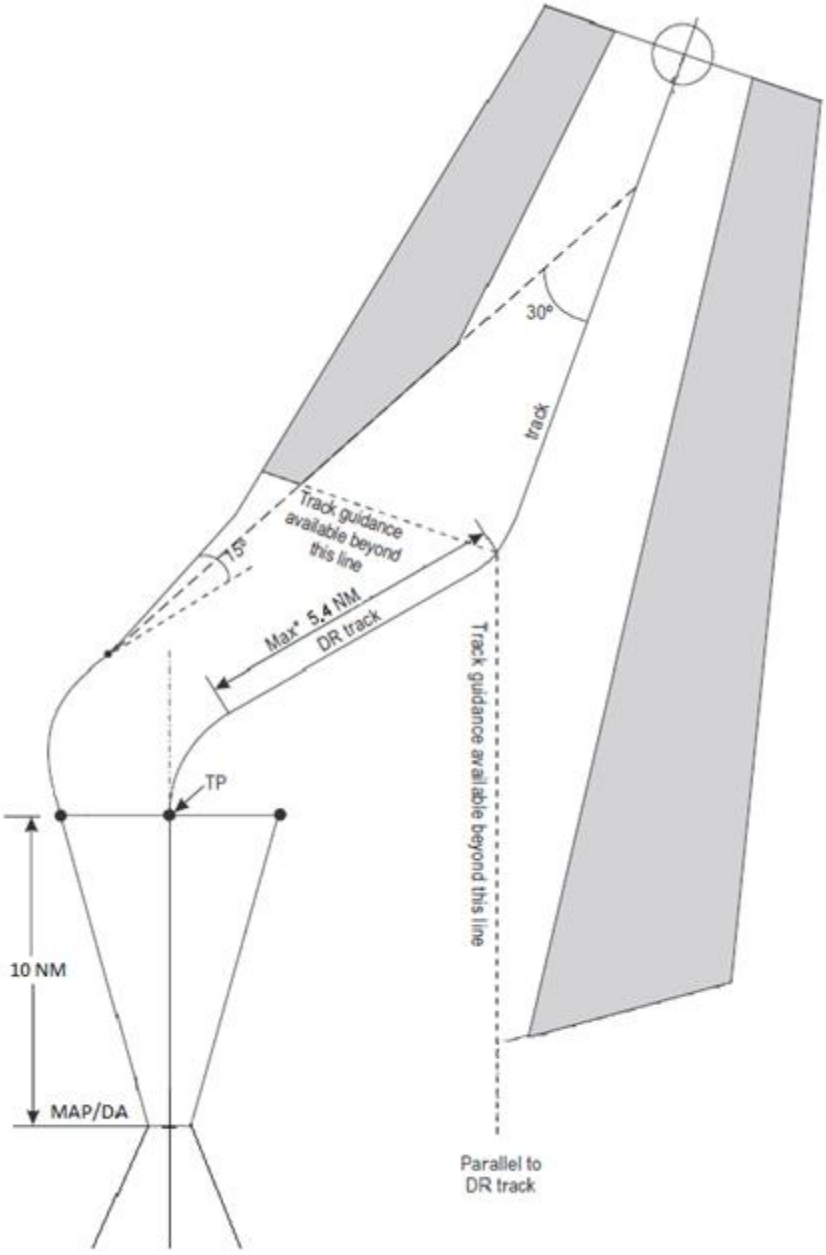
7.9. Paragraph 2-4-3.a.(1) Straight Courses. When the turn between initial sub-segments is over a facility and exceeds 90°, a lead radial or bearing which provides at least a 2 NM lead *is not* required.

7.10. Paragraph 2-4-3.d. Descent Gradient. Apply the appropriate initial approach segment descent gradient criteria between altitudes specified at fixes marking both the beginning and end of an initial approach segment or a sub-segment (includes stepdown fixes).

7.11. Paragraph 2-4-5. Initial Approach Segment Based on a PT. Unless the procedure turn/teardrop turn distance is indicated by an appropriate DME fix, ensure a remain within distance equal to the 'Procedure Turn Length' or the 'Specified Turn Distance' is charted for the course reversal; for example: "**Remain within 10 NM**" or "**Remain within 24 NM**."

7.12. Paragraph 2-4-6.b. Area. Apply this criteria when the altitude to be lost is 10,000 feet or more. When determining the turn distance and course divergence from Table **2-4-6**, do not consider any required altitude loss in the sub-segment prior to the initial approach fix. When level flight is required after a facility or fix and before starting a high altitude teardrop turn, a procedure turn, or before commencing descent, depict where the high altitude teardrop turn, procedure turn, or where descent starts with a NM value on the profile and planview. Depict this point with DME values when a suitable NAVAID is available.

Figure 7.2. Missed Approach Positive Course Guidance.



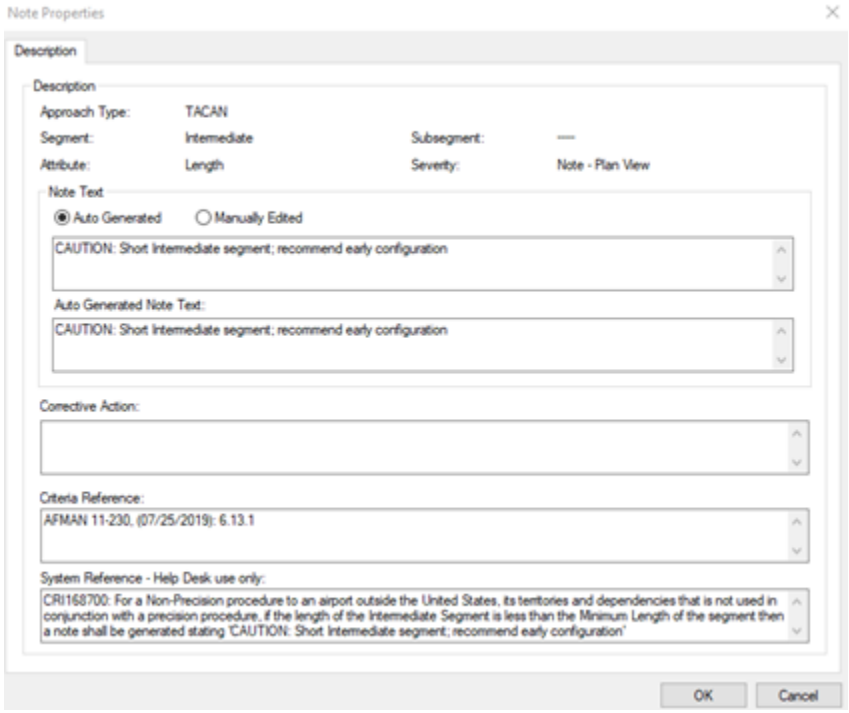
7.13. Paragraph 2-5-3.b.(1) Length. When the procedure is developed:

7.13.1. Inside NAS, process waivers for short intermediate segments according to **paragraph 1.4** of this manual. When operationally unable to comply with **paragraph 1.4**, note the instrument flight procedure "**NOT FOR CIVIL USE**."

7.13.2. Outside NAS, and unable to comply with the minimum intermediate approach segment length, waiver consideration is not required. GPD will mitigate this nonstandard condition by annotating the procedure with a note. Example: **CAUTION: Short intermediate segment; recommend early configuration.** Maintain record of operational risk management assessment of the nonstandard condition by recording the circumstances and action to resolve in GPD's

"Notes" "Note Properties" (See **Figure 7.3**. Note Properties Description) and in the procedure design notes. **(T-3)**

Figure 7.3. GPD Notes Dialog.



7.14. Paragraph 2-5-4. Intermediate Approach Segment Based on an Arc. Application of this criteria is not authorized.

7.15. Paragraph 2-6-2. Glidepath Angle (GPA) and Vertical Descent Angle (VDA).

7.15.1. Glidepath angle. The use of any glidepath angle value less than 2.50° or greater than 3.50° and the use of any HAT value lower than the minimum values from Table **3-4** requires waiver.

7.15.2. Vertical descent angle. When the instrument procedure specialist is constructing nonprecision approach procedures according to paragraph **2-6-2**. Glidepath Angle (GPA) and Vertical Descent Angle (VDA), a TCH must be provided that is coincident with the associated visual glide slope indicator (VGSI) angle TCH. **(T-2)** When a VGSI is not installed, or when VGSI angle is not between 2.50° and 3.50° or when VGSI TCH is not within the parameters of FAA Order 8260.3, **Chapter 10**, Table **10-1-1**. TCH Requirements, a VDA ≥ 2.50° or ≤ 3.50° (optimum is 3°) with an appropriate TCH value from Table **10-1-1** must be developed. **(T-2)** Whenever a published glidepath/descent angle or TCH is not coincident with VGSI angle for a runway, publish the appropriate note from FAA Order 8260.19, paragraph **8-6-9**.m.

7.16. Paragraph 2-6-5. Visual Descent Point (VDP).

7.16.1. Do not establish a VDP for ASR approaches.

7.16.2. The instrument procedure specialist must document the reason(s) a VDP cannot be published in the procedure package. **(T-3)**

7.16.3. Non-collocated VDP DME sources may be used. When using non-collocated VDP DME sources, the maximum fix error is ± 0.54 NM.

7.17. Paragraph 2-6-6. Visual Guidance Surface (VGS). When evaluating VGS for Category III operations, VGS extends from the landing threshold point to a DA/VDP point that is equivalent to a 100 foot HAT.

7.18. Paragraph 2-7-3. Sidestep Maneuvers. The final approach course is depicted on the planview to the primary runway.

7.18.1. When using GPD to design the sidestep runway final approach area, place an appropriate pseudo NAVAID abeam the approach runway NAVAID and on the sidestep runway centerline or extended runway centerline, as appropriate.

7.18.2. Establish the sidestep runway PFAF on the sidestep runway centerline extended abeam the primary runway PFAF. The area considered for obstacle clearance in the sidestep final starts at the sidestep runway PFAF and continues towards the sidestep runway threshold.

7.18.3. Do not publish a VDP for sidestep maneuvers.

7.18.4. Develop and submit only one procedure package to flight inspection (with one signature page) that includes the publication report for the sidestep maneuver. Justify segment violations (other than the final approach segment) with the following notation: "Not applicable; sidestep maneuver." Waiver authority consideration is not required. **Note**: In this case, the Approach/Departure Signature Page date-time stamp does not match the date-time stamp of the sidestep procedure build.

7.19. Paragraph 2-8-1. Missed Approach Segment.

7.19.1. Criteria for developing missed approach segments using DME arcs is not specified and therefore considered nonstandard. When operational necessity requires DME arcs for positive course guidance, process a waiver from this 11-230 paragraph.

7.19.2. Alternate missed approach procedures are developed to anticipate navigational system outages. When alternate missed approach instructions are required and supported by TERPS, coordinate and provide instructions to ATC facility management.

7.20. Paragraph 2-8-3. MAP. A crossing radial may be used to define MAP. When using this option, the procedure is nonstandard and requires waiver consideration. The maximum acceptable fix error is ± 0.5 NM for a crossing radial. When considering MAP locations using a DME fix or a crossing radial, establish MAP at or prior to the first usable landing surface. The on-airport NAVAID may be identified as MAP only when a usable, satisfactory DME fix or crossing radial is not available.

7.21. Paragraph 2-8-5, Straight Missed Approach Obstacle Clearance; Paragraph 2-8-7, Turning Missed Approach Obstacle Clearance; and Paragraph 2-8-8, Combination Straight and Turning Missed Approach Area.

7.21.1. Instances may occur when an obstruction penetrates the 40:1 precision or nonprecision missed approach surface and MAP relocation, DA or MDA adjustments to eliminate the penetration are not feasible. Apply the applicable guidance from **paragraph 7.6** and publish a climb gradient that eliminates the penetration.

7.21.2. When the clearance limit fix/facility is not part of the en route structure, the published missed approach altitude (altitude at the clearance limit) should not be lower than the highest Minimum Instrument Flight Rule Altitude Chart sector altitude (DAF IFR ATC facility) or the highest En Route Minimum Instrument Flight Rule Altitude Sector Chart altitude (FAA IFR ATC facility). When it is not practical to ensure the missed approach altitude meets this requirement, ensure "**RADAR required**" is charted. **Note**: Radar coverage must exist throughout the missed approach segment and the clearance limit and missed approach altitude must be within the service volume of the NAVAID(s) that define the clearance limit. **(T-2)**

7.22. Paragraph 2-9-9.c.(4)(b). USAF/Not Applicable. When an operational requirement exists, a stepdown fix may be established without regard to the effect it has on MDA or visibility. Waiver authority consideration is not required. Justify criteria violations by entering the operational requirement into GPD and referencing this paragraph number.

7.22.1. Establish stepdown fix altitudes in the final approach segment of a straight-in approach without regard to the circling minimum descent altitude value; that is, these stepdown fix altitudes do not need to be equal to or greater than the circling minimum descent altitude.

7.22.2. Ensure each stepdown fix altitude in the final approach segment is equal to or greater than the lowest straight-in MDA and equal to or greater than the altitude at any subsequent stepdown fix.

7.22.3. When establishing stepdown fixes on a circling only approach, ensure each stepdown fix altitude is equal to or greater than the lowest circling minimum descent altitude and equal to or greater than the altitude at any subsequent stepdown fix.

7.23. Paragraph 2-9-10. Obstacles Close to a PFAF or a Final Approach Segment SDF. When applying this guidance, only note the highest MSL obstacle eliminated from consideration in the 7:1 (fixed wing) or 3.5:1 (helicopter only) OIS area on the procedure.

7.24. Paragraph 3-1-2. Establishment. Establishing and publishing alternate minima for DAF developed instrument flight procedures is not required. Provide takeoff minimums when notified by the Civil Reserve Air Fleet or other DoD contracted civil aircraft that takeoff minimums are necessary.

7.25. Paragraph 3-1-2.c. Approach lighting systems. Apply this guidance to all instrument procedures developed by DAF and to all FTIP published in DoD FLIP (Terminal) or posted to USAF FTIP SharePoint® and GDSS. When referring to Table **3-1-2**., Lighting System Classification, the Next Generation Expeditionary Airfield Lighting System (NGEALS) is equivalent to Medium Intensity Approach Lighting System with Runway Alignment Indicator Lights; Facility Class Full (FALS). **Note**: NGEALS also includes Precision Approach Path Indicator (PAPI) lights.

7.25.1. Sequenced flashers constitute a portion of certain approach lighting systems but are not considered when applying approach light credit to instrument procedure visibility minima; that is, inoperative sequenced flashers do not affect the published visibility minima.

7.25.2. Table **3-1-1**. When Runway Alignment Indicator Lights are part of the approach lighting system and they become inoperative, the instrument flight procedures to that runway revert to no-light visibility minima.

7.25.3. DAF does not apply the INOPERATIVE COMPONENTS OR VISUAL AIDS TABLE (inoperative table) found on page A1 of FAA Terminal Procedures Publication. Chart the appropriate approach lighting system inoperative note when applying credit for approach lights.

7.26. Paragraph 3-2-2.b. Precipitous terrain. Apply precipitous terrain adjustments determined by GPD; manual calculation/application is not authorized.

7.27. Paragraph 3-3-2.c.(4)(b). 20:1 OIS. Restrict night operations when the 20:1 OIS is penetrated and VGSI is not operating or not installed. Night operations may continue unrestricted when a VGSI is installed and operating and the location of the penetrating obstacle(s) is indicated on the approach chart or in a FTIP review. For straight-in approaches, reference the location of the obstacle to the course. For circling approaches, reference the location of the obstacle to the runway centerline. Apply the appropriate note from FAA Order 8260.19, paragraph **8-6-11**o and the following notation guidance whenever the 20:1 OIS is penetrated by an unlit obstacle or it is not known if the penetrating obstacle is lighted. **Note**: Do not include vertical or horizontal accuracy values when publishing the height and location of the 20:1 OIS penetration(s).

7.27.1. When a VGSI system is installed:

7.27.1.1. Annotate the approach chart or FTIP review to indicate the height and location of the unlit 20:1 OIS penetration(s) located in the circling and straight-in visual area, or in the offset visual area. Example: **Unlit antenna 86′ AGL/1820′ MSL, 2430′ prior to threshold, 170′ right of course/centerline** (as applicable); and

7.27.1.2. Also chart the following note to inform DAF aircrews that the approach may be used to land straight-in at night only after they have requested and received approval from their command authority: "**USAF Only: When VGSI inop, straight-in Rwy** (runway number) **authorized at night with aircrew command approval.**"

7.27.2. When a VGSI is not installed or when unable to determine whether or not a VGSI is installed:

7.27.2.1. Indicate on the approach chart or FTIP review the height and location of the unlit 20:1 OIS penetration(s). Example: **Unlit steeple 190′ AGL/2270′ MSL, 2950′ prior to threshold, 185′ left of course/centerline** (as applicable);

7.27.2.2. Chart the following note to indicate to all users the straight-in approach procedure and circling to the runway is not authorized at night: "**Procedure NA at night**";

7.27.2.3. Also chart the following note to inform DAF aircrews that the approach may be used to land straight-in at night only after they have requested and received approval from their command authority: "**USAF Only: Straight-in Rwy** (runway number) **authorized at night with aircrew command approval**"; and

7.27.2.4. Whenever circling minimums are published and one or more runways have 20:1 OIS penetrations, chart this note, "**CAUTION: Circling to Rwy** (XX, XY, XZ, as applicable) **NA at night**", to inform all users that circling to each of the affected runways is not authorized at night.

7.27.3. When numerous like obstacles need to be annotated while charting the notes in **paragraph 7.27.1** and **paragraph 7.27.2**, group the obstacles in the note as in this example:

Unlit Terrain/Trees/Towers (as applicable) **beginning 1245′ prior to threshold, 250′ left of course/centerline** (as applicable)**, up to 2910′ MSL**.

7.27.4. Whenever Category A minima are affected by penetrations to the 20:1 or 34:1 OIS, also apply the notation requirements in FAA Order 8260.19, paragraph **8-6-11**k.(3).

7.28. Table 3-3-6. Minimum Visibility Based on Runway Characteristics. Only apply this table within NAS; do not apply Table **3-3-6**. to FTIP published in DoD FLIP (Terminal), FTIP reviews, or to instrument flight procedures developed for DAF owned and operated locations outside of the Continental US.

7.29. Paragraph 5-3-4.b. Arc final approach. Application of this criteria is not authorized.

7.30. Paragraph 10-1-4.b. TCH.

7.30.1. Best Fit Straight-Line Application to Threshold Crossing Height. When developing instrument flight procedures, do not use flight inspection derived best fit straight line reference datum height data.

7.30.2. Apply guidance from this paragraph and Table **10-1-1** when determining TCH value for precision procedures. Use "DAFMAN 11-230, **paragraph 7.30**" as justification to TCH violations on precision approach procedures and approach with vertical guidance procedures based on ICAO Doc 8168 Vol II criteria.

7.30.3. Use Table **10-1-1** to determine the minimum and maximum TCH authorized for the largest aircraft expected to use the runway. When the calculated TCH is less than that stipulated in Table **10-1-1**, publish/chart the following note in the planview of all vertically guided instrument flight procedures when the warning is generated: "LOW TCH – (number) feet."

7.31. Paragraph 10-2-8. Adjustment of DA for Final Approach OCS Penetrations. When applying this guidance, limit the adjustment of DA to no more than 250 feet above the penetrating obstacle.

7.32. Paragraph 10-6-1. Acceptable Obstacles.

7.32.1. When an obstruction penetrates the final approach W and X surfaces or W and Y surfaces, *AND* is not considered acceptable; Category II minimums are not authorized.

7.32.2. When an obstruction penetrates the missed approach section 1 surfaces (except $A1_{extended}$) *AND* is not considered acceptable, adjust DA.

7.32.3. When an obstruction penetrates the missed approach section 1 surfaces (except $A1_{extended}$), *AND* is not considered acceptable, *AND* cannot be mitigated by adjusting DA, Category II minimums are not authorized.

7.32.4. Surfaces A, B, C, and D must not be penetrated unless the penetrating obstacle is either deemed acceptable per Table **10-6-1**., *Acceptable Obstacles,* or mitigated by raising DA. **(T-1)**

7.32.5. A1 surface (or $A1_{extended}$) must not be penetrated, unless the penetrating obstacle is deemed acceptable per Table **10-6-1** or the procedure is published with a missed approach climb gradient that clears the penetration. **(T-1)**

7.33. Section 11-2. Radar Approaches. Do not publish a TCH or a descent gradient for ASR approach procedures. When required, calculate recommended altitudes according to paragraph **11-**

2-5.g. When requested or when required by host nation authorities, round each recommended altitude to the nearest 100-foot increment.

7.34. Paragraph 12-2-2. PinS Approach. Except for helicopter point-in-space (PinS) procedures, these are special use instrument procedures and require annotation per DAFMAN 11-230 Chapter 4.

7.34.1. Establish a MDA or DA/DH of 500 feet or higher AGL for procedures that do not provide for landing.

7.34.2. When all the appropriate instrument flight procedure criteria have not been applied, apply DAFMAN 11-230 **paragraph 4.2**. to PinS procedures.

7.35. Paragraph 13-1-4. Departure OCS Application. Unless specified otherwise in this DAFMAN, the departure OCS begins at the departure end of runway at the departure end of runway elevation *even when a clearway is present*.

7.36. Paragraph 13-1-4.a. Low, close-in OCS penetrations. Publish the location of low, close-in obstacles per guidance in FAA Order 8260.46. Sample takeoff obstacle notes can be found in FAA Order 8260.46, Appendix D, Section 1, **paragraph 10**, and in the footnotes of Figure 2-1-1 and Figure 2-1-3 from the same FAA order.

7.36.1. Do not add accuracy values to the reported heights/elevations of these obstacles. When the noted takeoff obstacle is terrain, only list MSL height; do not list an AGL height of "0" feet.

7.36.2. When multiple terrain points are relatively close together and of similar height, group them together in a single entry in the following format: "**RWY 04, terrain beginning 16′ from DER, 500′ left of centerline, up to 4305′ MSL**." When grouping numerous terrain points is not practical, group together as many as possible in the single entry and list the remaining points individually.

7.37. Formula 13-1-2. Standard/Military Option Climb Gradient. When the Military Option formula is used to determine the climb gradient, also use this formula to determine whether or not the obstacle is classified as a low, close-in obstacle.

7.38. Paragraph 13-1-5.d. Reduced Takeoff Runway Length (RTRL). Do not apply RTRL option when any obstruction penetrates the 40:1 OCS by more than 35 feet.

7.39. Paragraph 13-1-7. Initial Climb Area (ICA). Do not develop departures requiring a turn prior to reaching 400 feet above the departure end of runway elevation.

7.40. Paragraph 13-3-1. DR Departure. Departures requiring dead reckoning (DR) segments that extend more than 10 NM from the departure end of runway are nonstandard and require waiver. Ensure the note "**NOT FOR CIVIL USE**" is published on these departures.

7.40.1. When a DR segment extends more than 10 NM from the departure end of runway, the boundary lines of the departure obstruction evaluation area continue to splay to points abeam the point where PCG is established or to the end of the departure.

7.40.2. Publish headings (not DR tracks) to be flown. For example: "**Climb heading 220 to 3000 …**" or "**Climbing left turn direct ABC VOR …**"

7.41. Paragraph 13-3-3. Turning Segment Construction. Apply a minimum airspeed of 310 knots indicated airspeed to Category E aircraft *at all altitudes*.

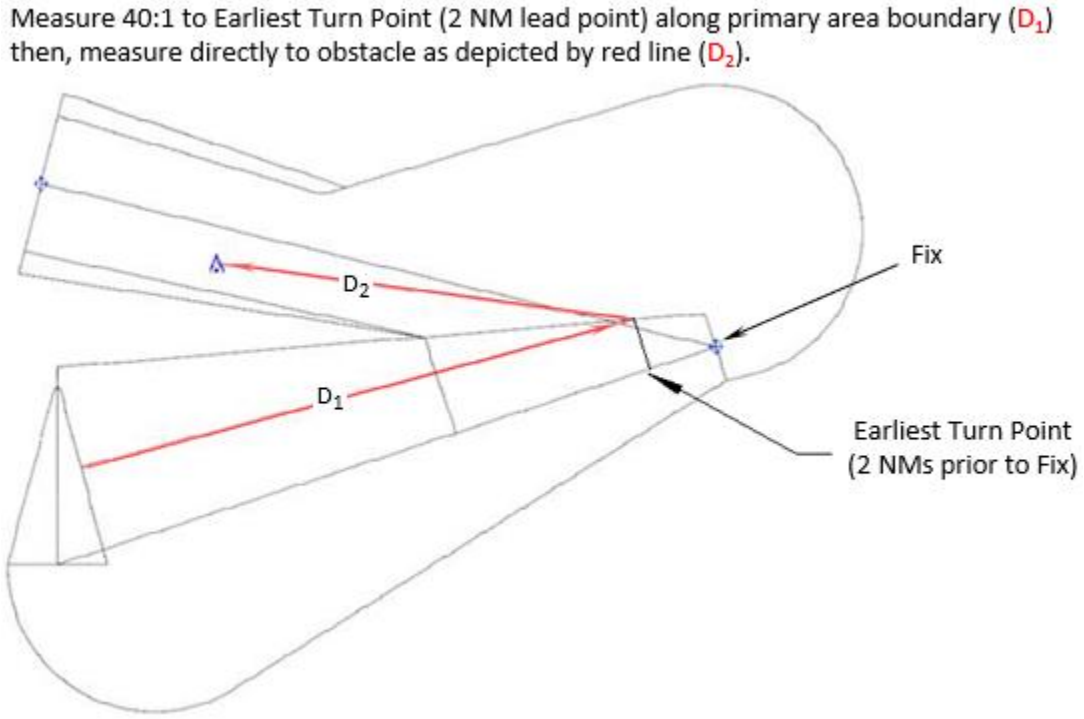
7.42. Paragraph 13-3-4. Multiple Turns. Apply this criteria to all departures with turns equal to or greater than 90° regardless of the number of turns.

7.42.1. When the last sub-segment of a departure procedure contains a turn, it is possible for the outside turn expansion to have not completed its inward taper prior to the end of the segment. In this case, extend the length of the last sub-segment to allow the inward taper of the turn expansion to complete. The inward taper of the turn expansion is complete when the inward taper intersects the outer boundary of the primary area of the trapezoid defining the segment at the final fix (**Figure 7.4**.).

Figure 7.4. Outer Boundary Turn Expansion Continued to Join the Next Segment.

7.42.2. Make distance measurements for obstacle evaluations (turns greater than 90°) to a point formed by a line drawn perpendicular to the course 2 NM prior to each turn fix at the inside boundary of the primary area, then directly to the obstacle. Also, apply this method to distance measurements for obstacles in succeeding segments (**Figure 7.5**.).

Figure 7.5. Distance Measurements for Obstacle Evaluations; Turns Greater than 90°.



7.43. Section 13-4. Visual Climb Over Airport (VCOA). Develop a VCOA procedure in conjunction with an ODP per FAA Order 8260.46, Table **2-1-1**., ODP Development Combinations. Publish VCOA procedure in the IFR Takeoff Minimums and Departure Procedures section of DoD FLIP (Terminal) in a textual format only. When ODP development is not possible or practical, a stand-alone VCOA procedure is authorized. When a VCOA is not developed, GPD generates a violation indicating ODP rules have not been satisfied. Use this paragraph to justify the criteria violation for a stand-alone VCOA procedure. Justify this violation with "**ATC has determined a**

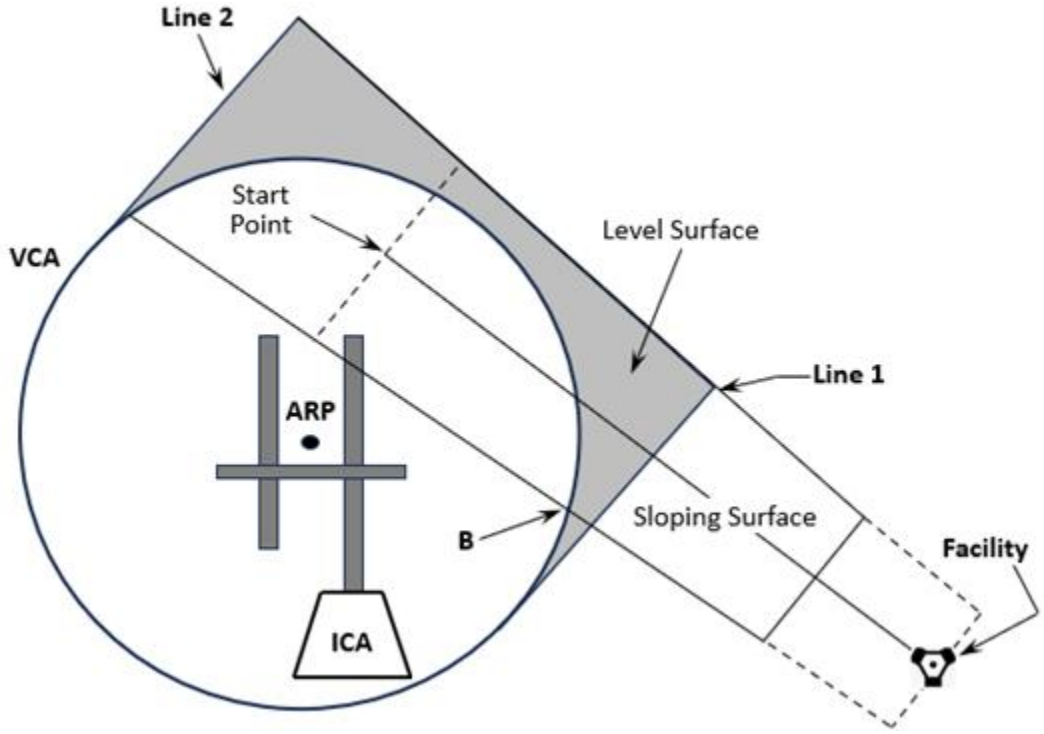
VCOA is not operationally feasible; see documentation in procedure package" on the justification tab of the violation dialog box. **Note**: Waiver authority consideration is not required.

7.44. Paragraph 13-4-3. VCOA Assessment.

7.44.1. Assess a 40:1 OCS outward from the visual climb area boundary using the preliminary height of the visual climb area level surface as the starting OCS height. Evaluate the 40:1 surface to a minimum distance of 25 NM; expand the assessment to a distance of 46 NM if any part of the assessment area within 25 NM includes designated mountainous terrain.

7.44.2. For basic areas that exceed the lateral limits of the visual climb area, the level surface is extended from the points of tangency on both sides of the visual climb area with lines drawn perpendicular to the route (lines 1 and 2 of **Figure 7.5**) and bounded by the side of the basic route outside of the visual climb area (shaded area of **Figure 7.5**.).

Figure 7.6. Basic Visual Climb Over Airport Area Extension.



7.45. Paragraph 13-4-4. Ceiling and Visibility. Publish ceiling and visibility per FAA Order 8260.46**.**

7.46. Paragraph 13-4-5. Published Annotations. Publish low, close-in obstacle notes per DAFMAN 11-230 **paragraph 7.37**; do not publish other obstacles identified in VCOA evaluation. Also, apply guidance from FAA Order 8260.46, **Chapter 2**.

7.46.1. Specify the airport name as the fix/location specified to cross for a VCOA diverse.

7.46.2. Specify the start fix used to develop the procedure as the fix/location specified for a VCOA route. Publish the airport name when the start fix is the airport. When a named fix is utilized, publish the 5-letter name of the fix. Subsequent turns on routes are developed as for normal route departures and holding is authorized at the end of a route segment.

7.46.3. Publish the radius of the visual climb area as a distance to remain within during the climb in visual conditions. Round downward to the next ¼ NM increment visual climb area radii greater than 2 NM but less than 3 NM. Round downward to the next whole NM increment visual climb area radii of 3 NM or more. The following format is required: "**RWY 9; Obtain ATC approval for VCOA when requesting IFR clearance. Climb in visual conditions to cross McAllen airport at or above 6000 before proceeding on course. Remain within 4.0 NM of McAllen airport during VCOA.**"

7.47. Section 14-5. Diverse Vector Area (DVA) Assessment. Also see AFMAN 13-215.

7.48. Section 16-2. Pattern Components. Except as noted in the sub-paragraphs below, apply holding pattern criteria as established in FAA Order 8260.3, **Chapter 16**. Apply guidance from ICAO Doc 8168, Vol II, when developing or evaluating holding patterns based on ICAO standards. Holding at (overhead) a TACAN facility is nonstandard regardless of the criteria or standard being applied. Document holding patterns on FAA Form 8260-2 per guidance in FAA Order 8260.19, paragraph **8-5-2**.

7.48.1. Paragraph **16-2-2**. Outbound Leg Length. Do not request depiction of standard (timed) holding leg lengths within any holding pattern on the planview.

7.48.2. Paragraph **16-2-3**. Maximum Holding Airspeed. Develop all holding patterns to accommodate a maximum holding airspeed of 310 knots indicated airspeed. Except as noted in **paragraph 7.52** of this DAFMAN, apply the values from Table **16-7-1**. Do not request the standard holding airspeed of 310 knots indicated airspeed to be depicted within any holding pattern on the planview. When a smaller holding pattern is required for obstacles or for airspace considerations, apply the values from Table **16-3-1** and ensure the airspeed used with the smaller pattern is noted within the holding pattern on the planview.

7.49. Paragraph 16-3-6. Pattern Selection. Consider ATC holding requirements when determining minimum and maximum holding altitudes. Ensure all affected ATC facilities are advised of any holding pattern speed or altitude limitations.

7.50. Paragraph 16-7-1. Climb-in-Hold Evaluations. When missed approach climb-in-hold is required, apply the applicable missed approach instruction guidance from FAA Order 8260.19, paragraph **8-6-7**.f.

7.51. Paragraph 16-10-4. RNAV Holding Patterns. Apply FAA Order 8260.3, Section 16-10 when developing RNAV holding. Use the values specified in Table **16-7-1** under the "**15-29.9 NM and RNAV**" column when determining RNAV holding pattern sizes.

7.52. Paragraph 16-12-1. Turbulent Air Operation. Provide all restrictions related to turbulent air holding to the ATC facility manager.

Chapter 8

IMPLEMENTING FEDERAL AVIATION ADMINISTRATION ORDER 8260.19

8.1. Section 2-3. Environmental Requirements. Comply with the guidance contained in the *Environmental Impact Analysis Process,* 32 C.F.R. § 989. As a program manager, ensure all of the responsibilities outlined in 32 C.F.R. § 989.3(c) and 32 C.F.R. § 989.3(d) are considered.

8.1.1. Access 32 C.F.R. § 989 from the Electronic Code of Federal Regulations via the website **http://www.ecfr.gov/cgi-bin/text-idx?tpl=%2Findex.tpl**. Select "Title 32 – National Defense" then, Chapter VII Department of the Air Force, Subchapter T, **Part 989** Environmental Impact Analysis Process (EIAP).

8.1.2. When proposing altitude or flight track changes to existing instrument procedures or when proposing new instrument procedures, initiate the environmental impact analysis process by completing Section I of AF Form 813, *Request for Environmental Impact Analysis*.

8.1.3. Coordinate AF Form 813 through the Environmental Planning Function at the appropriate level for their evaluation of any effect the proposed new or revised instrument procedures may have on the Air Installation Compatible Use Zone according to DAFI 32-1015, *Integrated Installation Planning,* or other environmental resources.

8.1.4. Retain all environmental documentation with the instrument flight procedure package.

8.2. Paragraph 2-4-3. Requests for Expanded Service Volumes.

8.2.1. All courses and fixes used to develop the instrument flight procedure should fall within useable radials and useable ranges of the applicable NAVAID. Consider all flight inspected and any other known restrictions to NAVAIDs when developing instrument flight procedures.

8.2.1.1. When any course or fix extends beyond the standard service volume of the applicable NAVAID, an ESV evaluation is required.

8.2.1.2. Holding Patterns. The primary holding fix must be within the service volume of the NAVAID. When portions of the holding pattern (other than the primary holding fix) are outside the service volume of the NAVAID an ESV evaluation is *not* required.

8.2.2. When an ESV evaluation is indicated for US owned and operated NAVAIDs at DAF locations within the Continental US, access the on-line ESV request form via FAA's public web site at **http://esvmsmil.faa.gov/** Download the Expanded Service Volume Management System Military Module User Manual from the site and follow the directions for registering as a new user. After successful registration and receipt of credentials by email, follow the user manual instructions for entering ESV criteria into the on-line form. Also see AFFSA TERPS SharePoint® TERPS Information Pamphlet for *USAF Expanded Service Volume Processing Information Pamphlet.*

8.2.3. To ensure ESV request has been routed by the Flight Inspection Central Operations office to the appropriate Flight Inspection Field Office, track the status of the request with the tracking number assigned during the initial submission. A copy of this single page of the module should be included in the flight inspection package to serve as a reminder to flight inspection that an ESV is pending their evaluation.

8.2.4. Once a satisfactory ESV is obtained, official notification is documented in the Flight Inspection Report and the Expanded Service Volume Management System module is updated by the Flight Inspection Field Office. **Note:** An ESV requires specific 'NAVAID tuning' during ESV flight evaluation. Coordination with MAJCOM NAVAID maintenance office is essential to ensure qualified maintenance personnel are available during the evaluation.

8.2.4.1. Retain a print-out of the completed and approved ESV in the procedure package.

8.2.4.2. Ensure ESV results submitted to FAA on the applicable facility data form are reflected in FAA AirNav datasheet. See **paragraph 6.1.1** of this manual for guidance on obtaining AirNav datasheets.

8.2.5. The applicable MAJCOM TERPS function should validate requirements for ESV evaluations on US owned and operated NAVAIDs at DAF locations outside of the Continental US where DAF has TERPS responsibility prior to sending an ESV request to MAJCOM Spectrum Management Office.

8.2.6. When using GPD to develop an instrument flight procedure that incorporates fixes based on host nation owned and operated NAVAIDs, check the output for NAVAID service volume violations. When the standard service volume is exceeded, ensure the flight inspector documents acceptable reception in the flight inspection report and use the flight inspection results to justify the violation. Waiver authority consideration is not required.

8.3. Section 2-5. Implementing Epoch Year Magnetic Variation (MV).

8.3.1. AFFSA TERPS maintains a listing/record of DAF navigational aids and airports by geographical location. The MV listing/record indicates the current assigned MV of record and the projected MV for the next epoch year. Upon request, AFFSA TERPS will distribute the next epoch year values to MAJCOM TERPS.

8.3.2. MAJCOM TERPS will request the next/projected epoch year magnetic variation for DAF locations using the Magnetic Variation (MV) Request form. Submit an incident on AFFSA TERPS helpdesk and apply the guidance from Section 2-5 when implementing, maintaining, and updating epoch year magnetic variation values on DAF owned and operated airports and NAVAIDs.

8.3.3. Notify AFFSA Maintenance and Policy Directorate at **HQAFFSA.XM.ATCALS.1@us.af.mil** when the projected next epoch year MV of record changes by 3° or more from the currently assigned value. MAJCOMs and their supported TERPS functions should coordinate a timeline and effective date for implementing the new magnetic variation that coincides with a flight information publication and DAFIF® publication date. Additional guidance on processing can be found in Magnetic Variation Information Pamphlet available on the AFFSA TERPS SharePoint®.

8.3.3.1. Include radar systems and all affected instrument procedures when updating the magnetic variation of the airport or NAVAID(s). The effective date of the change may require additional coordination when DAF owned and operated NAVAID is within the NAS or when runway renumbering is required. Establish the effective date with enough lead-time to ensure all affected NAVAID data and instrument procedures are modified to reflect the future epoch year magnetic variation value on the effective date.

8.3.3.2. Once this timeline is established, provide the revised magnetic variation value and the effective date to AIS, NGA and Jeppesen® for Continental US locations via Aeronautical Information Portal. AIS publishes the change in NFDD. Coordinate the new date with all affected agencies/host nations when the proposed effective date is revised.

8.3.4. Login into FAA's Aeronautical Information Portal website, **https://nfdc.faa.gov/nfdcApps/ng/#/home** and upload the completed '.pdf' version to the Airport Data Change Form (Military) form (under 'Supporting Documents') before submitting. Retain the 'Data Submission Receipt Tracking Number' for future reference.

8.3.5. When host nation directives do not provide guidance for processing magnetic variation changes at DAF installations outside of the Continental US, comply with this manual to the maximum extent possible.

8.4. Section 2-6. Notice to Air Missions (NOTAMs). Apply guidance in AFI 11-208.

8.5. Section 2-10. Navigational Fixes. Military fixes are maintained in the national database. Each named fix is processed by FAA's Aeronautical Information Services and appended daily in NFDD (except weekends and Federal holidays). Access to fix information via FAA AIS website under Aeronautical Data **https://www.faa.gov/air_traffic/flight_info/aeronav/aero_data/**.

8.5.1. All named fixes must be documented and approved on Form 8260-2. Whether establishing, modifying, or cancelling navigational fixes, holding patterns, and/or reporting points, use FAA Form 8260-2. Additional guidance on requesting and completing this form can be found in FAA Form 8260-2 Information Pamphlet available on AFFSA TERPS SharePoint®.

8.5.2. MAJCOM TERPS Manager, as OPR for coordinating Fix use:

8.5.2.1. Establishes a process for obtaining, maintaining, approving, and submitting navigational fixes; and

8.5.2.2. For fixes that are part of NAS, ensure fix data is coordinated with FAA AIS and for those fixes outside of NAS, comply with **paragraph 8.5.5**.

8.5.2.3. Ensures new, revised, or cancelled fix data is published in NFDD with an effective date that matches the publication date of the instrument flight procedure prior to the change being published in DoD FLIP (Terminal). DoD FLIP cut-off schedule is contained in DoD FLIPGP, Chapter 11, *Revision Schedules;*

8.5.2.4. Report NFDD inaccuracies to FAA AIS and, when necessary, ensures the appropriate NOTAM action is taken; and

8.5.2.5. Requests and obtains new fix name(s) from FAA AIS Airspace and Procedures.

8.5.3. Paragraph **2-10-4**. Naming navigational fixes. DME leg length distances on published holding patterns do not require naming.

8.5.4. Paragraph **2-10-5**. Documenting navigational fixes.

8.5.4.1. When completing the "Reason for Revision" section of FAA Form 8260-2, use a "from-to-reason" format. Example: "Pattern 1 minimum holding altitude changed from 2000 to 3000; new controlling obstacle."

8.5.4.2. When a fix has moved, document the distance the fix has moved in feet or in NM to assist flight inspection in determining whether or not the fix needs to be re-evaluated.

8.5.4.3. To determine whether or not a new fix or waypoint name change is required, see FAA Order JO 7400.2, Chapter 3, Section 3.

8.5.5. When designing instrument procedures at locations outside of NAS, the responsible MAJCOM TERPS function will establish a process to obtain and process fix names in accordance with their applicable TERPS AOR or host nation directives.

8.5.5.1. AIS does not process new or amended fixes outside of US and territories via NFDD but they may retain FAA Form 8260-2 in their internal database for fix name tracking purposes; especially canceled fix names. Notify NGA and Jeppesen® of changes to fix information, including the cancellation of a fix.

8.5.5.2. Instrument procedures developed by DAF at locations outside of NAS may be published in DoD FLIP (Terminal) only after all required fix names are coordinated and approved by the host nation.

8.6. Paragraph 2-11-5. Controlling obstacles. Do not apply FAA Adverse Assumption Obstacle guidance outside NAS.

8.7. Section 2-12. Waiver of Standards/Approval Requests. Do not apply this section.

8.8. Chapter 3. Route Procedures. Do not apply this chapter.

8.9. Paragraph 4-1-3. Airspace requirements. Within US and where required by host nation regulations, ensure each instrument flight procedure's primary obstruction clearance areas are contained within controlled airspace. Document all efforts to obtain controlled airspace to support required instrument flight procedures. **(T-3)** Where it is not possible to designate controlled airspace, annotate the procedure with an appropriate note. Example 1: **CAUTION: Procedure not contained within controlled airspace**. Example 2: **CAUTION: Uncontrolled airspace below 700'/1200'** (or other altitude) **AGL**. Example 3: **CAUTION: Uncontrolled airspace beyond/within XX NM of** (airport name) **airport**. Consider continuously active restricted areas as controlled airspace and apply **paragraph 1.5** of this DAFMAN.

8.9.1. Where controlled airspace exists, ensure all instrument flight procedure altitudes are at least 300 feet above the floor of Class E airspace at the final approach fix, in all preceding segments, and in the clearance limit holding pattern.

8.9.2. Apply DAFMAN 13-201, *Airspace Management*, FAA Order JO 7400.2, and FAA Order 7610.4, *Special Operations*, as applicable, whenever establishing new airspace or when required to change airspace to accommodate new or revised instrument flight procedures.

8.9.3. When a military airspace manager is not available, inform the Air Force Representative when new or revised instrument procedures require establishing or changing airspace. Retain all airspace coordination documentation with the instrument flight procedure package.

8.10. Paragraph 4-1-7. Temporary displaced threshold procedures. Revise instrument procedures as necessary when the threshold is displaced temporarily, and the affected runway remains open to support operations.

8.10.1. Enter the amount of threshold displacement, temporary runway length, and the displaced threshold elevation into GPD using the Data Manager application. When the

displaced portion of the runway is not available for departure roll, change SER (Start End of Runway) location on the Runway Supplementary Data Tab to match the coordinate of the displaced threshold. Additionally, when available, enter the "Displaced Threshold TDZE" value on the Runway Supplementary Data tab. Exit the Data Manager application and run the AutoEval application on all mission essential procedures. When the airport elevation was based on the displaced portion of the runway, update the airport elevation in the aerodrome properties with the new value based on the shortened runway.

8.10.2. When the AutoEval results in a vertical guidance surface (VGS) penetration, lower than standard TCH or wheel crossing height, or when the location of the displaced threshold places the glide slope, runway point of intercept, or ground point of intercept into the displaced portion of the runway, ensure aircrews are made aware the existing precision procedures are "Not Authorized" via NOTAM. The associated localizer approach may be used as a stand-alone localizer procedure. **Note**: When this is the case, coordinate with Airfield Management personnel to suspend ILS operations, except localizer only, via NOTAM.

8.10.3. Do not apply credit for the approach lights when determining visibility minima. When reverting to no-light minima, ensure the revised MAP to threshold distance is included in the NOTAM, when required.

8.10.4. VGSI systems may be unavailable. When this is the case, ensure aircrews are made aware of this condition via NOTAM.

8.11. Paragraph 4-6-3. Developing RNAV waypoint. When establishing a waypoint fix, determine which category of fix, fly-by (FB) or fly-over (FO) fix will best meet the airspace, route of flight, obstacle clearance and operational requirements for transitioning from one route segment to another.

8.11.1. Missed Approach Waypoint (MAWP), Holding waypoint(s) and missed approach holding waypoint/(clearance limit) will be designed as a fly-over waypoint in GPD. Design each missed approach holding waypoint as a fly-over waypoint. When the missed approach holding waypoint is used for multiple purposes on the same chart, ensure it is *coded* as a fly-over waypoint and *charted* in the planview as a fly-by waypoint. Ensure these coding and charting requirements are correctly articulated in any required coordination. See **Table 8.1**.

Table 8.1. Waypoint Design Standard for Multiple Purpose Use on the Same Chart.

Segment/Location	Fly-by (FB) Mandatory	Fly-over (FO) Mandatory
Initial Approach	X	
Intermediate Approach	X	
Final Approach	X	
Missed Approach		X
Missed Approach Holding		X

Landing Threshold Point or Fictitious Threshold Point (offset procedures)		X

8.11.2. Clarify in TAS letter request to NGA and Jeppesen® that a waypoint designed as a holding fix will be charted as FB, without the circle around the symbol. If the holding waypoint is also designated in some other part of the procedure (i.e., designed as a FO at the IAF), then the holding waypoint will be charted as a fly-over point.

8.11.3. Missed approach holding fixes designed as a FO will be charted as 'fly-over' fixes in the missed approach icons block.

8.11.4. Stepdown fixes are along track distances and should be developed and coded as FB fixes.

8.12. Paragraph 4-6-9. DME/DME screening model. Do not apply guidance from this chapter.

8.13. Paragraph 6-1-4. Assistance. MAJCOM TERPS functions should assist their supported unit TERPS functions and request any needed substantiation from AFFSA TERPS.

8.14. Chapter 7. Planning. Do not apply guidance from this chapter.

8.15. Chapter 8. Instrument Approach Procedures Data Transmittal System. Do not apply guidance concerning documentation requirements on FAA forms unless directed in this DAFMAN.

8.16. Paragraph 8-5-2.r. Office of primary responsibility. When required to use a fix where FAA is OPR,

8.16.1. Complete FAA Form 8260-2, Data Worksheet, in FAA Order 8260.19, Appendix D. Note. It is not authorized to establish a new fix in the same location as an FAA fix or attempt to modify an existing FAA Form 8260-2 without OPR coordination.

8.16.2. Email the completed worksheet to the Manager of the Instrument Procedures Coordination Team and courtesy copy FAA Air Traffic Organization Service Area's Operational Support Group, Flight Procedures Team Lead responsible for the region where the fix is located. FAA contact information is posted on AFFSA TERPS SharePoint® in "TERPS Resources" folder.

8.16.3. Expect to receive an Aeronautical Chart Change Receipt from AIS for tracking and continued coordination.

8.17. Paragraph 8-6-6.d. Missed approach instructions. Except for the guidance pertaining to the completion of FAA forms, apply guidance from this paragraph to DAF developed RNAV missed approach instructions.

8.18. Paragraphs 8-6-7. Profile - Lines 1 through 8. Except for the guidance pertaining to the completion of FAA forms, apply paragraphs **8-6-7**a. through paragraph **8-6-7**.h.

8.19. Paragraph 8-6-9. Equipment and PBN requirements notes. Except for TACAN IFPs, annotate the navigational equipment required on final or in the missed approach segment. For example, when DME or radar is used to identify PFAF, ensure a note "RADAR or DME required" is published in the pilot briefing bar or include the navigational equipment in the procedure identification i.e., "ILS or LOC/DME RWY 23".

8.20. Paragraph 8-6-9.a. Conventional approaches. DAF does not assume all IFR aircraft have at least one VOR receiver. Therefore, a note identifying the additional equipment necessary to conduct the instrument flight procedure must be included.

8.21. Appendix A. Administrative Information . This appendix is not applicable to DAF.

8.22. Appendix B. Flight Procedures References . Data in this appendix provides reference information only.

8.23. Appendix C. Obstacle Accuracy Standards, Codes, and Sources . Data in this appendix provides reference information only.

8.24. Appendix D. FAA Form 8260-2, Data Worksheet. See **Paragraph 8.17**.

8.25. Appendix E. Radio Fix and Holding Data Record, FAA Form 8260-2 . This appendix provides examples only.

8.26. Appendix F. ILS and RNAV Standard Instrument Approach Procedure, FAA Form 8260-3. This appendix is not applicable to DAF.

8.27. Appendix G. Radar - Standard Instrument Approach Procedure, FAA Form 8260-4 . This appendix is not applicable to DAF.

8.28. Appendix H. Standard Instrument Approach Procedure, FAA Form 8260-5 . This appendix is not applicable to DAF.

8.29. Appendix I. Special Instrument Approach Procedure, FAA Form 8260-7A and Special Instrument Procedure Authorization, FAA Form 8260-7B . This appendix is not applicable to DAF.

8.30. Appendix J. Standard Instrument Approach Procedure, FAA Form 8260-9 . This appendix is not applicable to DAF.

8.31. Appendix K. Final Approach Segment (FAS) Data Block Cyclic Redundancy Check (CRC) Requirements . Data in this appendix provides reference information only.

8.32. Appendix L. Final Approach Segment (FAS) Data Block Cyclic Redundancy Check (CRC) Requirements for Helicopter Operations - RESERVED . Data in this appendix provides reference information only.

8.33. Appendix M. Instrument Flight Procedures (IFP) Lifecycle . This appendix is not applicable to DAF.

Chapter 9

IMPLEMENTING FEDERAL AVIATION ADMINISTRATION ORDER 8260.46

9.1. General Departure Procedure (DP) Development Guidance. Develop DPs per FAA Order 8260.3, FAA Order 8260.46, FAA Order 8260.58, and as supplemented in this chapter. Use the current DAF approved automation tool when developing DPs; develop DPs manually only when automation does not support the requirement.

9.1.1. Flight inspection of ODPs and SIDs is required except as noted in **paragraph 6.3.1**.

9.1.2. Publication of a SID does not eliminate the need to publish an ODP when 40:1 OCS penetrations exist.

9.1.3. Do not develop a DP with a DME arc segment for publication in DoD FLIP (Terminal) or for loose-leaf formatted distribution.

9.1.4. Computer Identification Codes. Coordinate all DPs that affect NAS with the appropriate FAA ATC facility. MAJCOM terminal instrument procedure specialists outside of the Continental US should determine whether DPs affect host nation airspace and require coordination with host nation ATC officials to obtain host nation assigned computer codes.

9.2. RNAV DPs. Apply FAA Order 8260.46, FAA Order 8260.58, and other applicable FAA orders, as specified, when developing RNAV DPs. Annotate each DAF RNAV DP within NAS per FAA Order 8260.46.

9.3. Supplemented Departure Criteria from FAA Order 8260.46, Chapter 2.

9.3.1. Paragraph **2-1-1**. Departure Procedure (DP) Guidelines; Table **2-1-1**., ODP development combinations. Classify the results of DAF diverse departure obstacle assessments as one of nine ODP cases (**paragraph 9.3.1.5**.).

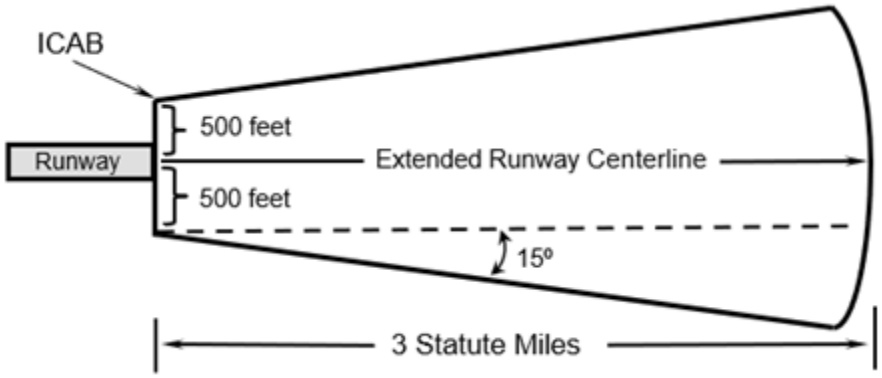
9.3.1.1. Obstacle Departure Procedure – a single action or a combination of actions from ODPs listed below developed to assist departing aircraft avoid obstacles that penetrate a 40:1 OCS. Develop and publish only one ODP for each runway.

9.3.1.2. Standard Instrument Departure – a DP that is developed when requested by ATC. It must include a route, provide the required obstruction clearance and is published graphically. **(T-1)** Multiple SIDs may be developed and published for each runway.

9.3.1.3. ICA3 – an arc, 3 statute miles from ICAB line (departure end of runway), (see **Figure 9.1**.).

9.3.1.4. Initial Climb Area (extended) – that area (**Figure 9.1**) between ICAB line and ICA3 line. The ICA (extended) origin width is 1,000 feet wide at the departure end of runway (500 feet either side of the runway centerline) and splays outward at a rate of 15° relative to the runway centerline extended. Use **Figure 9.1** to determine which one of the nine ODP cases to apply when obstructions penetrate the 40:1 OCS.

Figure 9.1. Initial Climb Area (extended).



9.3.1.5. Departure Procedure Workflow. Complete a diverse departure obstacle assessment for each runway authorized for IFR operations. Coordinate diverse departure assessment results through the IFR ATC facility manager. Classify the results of the diverse departure obstacle assessment into *one* of the nine ODP cases defined in **paragraph 9.3.1.5.1** through **paragraph 9.3.1.5.9** of this DAFMAN. Each ODP combination defined below constitutes *one* ODP.

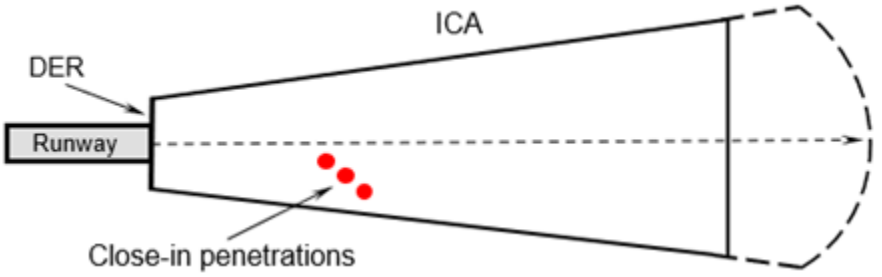
9.3.1.5.1. ODP Case 1 – No 40:1 OCS penetrations exist.

9.3.1.5.1.1. Do not develop or publish an ODP. Do not publish the Delta T symbol on any approach or DP at that location. **Note**: SIDs may be developed when required.

9.3.1.5.1.2. The instrument procedure specialist will document completion of the diverse departure obstacle assessment within a procedure package and maintain the Approach/Departure Signature Page. **(T-3)**

9.3.1.5.2. ODP Case 2 – 40:1 OCS penetrations exist only within ICA (extended) *and* all penetrations require a "climb to" altitude of 200 feet or less above the departure end of runway elevation. That is, *all* penetrations are low, close-in obstacles. (See **Figure 9.2**.) Apply the following:

Figure 9.2. Case 2:

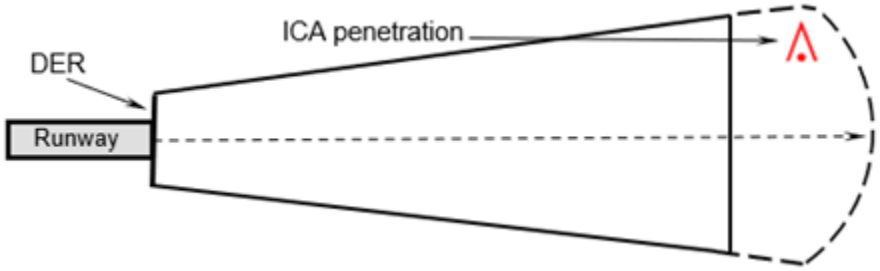


9.3.1.5.2.1. Only develop and publish low, close-in obstacle notes (**paragraph 7.37**); and

9.3.1.5.2.2. Send GPD publication report containing the location of the low, close-in obstacles to flight inspection; no drawing is required.

9.3.1.5.3. ODP Case 3 – 40:1 OCS penetrations exist only within ICA (extended) *and* all penetrations require a "climb to" altitude greater than 200 feet above the departure end of runway elevation. That is, *there are no low, close-in obstacles*. (See **Figure 9.3**.) Develop and publish only *one* of the following ODP combinations:

Figure 9.3. ODP Case 3:



9.3.1.5.3.1. Combination 1: A textual or graphic route or sector that avoids all 40:1 OCS penetrations and does *not* require a climb gradient in excess of 200 feet per NM.

9.3.1.5.3.2. Combination 2:

9.3.1.5.3.2.1. A ceiling and visibility to avoid the penetrations;

9.3.1.5.3.2.2. Standard minimums with a climb gradient to a fix or altitude that provides appropriate obstacle clearance beyond the fix or altitude so that the climb gradient can be used beyond the fix or altitude;

9.3.1.5.3.2.3. A note identifying the location and height of the controlling obstacle per FAA Order 8260.46 **Chapter 2**; and

9.3.1.5.3.2.4. Provide RTRL option in accordance with FAA Order 8260.3 **Chapter 13**.

9.3.1.5.3.3. Combination 3:

9.3.1.5.3.3.1. A textual or graphic route or sector that avoids some 40:1 OCS penetrations laterally *and* uses a climb gradient to mitigate all other 40:1 OCS penetrations vertically. Ensure the climb gradient provides appropriate obstacle clearance to a fix or an altitude so that the minimum climb gradient can be used beyond the fix or altitude;

9.3.1.5.3.3.2. A ceiling and visibility to avoid the penetrations;

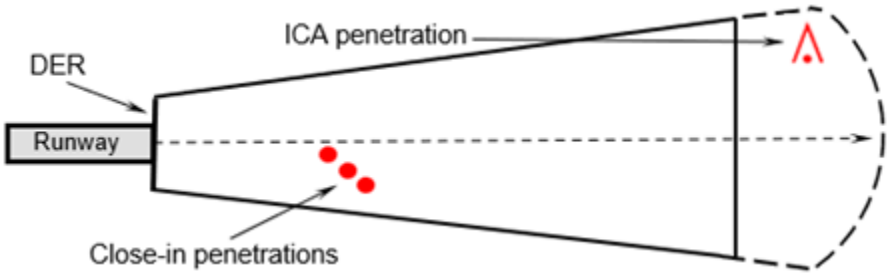
9.3.1.5.3.3.3. Standard takeoff minimums with a climb gradient to a fix or altitude that provides appropriate obstacle clearance beyond the fix or altitude so that the minimum climb gradient can be used beyond the fix or altitude;

9.3.1.5.3.3.4. A note identifying the location and height of the controlling obstacle in accordance with FAA Order 8260.46 **Chapter 2**; and

9.3.1.5.3.3.5. Provide RTRL option in accordance with FAA Order 8260.3 **Chapter 13**.

9.3.1.5.4. ODP Case 4 – 40:1 OCS penetrations exist only within ICA (extended) *and* has a combination of low, close-in obstacles and 40:1 OCS penetrations that require a "climb to" altitude greater than 200 feet above the departure end of runway elevation. (See **Figure 9.4**.) Develop and publish low, close-in obstacle notes *and* one of the three combinations from ODP Case 3.

Figure 9.4. ODP Case 4:



9.3.1.5.5. ODP Case 5 – 40:1 OCS penetrations only exist outside ICA (extended); no low, close-in obstacles. (See **Figure 9.5**.) Develop and publish only *one* of the following ODP combinations. **Note**: When there are 40:1 OCS penetrations outside ICA (extended) *with* low, close-in obstacles, develop and publish low, close-in obstacle notes and *one* of the three combinations from ODP Case 5.

9.3.1.5.5.1. Combination 1: A textual or graphic route or sector that avoids all 40:1 OCS penetrations and does *not* require a climb gradient in excess of 200 feet per NM.

9.3.1.5.5.2. Combination 2:

9.3.1.5.5.2.1. Standard takeoff minimums with a climb gradient to a fix or altitude that provides appropriate obstacle clearance beyond the fix or altitude so that the minimum climb gradient can be used beyond the fix or altitude; and

9.3.1.5.5.2.2. Provide a VCOA in accordance with this DAFMAN **Chapter 7**.

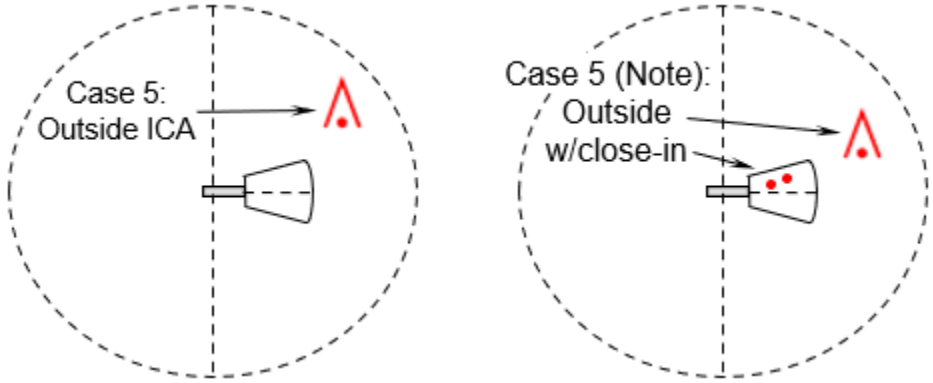
9.3.1.5.5.3. Combination 3:

9.3.1.5.5.3.1. A textual or graphic route or sector that avoids some 40:1 OCS penetrations laterally *and* uses a climb gradient to mitigate all other 40:1 OCS penetrations vertically. Ensure the climb gradient provides appropriate obstacle clearance to a fix or an altitude so that the minimum climb gradient can be used beyond the fix or altitude;

9.3.1.5.5.3.2. Standard takeoff minimums with a climb gradient to a fix or altitude that provides appropriate obstacle clearance beyond the fix or altitude so that the minimum climb gradient can be used beyond the fix or altitude; and

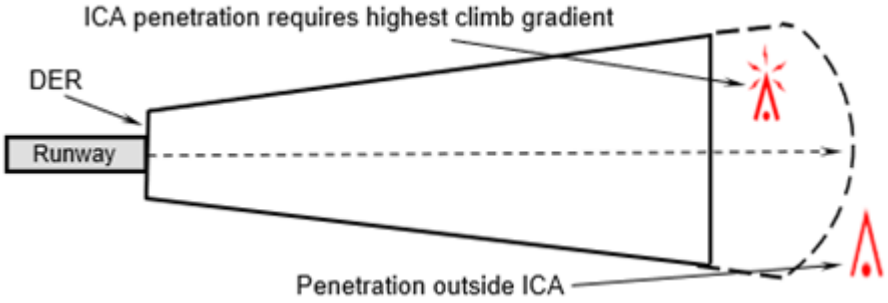
9.3.1.5.5.3.3. Provide a VCOA in accordance with this DAFMAN **Chapter 7**.

Figure 9.5. ODP Case 5 & Note Penetrations:



9.3.1.5.6. ODP Case 6 – 40:1 OCS penetrations exist both inside and outside ICA (extended) and all 40:1 OCS penetrations require a "climb to" altitude greater than 200 feet above the departure end of runway elevation *and* the obstacle that requires the highest climb gradient is within ICA (extended); no low, close-in obstacles. (See **Figure 9.6**.) Develop and publish only *one* of the following ODP combinations:

Figure 9.6. ODP Case 6 Penetrations:



9.3.1.5.6.1. Combination 1: A textual or graphic route or sector with standard takeoff minimums that avoids all 40:1 OCS penetrations and does *not* require a climb gradient in excess of 200 feet per NM.

9.3.1.5.6.2. Combination 2:

9.3.1.5.6.2.1. Standard takeoff minimums *and* a climb gradient to clear the obstacle within ICA (extended) to a fix or altitude that provides appropriate obstacle clearance beyond the fix or altitude so that the minimum climb gradient can be used beyond the fix or altitude;

9.3.1.5.6.2.2. Provide ceiling and visibility to enable obstacle avoidance within ICA (extended) *and* a climb gradient to a fix or altitude to mitigate the 40:1 OCS penetrations outside ICA (extended);

9.3.1.5.6.2.3. A note identifying the location and height of the controlling obstacle in accordance with FAA Order 8260.46 **Chapter 2**; and

9.3.1.5.6.2.4. Provide a VCOA in accordance this DAFMAN **Chapter 7**.

9.3.1.5.6.3. Combination 3:

9.3.1.5.6.3.1. A textual or graphic route or sector that avoids some 40:1 OCS penetrations laterally *and* uses a climb gradient to mitigate all other 40:1 OCS penetrations vertically. Ensure the climb gradient provides appropriate obstacle clearance to a fix or an altitude so that the minimum climb gradient can be used beyond the fix or altitude;

9.3.1.5.6.3.2. Standard takeoff minimums *and* a climb gradient to clear the obstacle within ICA (extended) to a fix or altitude that provides appropriate obstacle clearance beyond the fix or altitude so that the minimum climb gradient can be used beyond the fix or altitude;

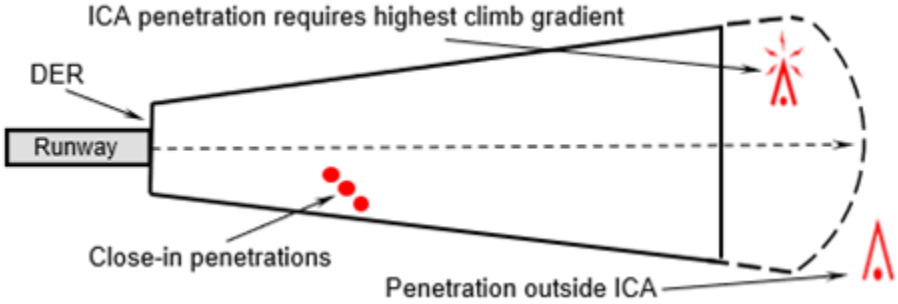
9.3.1.5.6.3.3. Provide ceiling and visibility to enable obstacle avoidance within ICA (extended) *and* a climb gradient to a fix or altitude to mitigate the 40:1 OCS penetrations outside ICA (extended);

9.3.1.5.6.3.4. A note identifying the location and height of the controlling obstacle; and

9.3.1.5.6.3.5. Provide a VCOA in accordance with this DAFMAN **Chapter 7**.

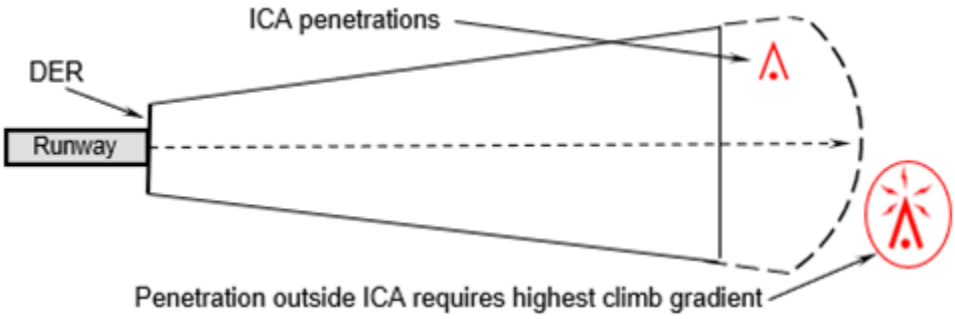
9.3.1.5.7. ODP Case 7 – 40:1 OCS penetrations exist both inside and outside ICA (extended) *and* has a combination of low, close-in obstacles and 40:1 OCS penetrations that require a "climb to" altitude greater than 200 feet above the departure end of runway elevation *and* the obstacle that requires the highest climb gradient is within ICA (extended). Develop and publish low, close-in obstacle notes and *one* of the three combinations from ODP Case 6. (See **Figure 9.7**.)

Figure 9.7. ODP Case 7 Penetrations:



9.3.1.5.8. ODP Case 8 – 40:1 OCS penetrations exist both inside and outside ICA (extended) *and* all 40:1 OCS penetrations require a "climb to" altitude greater than 200 feet above the departure end of runway elevation *and* the obstacle that requires the highest climb gradient is outside ICA (extended); no low, close-in obstacles. (See **Figure 9.8**.). Develop and publish only *one* of the following ODP combinations:

Figure 9.8. Case 8 Penetrations: All require >200 feet per NM climb gradient.



9.3.1.5.8.1. Combination 1: A textual or graphic route or sector with standard takeoff minimums that avoids all 40:1 OCS penetrations and does *not* require a climb gradient in excess of 200 feet per NM.

9.3.1.5.8.2. Combination 2:

9.3.1.5.8.2.1. Standard takeoff minimums with a climb gradient to a fix or altitude that provides appropriate obstacle clearance beyond the fix or altitude so that the minimum climb gradient can be used beyond the fix or altitude;

9.3.1.5.8.2.2. Provide RTRL option in accordance with FAA Order 8260.3 **Chapter 13**; and

9.3.1.5.8.2.3. Provide a VCOA in accordance with this DAFMAN **Chapter 7**.

9.3.1.5.8.3. Combination 3:

9.3.1.5.8.3.1. A textual or graphic route or sector that avoids some 40:1 OCS penetrations laterally *and* uses a climb gradient to mitigate all other 40:1 OCS penetrations vertically. Ensure the climb gradient provides appropriate obstacle clearance to a fix or an altitude so that the minimum climb gradient can be used beyond the fix or altitude;

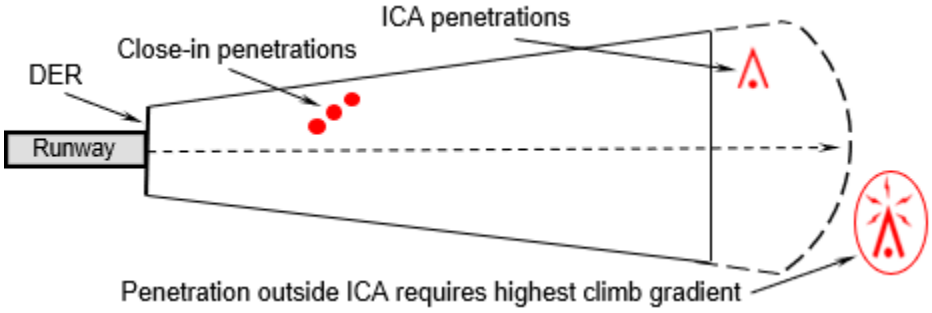
9.3.1.5.8.3.2. Standard takeoff minimums with a climb gradient to a fix or altitude that provides appropriate obstacle clearance beyond the fix or altitude so that the minimum climb gradient can be used beyond the fix or altitude *and/or* provide ceiling and visibility to enable obstacle avoidance within ICA (extended); *and* a climb gradient to a fix or altitude to mitigate the 40:1 OCS penetrations outside ICA (extended);

9.3.1.5.8.3.3. Provide RTRL option in accordance with FAA Order 8260.3 **Chapter 13**; and

9.3.1.5.8.3.4. Provide a VCOA in accordance with this DAFMAN **Chapter 7**.

9.3.1.5.9. ODP Case 9 – 40:1 OCS penetrations exist both inside and outside ICA (extended) *and* has a combination of low, close-in obstacles and 40:1 OCS penetrations that require a “climb to” altitude greater than 200 feet above departure end of runway elevation *and* the obstacle that requires the highest climb gradient is outside ICA (extended). (See **Figure 9.9**.). Develop and publish low, close-in obstacle notes and *one* of the three combinations from ODP Case 8.

Figure 9.9. Case 9 Penetrations: All require >200 feet per NM climb gradient.



9.3.1.6. Perform the following actions when the diverse departure obstacle assessment result is classified as ODP Case 2 through ODP Case 9:

9.3.1.6.1. Do not develop and publish duplicate takeoff obstacle notes;

9.3.1.6.2. Process the procedure package according to **Chapter 2** of this manual; and

9.3.1.6.3. The instrument procedure specialist will document completion of the diverse departure obstacle assessment and ODP in a procedure package on the Approach/Departure Signature Page. **(T-3)**

9.3.1.7. When the actions in **paragraph 9.3.1.5.2** through **paragraph 9.3.1.5.9** are not feasible, a stand-alone VCOA may be developed and published. **Note**: GPD generates a warning that requires documenting the reason(s) why the actions are not feasible in the justification block.

9.3.1.8. When considering publication of a VCOA, do not develop or publish a VCOA when an RNAV DP is being used as ODP or when ATC does not approve VCOA.

9.3.1.9. When the actions in **paragraph 9.3.1.5.2** through **paragraph 9.3.1.5.9** *and* a stand-alone VCOA are not feasible, IFR departures are not authorized.

9.3.2. Due to DAF's global TERPS mission, it may be necessary to publish ATC climb gradients therefore, at DAF locations, TERPS will coordinate departure procedures with the affected ATC facility management. **(T-3)** When ATC climb gradients are required, include the appropriate climb-to altitude on DP routing or calculate and chart ATC climb gradient as necessary. Retain a copy of this coordination in DP package. At FTIP locations, DAF TERPS will chart ATC DP climb gradient per host nation source. **(T-3)**

9.3.2.1. Paragraph **2-1-1**b.(7). When publishing an ODP, an ATC climb gradient will not preclude charting of a required climb gradient for obstruction avoidance and/or RNAV LNAV engagement.

9.3.2.2. Paragraph **2-1-1**d.(2). An excessive climb gradient greater than 500 ft/NM (600 ft/NM for helicopters) on a DP is *not* considered nonstandard. Departure procedures with published climb gradients do *not* require waiver consideration. When required obstacle climb rates exceed 500 ft/NM, add a note "**NOT FOR CIVIL USE**" in the plan view.

9.3.2.3. Paragraph **2-1-1**e.(2)(a). For operational necessity, ATC-required altitudes may be depicted on ODPs.

9.3.2.4. Paragraph **2-1-1**e.(2)(b)2. For operational necessity, ATC climb gradient may be published when necessary to meet minimum altitude restrictions.

9.3.2.5. Paragraph **2-1-1**e(3)(c). The guidance in this paragraph is not applicable to DAF. Refer to DAFMAN 11-230 **paragraph 7.6** for implementation.

Chapter 10

IMPLEMENTING FEDERAL AVIATION ADMINISTRATION ORDER 8260.58

10.1. Paragraph 2-4-2.a.(2). Maximum segment length is 20 NM.

10.2. Paragraph 5-1-1.a.(1). Departures requiring a turn prior to LNAV engagement are nonstandard and require waiver. Publish the note "**NOT FOR CIVIL USE**" on these nonstandard departures.

10.3. Appendix B. DF Leg Feasibility Analysis . This appendix is not applicable to DAF.

Chapter 11

IMPLEMENTING ICAO PANS-OPS AND MILITARY INSTRUMENT PROCEDURE STANDARDS

11.1. Implementation Requirements. When directed by the host nation, and only after MAJCOM TERPS Manager has determined a sufficient number of personnel are trained in ICAO PANS-OPS standards and design methods, implement PANS-OPS or MIPS criteria (as applicable) at all locations outside of the Continental US where DAF has instrument procedure responsibility. Use of PANS-OPS criteria is not authorized until it is determined by airfield authorities that the airfield meets ICAO Annex 14 airfield design criteria or the equivalent United Facilities Criteria (UFC). **(T-2)**

11.2. Definitions.

11.2.1. PANS-OPS. References to PANS-OPS apply to the standards defined in ICAO Doc 8168, *Procedures for Air Navigation Services – Aircraft Operations Volume II, Construction of Visual and Instrument Flight Procedures*.

11.2.2. Military Instrument Procedure Standards (MIPS). NATO Standardization Agreement (STANAG) 3759, AATCP-1 is NATO supplement to ICAO Doc 8168, Vol II. MIPS refers to instrument procedure design criteria formulated in AATCP-1 that is applicable to military aircraft operations.

11.3. Application. Mixing US TERPS criteria and any other criteria at the same location is only authorized when GPD software does not have the capability to develop an instrument flight procedure type using MIPS. MIPS criteria is not restricted to NATO operations, it's application supplements PANS-OPS and therefore, can/should be applied at locations where aerodrome operations conform to ICAO or the equivalent UFC standard for airfield and heliport planning and design. Inform the host nation when using US TERPS criteria at locations where the host nation operates the airfield and DAF has instrument procedure responsibility. **(T-2)**

11.3.1. When a specific requirement exists for a type of instrument procedure that is not addressed in this chapter, AATCP-1, or in PANS-OPS, apply FAA guidance as supplemented in this DAFMAN.

11.3.2. Except when limited by GPD, apply a single criteria or standard to all instrument flight procedures at a single location. Ensure that procedure packages, any checklist used for FTIP criteria validation, and FTIP review letters clearly identify the standard or standards, when applicable, being applied.

11.3.3. Use of AATCP-1.

11.3.3.1. **Chapter 1**. Administrative. USAF acts as the National Authority.

11.3.3.2. **Chapter 2**. Supplemented PANS-OPS Criteria. Do not apply paragraph 2.1.2., **paragraph 2.1.3**., **paragraph 2.1.5**, or **paragraph 2.1.12**.

11.3.3.3. **Chapter 3**. Additional Military Criteria – Landing Minima.

11.3.3.3.1. When a stepdown fix is included in the final segment, provide minimums with and without the stepdown fix unless DME is required to fly the final segment.

11.3.3.3.2. **Paragraph 3.3.6**., *Safe Altitude 100 NM*. Chart the Safe Altitude 100 NM according to DoD publication specifications for an ESA. Chart the Missed Approach Waypoint as the Safe Altitude 100 NM center point for an RNAV approach.

11.3.3.4. **Chapter 6**. Additional Military Criteria – Precision Approach Radar. Not applicable. For PAR final and missed approach segments, apply TERPS criteria. For the remaining segments associated with PAR procedures, apply standards from PANS-OPS or AATCP-1.

11.3.3.5. **Chapter 9**. Additional Military Criteria – Helicopters. Not applicable.

11.3.3.6. **Chapter 9**. Additional Military Criteria – Departures. **Paragraph 9.1.1**. *Visual Climb Over Airport (VCOA)*, 4. *Published Annotations*. Apply VCOA guidance and wording from **paragraph 6.44** of this DAFMAN.

11.3.4. Use of PANS-OPS.

11.3.4.1. *Forward*. 4. IMPLEMENTATION. USAF acts as the Contracting State.

11.3.4.2. Part I. GENERAL.

11.3.4.2.1. Section 2, **Chapter 1**, **paragraph 1.7**., *Increased Altitudes/Heights for Mountainous Areas*. In addition, add 600 meters (or 2000 feet when non-SI units [feet] are used) to holding, MSA and ESA segments.

11.3.4.2.2. Section 2, **Chapter 2**. VOR accuracies also apply to TACAN facilities.

11.3.4.2.3. Section 3, **Chapter 2**, **paragraph 2.6**., *Obstacle Identification Surface (OIS)*. Within GPD, OIS origin begins at a height equivalent to the departure end of runway elevation. The origin height may be raised as high as 16 feet (or as high as what the host publishes) above the departure end of runway elevation to eliminate penetrations to OIS. When *establishing* an origin height greater than 16 feet, obtain host nation approval. Whenever the origin height is established above the departure end of runway elevation, publish the appropriate departure end of runway crossing height on the procedure.

11.3.4.2.4. Section 3, **Chapter 4**, **paragraph 4.3.1**., *Turn Initiation Area OIS*. Apply **paragraph 11.3.4.2.3**.

11.3.4.2.5. Section 4, **Chapter 3**, **paragraph 3.2.1**., *Minimum altitudes*. Round the altitude at the initial approach fix to the nearest 50-meter increment (nearest 100-foot increment when non-SI units [feet] are used).

11.3.4.2.6. Section 4, **Chapter 3**, Appendix A, Initial Approach Using Dead Reckoning, **paragraph 3.1.2**.a), *First leg of the initial approach*. When developing an S-type DR initial approach, do not exceed an angle of 68 degrees between the leg prior to DR leg and DR leg (at the start fix). **Note**: A 68° turn at the start fix corresponds with an inner edge that is 90° to the straight leg prior to DR leg.

11.3.4.2.7. Section 4, **Chapter 5**, **paragraph 5.4.5.3.1**., *Remote altimeter setting*. Not Applicable. Apply AATCP-1, paragraph 2.1.7.

11.3.4.2.8. Section 4, **Chapter 5**, **paragraph 5.5.1**., *Descent gradients/angles for charting*. The acronym RDH (reference datum height) is referring to the threshold

crossing height (TCH). When nonprecision approaches are published in conjunction with a vertical guidance system servicing the same runway, achieving VGSI coincidence should be the primary concern. Although the optimum TCH is 50 feet with a descent angle 3.0°, VGSI coincidence should be a primary consideration.

11.3.4.2.9. Section 4, **Chapter 7**, Appendix to **Chapter 7**, VISUAL MANOEUVRING USING PRESCRIBED TRACK. Not applicable to DAF TERPS.

11.3.4.3. Part II. CONVENTIONAL PROCEDURES.

11.3.4.3.1. Section 1, **Chapter 3**, MLS. Not applicable.

11.3.4.3.2. Section 1, **Chapter 5**, PAR. Not Applicable. For PAR final and missed approach segments, use TERPS criteria. For the remaining segments associated with PAR procedures, apply standards from PANS-OPS or AATCP-1.

11.3.4.3.3. Section 2, **Chapter 4**, VOR or NDB with FAF. This chapter also applies to TACAN procedures. **Note**: See AATCP-1, Chapter 4 for additional TACAN guidance.

11.3.4.4. Part III. PERFORMANCE-BASED NAVIGATION PROCEDURES. Section 2, **Chapter 6**, **Paragraph 6.2** b), *Threshold crossing height*. When TCH is not 50 feet but is coincidental with either ILS or a VGSI system, waiver consideration is not required. When TCH is not equal to 50 feet, ensure the procedure design TCH used to calculate DA is published on the procedure.

11.3.5. Criteria in addition to PANS-OPS and AATCP-1.

11.3.5.1. Unless otherwise stated in PANS-OPS, the rise in secondary obstacle clearance surfaces is measured perpendicular to the nominal flight track.

11.3.5.2. When developing Category II and Category III procedures, manually enter obstacles that represent taxiing aircraft, holding bays, and/or taxiway holding positions.

11.3.5.3. Reference PANS-OPS, the minimum RVR standard is 200 meters for Category III ILS.

Chapter 12

INSTRUMENT PROCEDURE AUTOMATION

12.1. Instrument Procedure Software. DAF GPD is the only software authorized for use when designing, reviewing, or maintaining instrument flight procedures and ATC charts. It is mandatory for developing precision final approach segments.

12.1.1. GPD Hardware Requirements. Within GPD's "*Installation Notes*" the minimum hardware requirements for desktop and laptop systems are listed as "*Recommended Desktop or Laptop Configuration*."

12.1.2. GPD Software Requirement. Software updates and releases keep pace with DAF Standard Service Desk Configuration office applications i.e., File Explorer®, Word®, Excel® etc. See GPD's "*Installation Notes*" for the framework of commercial software products required, i.e., Adobe Acrobat Reader.

12.1.3. GPD License keys. GPD software contains information proprietary to MDA Systems Ltd., to its subsidiaries, or to a third party to which MDA Systems Ltd. may have a legal obligation to protect such information from unauthorized disclosure, use or duplication. Any disclosure, use or duplication of this software or of any of the information contained herein for other than the specific purpose for which it was disclosed is expressly prohibited. The software and license key is assigned to the requestor and control of the computer with the software must be physically retained. Use of GPD on personal computers is not authorized.

12.1.4. GPD updates. When the most current changes to FAA, MIPS, ICAO, DAF design criteria standards and software versions are delayed due to programming, testing and distribution, IFPs developed with legacy criteria will remain valid until they are updated in DoD FLIP (Terminal) with the current software version.

12.1.5. GPD Global Spaces. When circumstances dictate the use of more than one Global Space, maintain a primary Global Space that matches promulgated IFPs. Ensure all workspaces in the primary data base are maintained with current DAFIF®, DVOF and obstacle data.

12.1.6. GPD Back-ups. MAJCOMs will establish a process for maintaining the required back-up files in a MAJCOM directive or in MAJCOM supplement to this DAFMAN. Recommend users back-up GPD files at least monthly and retain at a minimum the most recent back-up on an approved medium external to the computer running GPD.

12.2. Expected GPD Workflow. Follow the workflow outlined in GPD Operating Manual. Certain critical steps are explained in the sub-paragraphs below.

12.2.1. Evaluate accuracy and reconcile aeronautical data discrepancies. Verify all data imported from DAFIF® against source information. Convert non-WGS-84 coordinates to WGS-84 when necessary and ensure all coordinates entered into GPD are stated in WGS-84 datum. **Note**: GPD outputs Quality Reports that are intended to assist in aeronautical data resolution; maintaining hard copies of these documents is not required.

12.2.2. Resolve the following data in GPD Data Manager application prior to procedure development:

12.2.2.1. Aerodrome assigned (magnetic) variation;

12.2.2.2. Runway Physical, Landing, Takeoff and Displacement lengths;

12.2.2.3. Omni-directional NAVAIDs. Ensure that the NAVAID antenna elevation, assigned variation and radio class are entered;

12.2.2.4. Airport NAVAIDs. Check all ILS glide slope and localizer data against source documentation. Ensure the localizer course is entered as a true value (vice magnetic). Ensure that the assigned variation of the localizer is the same as the aerodrome assigned variation;

12.2.2.5. Add all ASR and PAR data, as needed. This data may be obtained from air traffic control and landing systems personnel. If like radar systems do not appear in GPD drop down menu, consult FAA Order 8200.1 Flight Inspection Manual for comparable radar systems; and

12.2.2.6. Supplementary Data. Enable and enter Supplementary Lighting Data and Supplementary Runway Data as appropriate.

12.2.3. Runway centerline elevations are required when developing approaches with a HAT of less than 200 feet.

12.2.3.1. Enter the runway centerline elevation for the point 200 feet prior to the runway threshold.

12.2.3.2. Enter the runway centerline elevation at least every 500 feet from the runway threshold to a point 3,000 feet down the runway (in the landing direction). When runway centerline elevation data cannot be obtained from a runway survey, ILS Category II/III or PAR approaches with a HAT of less than 200 feet are not authorized.

12.2.4. Enter sourced aeronautical data elements into GPD as listed in **Table 12.1** of this DAFMAN. **Note:** The items in **Table 12.1** are not all-inclusive but are those data elements that most often affect instrument flight procedure development. Some data elements (localizer course width, runway true bearing, precision threshold coordinates, etc.), trigger an operational warning when the accuracy entered does not meet Radio Technical Commission for Aeronautics recommended standards; *waiver consideration is not required* when these standards are not met.

12.2.5. Ensure assigned magnetic variation values used by GPD for locations in the Continental US and DAF controlled locations outside of the Continental US are entered to the nearest whole degree (that is, 10.0°; 4.0°, 38.0°, etc.) as assigned by AFFSA TERPS.

12.2.6. When using GPD for FTIP criteria validation, ensure the magnetic variation values are entered exactly as reported in host nation source documentation.

12.2.7. Evaluate the accuracy and completeness of obstacle data.

12.2.7.1. Adjust manually entered obstacles with the accuracy values according to their source. Identify the obstacle by map search and apply the accuracy values from **Table 12.2** of this DAFMAN when accuracies cannot be determined from the data source.

12.2.7.2. Apply the worst-case horizontal and vertical accuracy from **Table 12.2** and when unable to comply, annotate actions taken in GPD with user-entered notes.

12.2.7.3. In accordance with FAA Order 8260.19, Appendix C, **paragraph 2**b.(1)(f), horizontal and vertical accuracies derived from any source may be reduced to 250 feet (75m) and 50 feet (15m), respectively, when confirmed by a flight inspection fly-by.

12.2.8. When designing SA Category I ILS procedures with GPD, include the runway point of intercept distance from threshold and elevation in the designer notes. **Note**: This data is required by NGA for charting purposes.

Table 12.1. Aeronautical Data Elements for GPD Entry.

Aeronautical Data Element	Enter Value to the Nearest	Enter GPD Accuracy as
Field Elevation	Tenth of a foot	0.01
All Coordinates	0.01°	0.005
Assigned Magnetic Variation	Whole degree	0.1
Runway Data		
Length	Whole foot	1
Width	Whole foot	1
Threshold Elevation	Tenth of a foot	0.1
Runway Crown Elevation	Tenth of a foot	0.1
Ellipsoid Heights	Tenth of a foot	0.1
Touchdown Zone	Tenth of a foot	0.1
Takeoff/Landing Distance	Whole foot	1
True Bearing	0.01°	0.005
Departure End of Runway Elevation	Tenth of a foot	0.1
NAVAID Data		
Distance	Whole foot	1
VHF/UHF NAVAID Elevation	Whole foot	1
Localizer Course	0.01°	0.005
Localizer Course Width	0.01°	0.01°
Glide Path Angle	0.01°	0.005
Localizer Ground Elevation	Tenth of a foot	0.1
Glide Slope Ground Elevation	Tenth of a foot	0.1
Supplementary Lighting Data		
Approach Light Length	Whole foot	1
PAPI Distance	Whole foot	1
VGSI Angle	0.01°	0.005
VGSI TCH	Tenth of a foot	0.01

Table 12.2. Horizontal and Vertical Accuracies as Determined by Map Source.

Map Type	Horizontal Accuracy	Vertical Accuracy (see **Note 5**)
Civil Engineering Map or Geobase CIP foundation (or digital equivalent) (see **Note 1**)	40 feet (12m)	20 feet (6m)
USGS Topographical 1:20,000/1:24,000/1:25,000	40 feet (12m)	20 feet (6m) (see **Note 3**)
NGA Topographical Line Map (TLM) 1:24,000/1:25,000/1:50,000/ 1:100,000	50 feet (15m)	20 feet (6m)
USGS Topographical 1:62,500/1:63,360	250 feet (75m)	50 feet (15m) (see **Note 3**)
USGS Topographical 1:100,000	250 feet (75m)	125 feet (38m) (see **Note 3**)
NGA Joint Operations Graphic (JOG) 1:250,000	500 feet (150m)	125 feet (38m) (see **Note 6**)
USGS Topographical 1:250,000	1000 feet (300m)	125 feet (38m) (see **Note 3**)
VFR Terminal Area Chart 1:250,000	1000 feet (300m) (see Note 2)	250 feet (75m) (see **Note 4**)
VFR Sectional 1:500,000	1800 feet (550m) (see Note 2)	250 feet (75m) (see **Note 4**)
NGA Tactical Pilotage Chart (TPC) 1:500,000	3400 feet (1000m) (see Note 2)	500 feet (150m) (see **Note 6**)
World Aeronautical Chart (WAC) 1:1,000,000	3400 feet (1000m) (see Note 2)	500 feet (150m)
NGA Operational Navigation Chart (ONC) 1:1,000,000	3400 feet (1000m) (see Note 2)	500 feet (150m) (see **Note 6**)

Note 1. See FAA Order 8260.19, Appendix C, for obstacle accuracy standards.
Note 2. Reduce horizontal accuracies for terrain features by one half. The larger accuracy applied to manmade obstacles is to account for displacement from application of cartographic license allowed by IACC specifications.
Note 3. When obstacles or mountain peaks are specifically marked by a spot elevation, the vertical accuracy changes to 3 feet (1m).
Note 4. When mountain peaks are specifically marked by a spot elevation, the vertical accuracy changes to 20 feet (6 m).
Note 5. The vertical accuracy column applies to the elevation of any feature on the applicable chart other than terrain. Add this value to MSL value of each obstacle derived from the applicable chart when no other source (survey or actual measurement) is available. When evaluating terrain, apply **paragraph 3.3**. of this DAFMAN.
Note 6. When spot elevations are specifically marked as an “accurate” spot elevation (with a dot), the vertical accuracy changes to 100 feet (30 m).

12.3. Additional Automation Considerations and Miscellaneous. GPD allows the instrument procedure specialist the option to treat undetermined and unknown datums as if they were WGS-84. When this option is not exercised, it results in a violation that cannot be cleared.

12.3.1. Therefore, when it appears that the obstacle in question may affect the instrument procedure, coordinate with NGA or the host nation for the location of the obstacle in the WGS-84 datum. When NGA or the host nation is not able to provide the obstacle's location in WGS-84 datum, check WGS-84 box and apply the larger of the reported horizontal accuracy or 3400 feet (1000m).

12.3.2. When making manual additions and revisions to aeronautical or obstacle data in GPD, enter geodetic coordinates in WGS-84 datum. Convert coordinates from any other datum to WGS-84 prior to use.

12.3.3. For tracking instrument flight procedure development and maintenance, each GPD user will establish a unique log-in and password that can be captured in GPD publication report prior to exporting instrument flight procedures intended for flight operations. **(T-3)**

12.3.4. Workspace development. Do not establish the center of the workspace any farther than 5 NM from the following:

12.3.4.1. The departure end of runway for departures;

12.3.4.2. The airport reference point for Diverse Vector Areas and circling approaches;

12.3.4.3. The radar antenna for Minimum Vectoring Altitude Charts. **Note:** When the Minimum Vectoring Altitude Chart is centered on XYZ aerodrome for a 200 NM radius, establish a workspace large enough to encompass 205 NM from the chart center; or

12.3.4.4. The runway threshold for instrument approaches.

12.3.5. Terrain Data Warning. GPD provides an operational warning when a procedure or chart segment is constructed in an area with missing or incomplete terrain data. When this warning is encountered, unless the missing cells are entirely over water, make every reasonable attempt to import a digital product (DTED Level 1 and 2 files or SRTM data) that provides coverage over the affected area. After evaluating all available sources and digital terrain coverage in the area is still missing or incomplete, ensure the terrain environment is properly considered.

12.3.5.1. Determine the segment or sector of the instrument procedure with missing digital data coverage. This can be done by scrolling the cursor in the 2-D view until the taskbar readout indicates "elevation missing."

12.3.5.2. Evaluate terrain in the area identified and add spot elevations to GPD Data Manager application. If necessary, importing and use of Vector Map products is authorized to determine the highest contour elevation according to **paragraph 12.3.7.2.1** of this manual.

12.3.5.2.1. After adding obstacles, revalidate segment and sector controlling obstacles for those procedure or chart portions that fall within an area with incomplete terrain coverage to determine if there are any remaining higher contours. Annotate in the Obstacle Notes tab and in the procedure warning justification section, remarks on the actions taken along with supporting rationale.

12.3.5.2.2. When Vector Map products are not available contact NGA AeroHelp at **AeroHelp@nga.mil**.

12.3.6. When DTED Level 1 is available with complete workspace coverage, importing DTED Level 2 or higher may not be necessary. Use of SRTM data is optional.

12.3.7. Runway Terrain Exclusion Area (RTEA). Activate RTEA feature within GPD only when DTED in the area of the runway threshold is higher than the actual terrain and is causing false penetrations to precision, visual area or departure obstruction surfaces. The instrument procedure specialist must document that DTED is higher than the actual terrain in the procedure package. **(T-3)**

12.3.7.1. When RTEA is activated:

12.3.7.1.1. Adjust the size of RTEA to only be large enough to remove the false penetrations in the vicinity of the runway threshold. This task may require repeat adjustments to the size of RTEA as the initial attempt may remove one or more false penetrations but additional false penetrations may appear even though the original penetration has been eliminated; and

12.3.7.1.2. Ensure the terrain within RTEA is accurately modeled. Manually enter terrain points into the database as obstacles to model the actual terrain within RTEA area. The number of obstacles that are entered into the database depends on the size of RTEA.

12.3.7.2. Terrain points can be obtained either by requesting a survey of the terrain within RTEA or via map study. Use a map with contour elevation intervals close enough to provide an accurate terrain model. Utilize the adverse assumption technique described below to ensure GPD does not add the default 125 feet of vertical or 500 feet horizontal accuracy when entering terrain points into GPD database.

12.3.7.2.1. Apply one foot less than the map contour line interval and subtract one additional foot. In GPD Obstacle Properties Notes tab, enter 1 foot in AGL accuracy and 1 foot in the horizontal accuracy fields. **Note**: By doing this, the actual terrain within RTEA can be accurately modeled.

12.3.7.2.2. For example, a point is located between contour elevations 315 and 320. Using the adverse assumption technique, MSL altitude of the point is 319 feet. Now subtract one additional foot. Enter into the Obstacle Properties Notes tab 318 feet for MSL altitude, 1 foot AGL accuracy and 1 foot horizontal accuracy. With the data entered in this manner, the point is evaluated as 319 feet MSL.

12.3.8. TERPS development software problem reporting. Timely software problem reporting is essential to ensure errors are corrected within a reasonable timeframe. Submit an incident through TERPS helpdesk as soon as practical after encountering or suspecting a problem with the software or when suggesting software improvements. When submitting one of the following GPD:

12.3.8.1. GPD crash incident. Attach the crash log(s), diagnostic log, workspace and build reports.

12.3.8.2. Instrument procedure development incident. Include (1) crash log(s), (2) diagnostic log, (3) workspace and (4) build reports, (5) .ipd file, (6) manual aeronautical file and (7) obstacle data files.

12.3.8.3. Coordinate with AFFSA TERPS on any nonstandard practices. Do not attempt to develop local or MAJCOM specific software work-arounds.

12.3.9. The instrument procedure specialist must review and validate autogenerated missed approach instructions prior to publication. **(T-3)**

12.4. Use of Geographic Coordinates Derived from Hand-Held GPS Receivers. Any instrument procedure developed using any coordinates that are derived solely from a hand-held GPS receiver are nonstandard and require waiver. Clearly identify all data derived directly from hand-held GPS receivers in the waiver request. **Note**: Using obstruction data derived from DAF civil engineering sources (Civil Engineering maps, Common Installation Picture files, etc.) does not require waiver action regardless of the methodology or equipment used to gather the data.

Chapter 13

UNITED STATES AIR FORCE FTIP ACCEPTANCE PROGRAM

13.1. Program Overview. In harmony with the *Memorandum of Agreement US Army Aeronautical Services Agency (USAASA), Naval Flight Information Group (NAVFIG), Air National Guard (ANG) Air Force Flight Standards Agency (AFFSA) and National Geospatial-Intelligence Agency (NGA-SFA) for Review, Maintenance, and Publication of Foreign Terminal Instrument Procedures (FTIP) (DOD FTIP MOA)*, each military service has the authority to establish a process that identifies, maintains, and periodically revalidates a list of nations and specific airports that meet instrument procedure criteria equivalent to US standards. DAF FTIP Acceptance Program implements this policy for DAF. This program provides relief from completing a comprehensive instrument procedure analysis of every foreign nation produced instrument procedure prior to being used. FTIP accepted under this program and published by DAF in DoD FLIP (Terminal) or validated and posted to USAF FTIP SharePoint® site and GDSS are not subject to the instrument procedure waiver process for any deviation to accepted standards, that is, US TERPS, ICAO PANS-OPS, or NATO MIPS.

13.1.1. To gain initial acceptance under this program, host nation flight inspection, flight validation, and instrument procedure development, publication, and maintenance practices are evaluated to determine whether or not they meet acceptable standards. Once accepted, host nation military or civilian instrument procedure programs are added to DAF Accredited Host Nation List. Prior to acceptance, MAJCOM TERPS function must complete and submit the Host Nation Accreditation Checklist. See AFFSA TERPS SharePoint® for USAF's Checklists and IP.

13.1.2. Host nation programs, airports, and associated source data that have not been evaluated and those that do not meet the guidelines set forth in this chapter are categorized as Non-Accredited. Non-Accredited programs and airports are not listed on USAF Accredited Host Nation List. FTIP in this category require procedures to be redeveloped using GPD software that includes obstruction/terrain analysis and when deviations to standards are found, require waiver of the nonstandard condition.

13.1.3. Host nation programs meeting the requirements of this chapter fall into one of two categories; USAF Accredited and Special Accredited. Individual host nation airports are not eligible for USAF Accredited category but may be evaluated for the Special Accredited category. The approval period for both categories (Accredited and Special Accredited) expires three years from the date the approval is granted.

13.1.3.1. Host nation instrument procedure programs may be categorized as USAF Accredited only when DAF has confidence in the host's flight inspection, instrument flight procedure development, and instrument flight procedure publication practices. These host nation programs produce instrument procedures that require, at a minimum, a checklist evaluation (**Attachment 4**) before a FTIP review is posted to USAF FTIP SharePoint® and on GDSS or being published in DoD FLIP (Terminal).

13.1.3.2. Host nation instrument procedure programs and airports may be categorized as Special Accredited only when DAF places a very high degree of confidence in the host nation's flight inspection, instrument flight procedure development, and instrument flight

procedure publication practices. These host nation programs are considered to have and use the same or comparable standards as DoD programs.

13.1.4. The responsible MAJCOM TERPS function evaluates and submits candidate host nation programs and airports that are within their area of responsibility. When a host nation is responsible for instrument flight procedures across two different MAJCOM AORs, see **paragraph 13.1.5**.

13.1.4.1. Evaluate each country's military and civilian instrument procedure development and publication process separately when each uses different methods, criteria, standards, or when performed by separate offices. Due diligence is required at joint use airfields in ascertaining specific FTIP development responsibility.

13.1.4.2. Submit requests for initial accreditation, for program upgrade to the Special Accredited category, for Special Accreditation of individual airports, and revalidation via email or via TERPS helpdesk to AFFSA TERPS. Do not submit accreditation requests for multiple programs or airports in a single submission or attached to (or part of) another document.

13.1.4.3. Ensure each accreditation request is approved and endorsed by MAJCOM TERPS function manager, Flight Commander (or higher), or a formally designated representative. Include a statement that indicates all requirements have been completed, a short summary of the review results, and any MAJCOM recommendation(s).

13.1.5. When submitting documentation supporting additional locations in another MAJCOM's AOR (i.e., other states, territories, Special Administrative Regions, etc.), obtain concurrence from the other MAJCOM's TERPS manager. For example, France is in USAFE's AOR whereas, France is responsible for instrument procedure development and maintenance for the Futuna Islands, New Caledonia, etc. which is in PACAF's AOR. USAFE would coordinate with PACAF to obtain concurrence. When there are no objections, include the additional locations in the accreditation request.

13.1.6. USAF Accredited programs are listed and tracked on USAF Accredited Host Nation List. Special Accredited Programs and airports are listed and tracked on DoD Accepted Host Nation List.

13.2. Evaluation and Acceptance Requirements – USAF Accredited Category.

13.2.1. In addition to the requirements in **paragraph 13.1**, the following requirements apply when submitting candidate instrument procedure programs for initial accreditation:

13.2.1.1. Notify AFFSA TERPS when a host nation instrument procedure program is being considered for accreditation. Identify the country name and which program (civil, military, or both) is being considered;

13.2.1.2. Notify the applicable US Defense Attaché Office that a host nation instrument procedure program is being considered for addition to USAF Accredited Host Nation List. Request input for any concerns that office has that may discourage accreditation of the candidate program; and

13.2.1.3. Access information from FAA Notice to Air Mission-Domestic/International for data that supports the accreditation request and for potential concerns that may discourage accreditation of the candidate program.

13.2.2. A site visit is not required, however, when a site visit is conducted, include site visit results or a copy of the trip report, as applicable.

13.2.3. Document a historical listing of any obstacle clearance related discrepancies previously discovered as part of FTIP criteria validation process while the program was Non-Accredited. Provide rationale that explains how these discrepancies no longer affect safety of flight.

13.3. Evaluation and Acceptance Requirements – Special Accredited Category.

13.3.1. In addition to the requirements in **paragraph 13.1** and **paragraph 13.2**, ensure the following when submitting a host nation's civil or military program for upgrade to the Special Accredited category:

13.3.1.1. Complete the Host Nation Program Acceptance Checklist from DoD Memorandum of Agreement for Review, Maintenance, and Publication of FTIP **Attachment 3**. Also see the Accreditation Information Pamphlet posted on AFFSA TERPS SharePoint®.

13.3.1.2. Ensure the host nation program has been categorized as "Accredited" on USAF Accredited Host Nation List for a minimum of 36 consecutive months.

13.3.2. The Special Accredited status cannot be granted to a host nation instrument procedure program unless specific justification is provided when:

13.3.2.1. Host nation source documentation (AIP, flight information publication data, NOTAMs, instrument flight procedures, etc.) is not published in easily understandable English; or

13.3.2.2. Host nation DPs are not available from host source documentation for review. **Note**: Evaluate AIPs and flight information publication products to determine whether or not DPs (either ODPs or SIDs) have been established for obstacle avoidance.

13.3.3. Conduct a site visit (not an inspection) to the applicable (civil or military) host nation's procedure development office. Document the results of the site visit and forward to AFFSA TERPS within 90 days of the site visit. The purpose of this visit is to become more familiar with the host nation's instrument flight procedure processes. To the maximum extent possible, use the appropriate accreditation checklist i.e., to review and document instrument procedure specialist experience and training, host nation flight inspection and flight validation practices, procedure development and instrument flight procedure publication standards.

13.3.4. Include a statement indicating all requirements in **paragraph 13.2** and **paragraph 13.3** have been met in the request to special accredit an instrument procedure program. Provide rationale when submitting a program for the Special Accredited category without meeting the requirement(s). AFFSA TERPS makes the final decision based on the documentation and rationale provided.

13.4. Evaluation and Acceptance Requirements – Host Nation Airports. Individual host nation airports may only be considered for Special Accredited category when the host nation program responsible for the development, maintenance, and publication of the instrument flight procedures at the airport has been on USAF Accredited Host Nation List for a minimum of 36 consecutive months.

13.4.1. MAJCOM TERPS authority must complete the Host Nation Program Acceptance Checklist. See AFFSA TERPS SharePoint® for DAF's Checklist and IP. Include the official airport name and the associated four-letter ICAO airport identification as indicated in host source in the request for Special Accreditation of host nation airports.

13.4.2. Document the requirements as outlined in **paragraph 13.3** (except for the requirement in **paragraph 13.3.2**) and **paragraph 13.4** have been met unless rationale is provided for submitting the airport for Special Accredited category without meeting the requirement(s).

13.4.3. AFFSA TERPS makes the final decision based on the documentation and rationale provided.

13.5. AFFSA TERPS Acceptance Approval Responsibilities.

13.5.1. When applicable, solicit and consolidate comments from other Services, organizations i.e., DAOs, NGA, ANG and MAJCOMs as deemed necessary regarding the suitability of programs or airports submitted for initial acceptance and inform these agencies of completed acceptance actions.

13.5.1.1. Review and evaluate the documentation provided by the responsible MAJCOM and the results of the inquiries to outside agencies. The review should be completed within 30 days depending on the completeness of the submitted documentation and the responsiveness of the outside agencies, as applicable.

13.5.1.2. Provide feedback to the submitting MAJCOM when comments from outside agencies reflect negatively on the request. The submitting MAJCOM should attempt to resolve these issues with the host nation or the commenting agency, as necessary, to allow continuation of the accreditation process.

13.5.2. Maintain USAF Accredited Host Nation List, DoD Accepted Host Nation List, and distribute them whenever updates are made.

13.5.3. Notify the appropriate MAJCOM TERPS function when made aware of changes that may affect the status of host nation instrument procedure programs or airports.

13.6. Maintaining FTIP Acceptance Status. The responsible MAJCOM TERPS function is required to periodically revalidate programs and airports accepted under USAF FTIP acceptance program. Submit revalidation packages to AFFSA TERPS at any time during the approval period but not later than 30 days prior to the accreditation expiration date. Include all documentation required in **paragraph 13.2** through **paragraph 13.4**, as applicable. When required, forward revalidation extension requests to AFFSA TERPS at least 30 days prior to the accreditation expiration date; include rationale for the extension and the amount of additional time required. Failure to conduct and document the revalidation without an approved request for extension will result in downgrade of program or airport status.

13.6.1. USAF Accredited Category. Complete the Host Nation Accreditation Checklist. Include a recommendation for the program to either retain the current status, or for it to be upgraded or downgraded, as applicable. **Note:** When revalidating an USAF Accredited host nation program and requesting an upgrade to the Special Accredited category, complete the Host Nation Program Acceptance Checklist.

13.6.1.1. When MAJCOM becomes aware of a condition or identifies a trend that may have precluded the initial approval of the Accredited category, take the following actions:

13.6.1.1.1. Issue a "**NOT AUTHORIZED**" NOTAM on all affected instrument procedures pending downgrade to the Non-Accredited category; and

13.6.1.1.2. Notify AFFSA TERPS of the new trend(s), condition(s) or change(s) to the host nation program. Include one of the following recommendations in this notification:

13.6.1.1.2.1. To maintain the Accredited category; or

13.6.1.1.2.2. To downgrade the program to the Non-Accredited category.

13.6.1.2. Final action is based on AFFSA TERPS evaluation of MAJCOM recommendation. When host nation programs are downgraded from the Accredited category, perform the following:

13.6.1.2.1. Rebuild each affected host nation procedure in GPD and amend the published procedures as necessary; and

13.6.1.2.2. Issue all required waiver actions as necessary.

13.6.1.3. When removing FTIP from DoD FLIP (Terminal), it may be necessary to complete a FTIP review according to **Chapter 14** of this manual to include posting the host nation procedure on USAF FTIP SharePoint® and GDSS.

13.6.2. Special Accredited Category. Complete the Host Nation Program Acceptance Checklist, **Attachment 3** of DoD Memorandum of Agreement for Review, Maintenance, and Publication of FTIP or go to AFFSA TERPS SharePoint® for FTIP Acceptance Program IP. Include a recommendation for the program or airport to either retain the current status or for it to be downgraded. Periodic Host Nation validation visits will be conducted every 36 months.

13.6.2.1. When MAJCOM becomes aware of a condition or identifies a trend that may have precluded the initial approval of the Special Accredited category (airports or programs), take the following actions:

13.6.2.1.1. Issue a "**NOT AUTHORIZED**" NOTAM on all affected instrument procedures until the appropriate review is completed; and

13.6.2.1.2. Notify AFFSA TERPS of the new trend(s), condition(s), or change(s) to the host nation program. Include one of the following recommendations in this notification:

13.6.2.1.2.1. To maintain the Special Accredited category; or

13.6.2.1.2.2. To downgrade the program or airport.

13.6.2.2. Final action is based on AFFSA TERPS evaluation of MAJCOM recommendation. Host nation programs downgraded to the Accredited category are placed on USAF Accredited Host Nation List for a maximum period of 12 months without being revalidated.

13.6.2.3. When a Special Accredited program is downgraded to USAF Accredited category, ensure FTIP is validated according to **Chapter 14** of this manual and that any required procedural changes are sent to NGA via a new tasking letter.

13.6.2.4. When a Special Accredited airport is downgraded, it is removed from DoD Accepted Host Nation List and reverts to the accreditation status of the applicable host

nation program. Unless the instrument procedure authority for the airport is categorized as Accredited, pursue all required waiver actions on all affected instrument procedures now based on Non-Accredited host nation source.

Chapter 14

FOREIGN TERMINAL INSTRUMENT PROCEDURES

14.1. Validation of FTIP. When host nation instrument flight procedures are not published by DoD, they must be validated as safe and accurate by the appropriate US military authority before they can be flown. **(T-1)** It is acceptable to provide assistance when requested by another authority during contingency conditions or emergency situations; however, do not perform FTIP criteria validation processes on host nation instrument flight procedures or at host nation airports when another US military instrument procedure authority has instrument flight procedure responsibility unless coordinated in accordance with **paragraph 1.9**. Prior to starting FTIP criteria validation, determine if a procedure request is valid according to MOU for Provision of Administration of USAF FTIP SharePoint®.

14.1.1. FTIP criteria validation processes include an evaluation of FTIP for compliance with an accepted instrument procedure criteria or standard. See **Figure 14.1** the Basic Process for Validating FTIP.

14.1.2. When a DoD published FTIP is NOTAM'd "Not Authorized" by another US DoD military service instrument procedure authority and the procedure is not restricted for use by the Host Nation:

14.1.2.1. The requestor’s MAJCOM TERPS OPR will contact TERPS OPR for resolution prior to performing a FTIP review. If OPR is unable to return the procedure to service in time to support the mission, address any operational concerns with OPR and coordinate whether DAF should proceed with a FTIP review.

14.1.2.2. Ensure the review minima and visibility are equivalent or higher than DoD IFP and HN IFP. For example, if the review (GPD) minima is equal to HN but, OPR’s minima is higher, raise the minima to match DoD FLIP product.

14.1.2.3. The review effective date will not exceed the effective DoD NOTAM period.

14.1.3. In all cases, to include contingency, emergency or special use, the Operational Risk Management decision(s) and final approval to use FTIP is the requesting flying unit’s MAJCOM standardization and evaluation (StanEval).

14.1.4. FTIP criteria validation may be waived when a FTIP review is required for nonstandard operations defined as an urgent requirement to fly short-notice, humanitarian, contingency, medical evacuation, “special” access and urgent State Department missions. Only the O-8 Flag Officer or above in the chain of command with responsibility for mission risk assessment may exercise this waiver authority. This waiver authority will not be further delegated. **(T-1)**

14.1.5. The requesting agency is responsible for identifying all FTIP requiring validation. Establish guidance for FTIP criteria validation requests to be directed to MAJCOM TERPS function. When the requested FTIP is in TERPS area of responsibility of another MAJCOM, the reviewing MAJCOM retains maintenance responsibility until the operation or exercise expires or until maintenance responsibility is transferred. Requests for a single approach or departure should be provided to the reviewing MAJCOM at least seven duty days prior to the

mission date. Additional notice may be required when multiple instrument flight procedures are requested. Refer to USAF FTIP SharePoint® for required processing information.

14.1.6. Obtain copy of applicable host nation AIP or terminal flight information publications from NGA to the max extent possible. These products are available from NGA Aeronautical Source Packaging Service (ASPS). Do not distribute to aircrews host nation instrument flight procedures downloaded from foreign internet web sites without Host Nation approval.

14.1.7. Obtain FTIP operational risk mitigation approval from the requesting flying unit's MAJCOM StanEval. FTIP review results should include appropriate StanEval recommendations or limitations (i.e., IMC, DAY/VMC, VMC etc.) concerning the procedure.

14.1.8. Submit FTIP reviews approved by the requesting flying unit's MAJCOM StanEval to USAF FTIP SharePoint® and update the review status to "Sent to GDSS." AMC/A3AT will post the review to GDSS and update the review status to "Posted on GDSS". **Note:** The SharePoint® function "Sent to GDSS" meets notification requirement to Air Mobility Command Deputy Division Chief (AMC/A3A) for posting to GDSS. MAJCOM review OPR and requesting MAJCOM StanEval OPR share responsibility to ensure FTIP review is accurately reflected on both USAF FTIP SharePoint® and GDSS.

14.2. Conducting Comparison Review. When requested, a comparison review may be accomplished to determine how accurately the commercial vendor has reproduced all the information and graphics published by the host nation. Compare each item on the commercial product with the corresponding item on the host nation product. When this review reveals charted differences between the commercial product and the host nation product, ensure the differences are annotated in the memorandum.

14.3. Conducting Instrument Procedure Evaluation. Validate host nation produced instrument flight procedures using FTIP Criteria Validation Checklist (**Attachment 4**) or GPD software. When using GPD, ensure all items on FTIP Criteria Validation Checklist are evaluated. Whether instrument flight procedures are developed using TERPS, PANS-OPS or MIPS criteria, validate in accordance with the host nation's standard. If host nation standard for developing IFPs differs i.e., "State" or some other variation, MAJCOM TERPS Manager will determine the appropriate standards applicable to FTIP review.

14.3.1. For Accredited and Non-Accredited instrument procedure evaluations, the instrument procedure specialist must evaluate all segments of FTIP; include associated holding patterns, landing minima, and minimum sector altitudes. **(T-1)** STARs and airway structure do not require evaluation.

14.3.1.1. PAR and ASR procedures. MAJCOM TERPS authority will determine whether the host nation provides the necessary data to properly validate the host nation radar procedure.

14.3.1.2. Host Nation departure and missed approach segments with arc segments may be evaluated using PANS-OPS or MIPS criteria. For FTIP reviews, arcing segments, in lieu of a waiver, ensure an operational risk management assessment is conducted and documented.

14.3.1.3. When host nation does not prescribe track guidance in a particular segment, publish the following note: "**CAUTION: Track guidance not available in the (appropriate segment) segment**."

14.3.2. FTIP criteria validation of Special Accredited category FTIP is not required, however, MAJCOM TERPS function may establish validation requirements for this category at their discretion. When requested, provide ceiling and visibility according to **paragraph 14.4** of this manual.

14.3.3. FTIP criteria validation of USAF Accredited category FTIP is required. When the validation reveals noncompliance with the selected standard, waiver is not required. Document the deviation(s) in the procedure package. When necessary and in conjunction with the appropriate MAJCOM StanEval, publish operational notes, warnings and cautions to ensure users are aware of each deviation and a recommended mitigating action. For example: **CAUTION: CAT E short intermediate; recommend early configuration**.

14.3.3.1. Evaluation of obstacles for obstacle clearance is not required. **Exception**: When validating host nation DPs according to **paragraph 14.5.1** of this manual, a departure obstacle assessment is required.

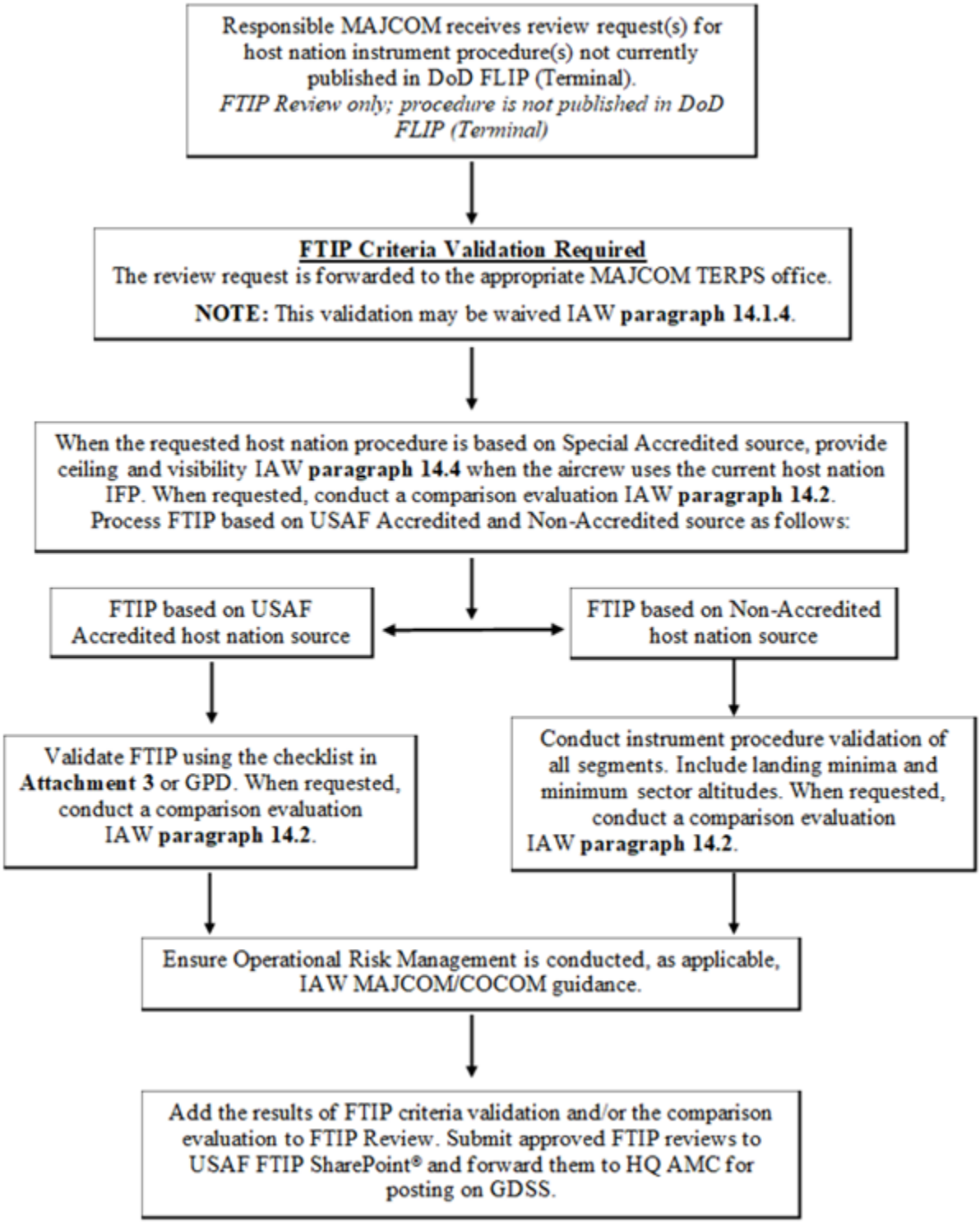
14.3.3.2. Complete, sign, and date FTIP Criteria Validation Checklist (**Attachment 4**).

14.3.4. FTIP criteria validation of Non-Accredited category FTIP. Evaluate each segment (include any holding pattern and MSA) of the instrument procedure for obstacle clearance. Also evaluate landing minima prior to aircrew use of FTIP. Justify each GPD deviation listed in the Violations, Warnings, Notes, etc. section of the build or publication report. Document each abnormality with an easily identifiable mitigation statement.

14.3.4.1. On Non-Accredited Host Nation FTIP published in DoD FLIP, when criteria violations impose non-standard flight conditions, initiate waiver action prescribed in **paragraph 1.4** of this manual.

14.3.4.2. Retain the completed FTIP review in an instrument procedure package with GPD build report until the review expires.

Figure 14.1. Basic Process for Validating FTIP.



14.4. Validating FTIP Approach Minimums.

14.4.1. When performing FTIP criteria validation, determine the unit of measurement used by the host in their published instrument procedures for RVR and prevailing visibility. Utilize the same unit of measurement used by the host in DoD FLIP (Terminal) product or in FTIP review.

Note: Changes made to FTIP minima due to rounding do not require coordination with the host nation.

14.4.2. Validate FTIP approach minimums with the same criteria used by the host nation. If unable to determine the criteria standard used by the host nation for calculating approach minimums, use the same standard used to evaluate the final and missed approach segments.

14.4.3. To compute FTIP ceiling and visibility values, recommend using the Minima Calculator within GPD Utilities. FTIP ceiling values are computed per either FAA Order 8260.3, or MIPS (AATCP-1). Applicable visibility minima examples are provided in ICAO Doc 9365, *Manual of All-Weather Operations*, or according to MIPS (AATCP-1).

14.4.4. Compare results with the host's published value(s) and publish the higher of the two values.

14.4.5. For FTIP reviews of radar approach landing minima based on Non-Accredited host nation source and, at MAJCOM TERPS Manager's discretion, reproduce radar approach landing minimums in accordance with **paragraph 14.4.2**.

14.4.6. When GPD does not support evaluation of host nation circling minima on a precision procedure that does not have an accompanying nonprecision procedure (that is, host nation ILS and circling minima without localizer minima), use GPD minima calculator to determine the circling minimum descent altitude.

14.5. Validating Host Nation DPs. When host nation obstacle avoidance DPs are published, evaluate the host product(s) as prescribed in this chapter for a review or for publication. When departure information is not evident in host nation documentation, coordination with host aviation authorities may be required to determine their method of accommodating departures.

14.5.1. When unable to verify or validate host nation DP practices (SIDs, omni-directional departures, diverse departure information, etc.), apply the following:

14.5.1.1. For USAF Accredited and Non-Accredited locations, develop an appropriate workspace and accomplish a departure obstacle assessment utilizing the same criteria with which HN approach procedures were developed;

14.5.1.2. When obstructions penetrate the 40:1 OCS, ensure the appropriate takeoff obstacle notes are added to FTIP review. When the assessment does not identify any OCS penetrations, add the following note to the review: **No obstacles found that require a climb gradient in excess of 200 feet per NM**;

14.5.1.3. Apply **paragraph 7.37** of this DAFMAN and maintain a DP package; i.e., GPD report documenting an assessment was accomplished by a TERPS specialist confirming either no 40:1 OCS penetrations exist or identifies and reports penetrations along with recommended action to mitigate.

14.5.1.4. When the departure obstacle assessment identifies an obstacle that requires a climb gradient to an altitude greater than 200 feet above the departure end of runway elevation, comply with **paragraph 14.5.1.3** *and* either:

14.5.1.5. Recommend a climb gradient that provides the required obstacle clearance and an altitude where the minimum climb gradient can be resumed in a note. Example: **RWY 12 – Minimum climb of 230 feet per NM to 4600**; or

14.5.1.6. When an ODP routing permits an unrestricted climb within a sector, recommend the courses to remain within in a clockwise fashion. Example: **RWY 12 – Climb on a heading between 061° clockwise to 228° from departure end of runway**.

14.5.2. Combining the options described in **paragraph 14.5.1.5** and **paragraph 14.5.1.6** is also authorized. Example: **RWY 12 – Minimum climb of 350 feet per NM to 9300, climb on a heading between 061° clockwise to 228° from departure end of runway, or minimum climb of 260 feet per NM to 8700 for all other courses**.

14.6. Metric Minima, Rounding, and Associated Conversions.

14.6.1. Climb Gradients/Climb Rates/Vertical Velocity. Host nation departure and missed approach climb gradients are normally expressed as a percentage. Consider host nation climb gradients of 3.3% equal to the minimum climb rate for fixed wing aircraft of 200 feet per NM. When the host nation publishes a climb gradient that exceeds 3.3%, convert the climb gradient percentage to a foot per NM value by multiplying the host published percentage by 6076.11548.

Example. Convert 5.4% into a climb gradient expressed in a foot per NM value as follows:

0.054 × 6076.11548 = 328.110 ≈ 329 feet per NM.

14.6.2. Descent Gradient. Convert host nation final approach descent expressed as a percentage of feet per NM to a descent angle. Round appropriately and publish the descent angle to the nearest 1/100th of a degree.

Example. Convert 4.3% descent gradient expressed in feet per NM to a descent angle as follows:

$TAN^{-1}(0.043) = 2.50°$.

14.6.3. Vertical Descent Angle. Calculate VDA per FAA Order 8260.3, paragraph **2-6-2**.

14.6.4. Rounding altitudes and climb gradients is acceptable when converting from meters to feet or when converting host nation climb gradients expressed as a percentage to a foot per NM value.

14.6.4.1. Round minimum altitudes UP to the NEXT, maximum altitudes DOWN to the NEXT, and mandatory altitudes to the NEAREST:

14.6.4.1.1. 1-foot increment for DA/DH;

14.6.4.1.2. 20-foot increment for FAF/PFAF, stepdown fix, and MDA. **Note:** A 10-foot increment is authorized for MDA/MDH when applying PANS-OP or MIPS criteria;

14.6.4.1.3. 100-foot increment for DPs, Feeder, Initial, Intermediate, and Missed Approach segments; and

14.6.4.1.4. 1000-foot increment for en route altitudes and flight levels.

14.6.4.2. Round clearance limit altitudes specified in DPs and missed approach instructions to the nearest 100-foot increment. When the 100-foot increment causes missed approach and DP construction difficulties or changes the intent of the host developed procedure, GPD will evaluate entries in 1' increments.

14.6.4.3. In all instances of rounding, ensure the rounded result does not violate the obstacle clearance requirement of any segment or chart.

14.6.5. Depict host nation published QFE (AGL elevation) heights in parentheses below the associated QNH (MSL elevation) altitudes on the published FTIP.

14.6.5.1. The reference datum associated with QFE value is normally indicated on each FTIP and is usually one of the following: the runway threshold elevation; the runway touchdown zone elevation; or the airfield elevation.

14.6.5.2. When the applicable threshold elevation is more than 2 meters (7 feet) lower than the field elevation, the difference between QNH value and QFE value should equal the threshold elevation.

14.7. Departure End of Runway Crossing Restrictions (screen height). The standard PANS-OPS OIS for straight departures begins at the departure end of runway at a height of 5 meters (16 feet). Evaluate host source for nonstandard departure end of runway crossing restrictions (screen heights). When the host publishes a screen height other than 5 meters (16 feet), evaluate the departure using the host published screen height. When performing FTIP criteria validation for either publication or for a FTIP review; take the following additional actions:

14.7.1. Use 16 feet above the departure end of runway elevation as the 40:1 OCS origin height when calculating the climb gradient unless the host source documents another height as the procedure design gradient starting point;

14.7.2. Do not approve or publish a screen height lower than published by the host without first obtaining approval from the appropriate host nation aviation officials;

14.7.3. Do not establish departure end of runway crossing restrictions or publish a climb gradient solely to avoid any obstacle(s) identified at the host location as a low, close-in obstacle; and

14.7.4. Include a request to chart host nation screen heights other than 16 feet in the tasking letter to NGA. Incorporate all departure end of runway crossing restriction instructions in the IFR takeoff minimums or in the departure route description, as applicable, describing AGL and MSL restriction in the following format: **Cross departure end of runway at or above 20′ AGL/187′ MSL**.

14.8. Maximum Holding Altitude Determination.

14.8.1. When evaluating holding patterns based on Non-Accredited host nation source and the maximum holding altitude cannot be determined, evaluate the holding pattern to the higher of the following:

14.8.1.1. An altitude equal to an ESA;

14.8.1.2. 10,000 feet above the host nation published minimum holding altitude; or

14.8.1.3. The published initial approach fix altitude.

14.8.2. When an FTIP review evaluation indicates a required change to the host nation published holding pattern, either lower the selected maximum holding altitude or select a smaller holding pattern (lower airspeed) and re-evaluate

14.8.3. On FTIP reviews, continue this process until the selected altitude, the lower airspeed, or a combination of both allows use of the holding pattern as depicted on FTIP. Publish the validated maximum holding altitude (and airspeed when required) on DoD FLIP (Terminal). **Note**: Only publish the maximum holding altitude when required to ensure clearance from obstacles.

14.8.4. A maximum holding altitude determination is not required for FTIP reviews of holding patterns based on USAF Accredited or Special Accredited host nation source.

14.9. Procedure Turns. Review procedure turns exactly as shown on FTIP. Include the fix when the turn starts at a fix, rather than at a time or distance determined by the pilot. Determine and evaluate the outbound and inbound tracks on the 45° offset of the 45°/180° procedure turn when they are not shown on FTIP.

14.9.1. When a "Remain within Distance" is not published by the host nation, coordinate with the host nation instrument procedure authority to determine the intended distance for the procedure turn and publish that value in DoD FLIP (Terminal). Publish an appropriate note in the profile view (for example, **CAUTION: Remain within distance unknown**) when unable to determine this distance. Determine and publish all appropriate notes and operational information necessary to convey the intent of the course reversal maneuver.

14.9.2. When applying US TERPS criteria while performing FTIP criteria validation with the intent of publishing in DoD FLIP (Terminal), waiver consideration is not required when the host nation has provided for course reversal and the procedure turn facility or fix to FAF distance is more than 4 NM. Mitigate this nonstandard condition by annotating DoD published procedure with the following note: "**CAUTION: Ensure outbound track distance/time enables final approach course intercept prior to the final approach fix**" on the planview.

14.10. Translating FTIP Not Published in English. FTIP published by the host nation in any language other than English require a complete translation prior to publication in DoD FLIP (Terminal) and prior to being reviewed for posting to USAF FTIP SharePoint® and GDSS in the Airfield Suitability and Restrictions Report.

14.10.1. The only approved sources for translating information and instrument procedures obtained from a foreign AIP are NGA, a qualified translator on MAJCOM TERPS staff, or the US Defense Attaché Office located in the country where the instrument procedure is located.

14.10.2. Send requests for copies or translation of host nation source documentation to NGA at **AeroHelp@nga.mil**.

14.10.2.1. The subject line of the email should include the country name, airfield name, due (D) date, mission (M) date and the priority (P) code (See **paragraph 14.10.2.2**.).

14.10.2.2. To ensure proper distribution at NGA and a timely response use the following Priority Codes. P1 = 1-3 Business Days. P2 = 3-6 Business Days. P3 = 7-14 Calendar Days. P4 = 15-30 Calendar Days.

Example 1: Kyrgyzstan, Bishkek, D4/04/24, M6/15/24, P2.
Example 2: Columbia, Multiple Airfields, D7/14/24, M8/20/24, P1.

14.10.2.3. Include the purpose for the translation.

14.11. FTIP Reviews. The instrument procedure specialist will document FTIP reviews according to the formats outlined in GDSS Airfield Suitability and Restrictions Report. **(T-3)** State in the memorandum which segments, if any, were found not to meet criteria or standards. Include appropriate comments when FTIP does not meet recognized obstacle clearance or when flight inspection abnormalities are known to exist. In conjunction with the requesting flying unit's MAJCOM determined standardization and evaluation function, evaluate each nonstandard condition for a potential operational or caution note to be charted in the planview that informs users of the deviation, or recommends compensating action, or both. Record approval and disapproval actions and retain FTIP criteria validation results with supporting documentation, as applicable, in a procedure package.

14.11.1. FTIP reviews must be posted to FTIP SharePoint® and GDSS as received from the reviewing MAJCOM, verbatim, by AMC/A3AT. When information in GDSS already includes the same information contained in the review, the duplicated information may be excluded from the review posted to GDSS without approval from the reviewing MAJCOM. AMC/A3AT is responsible for obtaining approval from the reviewing MAJCOM for any other change(s) made to the review prior to the review being posted.

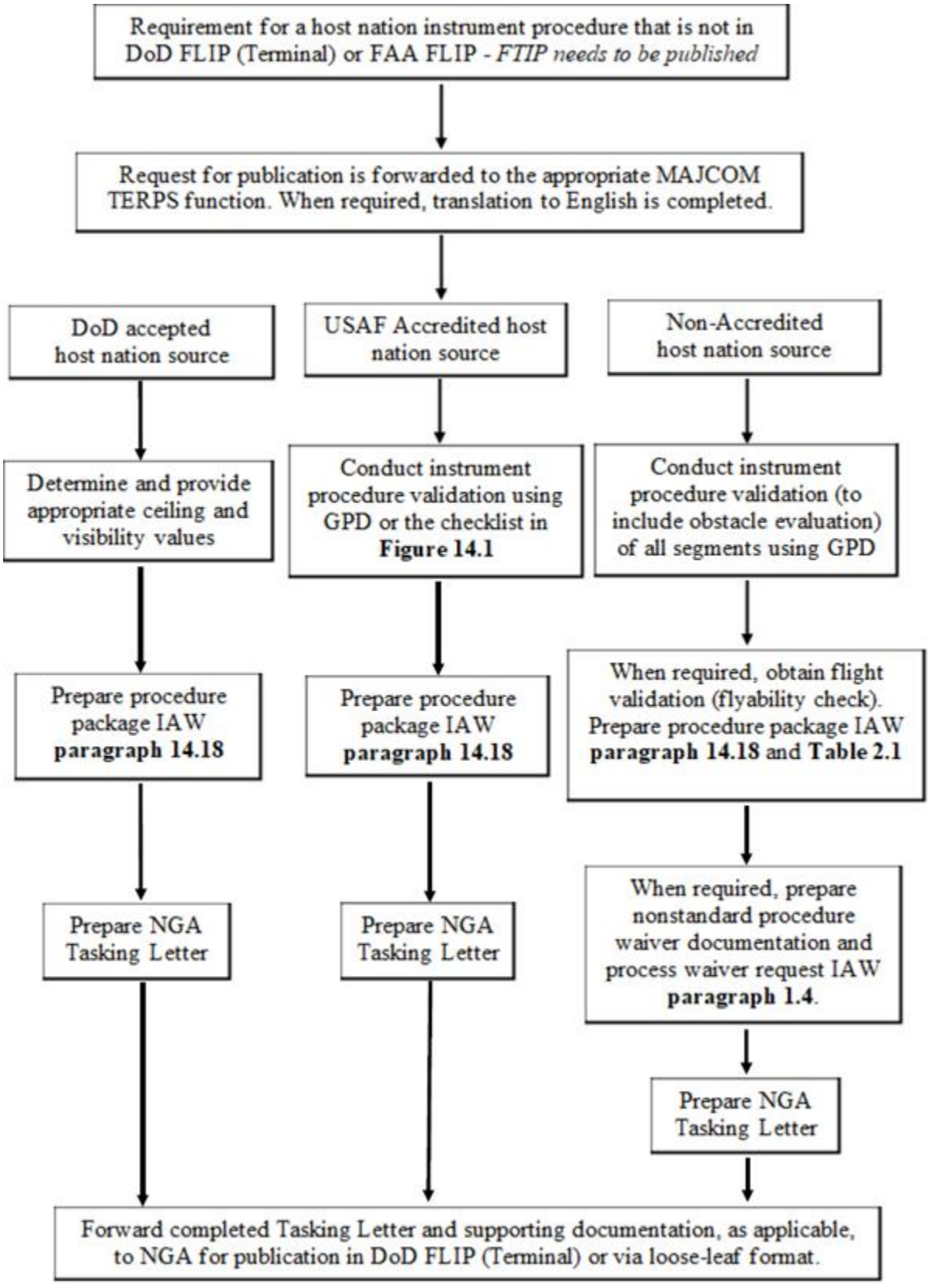
14.11.2. The reviewing MAJCOM is responsible for informing the requesting agency when changes to a review are required. In addition to updating the posting on USAF FTIP SharePoint®, send revisions to AMC/A3AT at **amc.terps@us.af.mil** for posting to GDSS and courtesy copy AFFSA TERPS at **hqaffsa.terps.standards@us.af.mil**. Ensure an expiration date is clearly indicated in each review posted to USAF SharePoint® and GDSS and that there are no duplicate reviews maintained on either system. Perform continuous maintenance on FTIP review according to **paragraph 2.6** of this manual while the review remains effective.

14.11.2.1. When maintenance of FTIP review has been stopped for any reason, and a new request for validation of FTIP is received, re-accomplish the validation and establish a new expiration date.

14.11.2.2. When subsequent requests for validation are made and maintenance has been continuous, FTIP does not require additional evaluation. For example, when FTIP is required for an extended period of time or is awaiting publication and a request is received for the review to be used before the review expires, the process does not have to be reinitiated; the current review may be used to satisfy the new request.

14.11.2.3. The review expiration date should match the anticipated publication date in the DoD FLIP (Terminal). When publication of FTIP review is desired, follow the basic process described in **Figure 14.2**. Limit the expiration date on FTIP reviews to a maximum of seven days past the expected mission completion date.

Figure 14.2. Basic FTIP Publication Process.



14.12. Selecting FTIP for Publication or Review. Requests by Military Services' authorities for publication or review of FTIP should specify the required instrument procedure(s) by name and location. Obtain copies of the identified instrument procedure(s) from the applicable host nation's AIP or terminal flight information publication product(s). Select instrument and/or radar procedures that satisfy DoD requirements provided:

14.12.1. The instrument procedure is published in a host nation AIP or flight information publication product. It may be acquired via written agreement or MFR via email between MAJCOM TERPS function and the host nation aviation authority or US officials at or representing the host nation location (for example, the applicable US Defense Attaché Office; local DAF flying organization, etc.). This agreement must include assurances that MAJCOM is informed of changes or revisions made by the host nation as they occur;

14.12.2. At FTIP Location, MAJCOM TERPS authority must ensure a DoD accessible and reliable HN NOTAM distribution system exists prior to publishing FTIP in DoD FLIP. For FTIP reviews, document HN NOTAM availability and access protocols (DIAP, domestic website, AIP) on all FTIP reviews. If access requires HN web access, include the web address. If HN NOTAMs are not readily available for FTIP location, clearly state this in FTIP review to allow the risk acceptance authority the opportunity to address this fact in their risk acceptance decision; and

14.12.3. Other DoD instrument procedure authorities are notified per DoD FTIP MOA when requesting FTIP publication responsibility at a new location. When removing published FTIP, comply with **paragraph 2.8** of this manual.

14.12.4. FTIP based on Non-Accredited host nation source require flight validation prior to the initial publication in DoD FLIP (Terminal). This requirement does not apply after initial publication in DoD FLIP (Terminal). One of the following two items satisfy the flight validation requirement:

14.12.4.1. Host nation source, the appropriate US Defense Attaché Office, or MAJCOM TERPS authority verifies that flight validation is being performed on FTIP as described in ICAO Doc 8168, Vol II, Part I, Section 2, Chapter 4, **paragraph 4.6**;

14.12.4.2. An air carrier operating under the *Operating Requirements: Domestic, Flag, and Supplemental Operations*, 14 C.F.R. § 121, routinely serves the location.

14.12.4.2.1. The instrument procedure specialist must contact the US air carrier to determine if special restrictions have been established for operating at the airport and document the results of this inquiry in the procedure package. **(T-3)**

14.12.4.2.2. When the air carrier has established restrictions, attempt to obtain and evaluate these restrictions to determine whether or not they should be applied to DoD published procedure.

14.12.5. When the instrument procedure specialist is unable to validate the requirements defined in **paragraph 14.12.4.1** and **paragraph 14.12.4.2.2**, a flyability check must be conducted according to **Chapter 4** of this manual on Non-Accredited FTIP prior to initial publication in DoD FLIP (Terminal). **(T-1)**

14.12.6. When conducting live flyability checks at host nation airfields and aircrews find it difficult to evaluate all segments of the probability of satisfactory NAVAID and radio

reception, and obstacle and terrain clearance for certain portions of the instrument procedure that cannot be flown, an assessment of the segments not flown is at the discretion of the aircrew. For example, when the missed approach segment cannot be flown on arrival, an aircrew can provide an assessment based on their departure observation. Assessment of segments and holding patterns not flown may be completed via simulator evaluation or tabletop review methods.

14.13. Coordinating with the Host Nation. Establish host nation coordination requirements and MAJCOM documentation and approving authority signature requirements when publishing FTIP in DoD FLIP (Terminal). Coordination, cooperation and negotiation with a host nation generally requires appropriate authority to engage in such actions. Prior to engaging in such actions with host nation aviation authorities, ensure the appropriate authority has been delegated to allow such actions. When concluding international agreements refer to DoDD 5530.3, *International Agreements* and DAFI 51-403, *International Agreements*.

14.13.1. When existing FTIP at the airfield do not meet operational requirements or when there are no FTIP at the airfield, obtain approval from host nation aviation or instrument procedure authorities to develop and publish instrument flight procedures at the host nation location.

14.13.2. Coordinate with host nation aviation or instrument procedure authorities, as applicable, for a fix name when establishing a navigational fix that requires naming and when a fix or a fix name is no longer required. Obtain approval for publication of a new fix from the host nation. **Note**: There is no requirement to name any unnamed host nation fix.

14.13.3. Obtain approval from the host nation as required in this chapter, as required by the host nation, and when altering an existing FTIP except for: higher landing minima; higher ESA; higher MSA; and when converting metric altitudes to US equivalent altitudes.

14.14. Publishing High Performance Military Aircraft (HPMA) Minima.

14.14.1. Do not use Category E approach minima as a substitute for host nation HPMA minima.

14.14.2. When an operational requirement exists to publish HPMA minima, add the following note: "**WARNING: Aircrews conducting HPMA procedures must comply with NATO Standard AFPP-1**" to the planview.

14.15. Publishing Foreign RNAV Procedures. Do not try to interpret the intent of the host nation or establish a path terminator for any RNAV segment. NGA does not require coding to be provided with FTIP RNAV procedure for publication; they are authorized to code the host nation procedure according to DAFIF® specification.

14.16. Publishing FTIP Missed Approach Procedures.

14.16.1. When a host nation publishes more than one missed approach, publish all of them on DoD FLIP (Terminal). Depict only one missed approach track graphically; publish all others via a complete textual description.

14.16.2. When a host nation publishes a missed approach procedure for PAR or ASR procedures, publish them textually in the "RADAR INSTRUMENT APPROACH MINIMUMS" section of DoD FLIP (Terminal).

14.16.3. When track guidance is not available or not used in the host nation missed approach beyond a point 10.8 NM from the departure end of runway, add the following caution note to the planview: "**CAUTION: Track guidance not available in the missed approach**." When this note is not operationally advantageous (not charted), obtain operational authority approval to not chart the note, limit use of the procedure to the requesting operational unit, and designate the instrument flight procedure as 'special use' according to **paragraph 2.11** of this manual.

14.17. DoD NOTAMs on FTIP Published in DoD FLIP (Terminal). NOTAMs issued by the host nation do not apply to FTIP published in DoD FLIP (Terminal). The responsible MAJCOM TERPS function must evaluate host nation NOTAMs for applicability to DoD published FTIP. The responsible instrument procedure specialist then issues NOTAMs on FTIP published in DoD FLIP (Terminal). **Note:** Ensure the requirements in **paragraph 2.4** of this DAFMAN are applied.

14.17.1. When the host nation makes changes to an instrument procedure that are effective before the next DoD FLIP (Terminal) cycle, or effective prior to the changes being published on the corresponding FTIP in DoD publication, correct DoD procedure by issuing a NOTAM reflecting the changes made by the host.

14.17.1.1. When the host changes are extensive in nature or when validation is not possible prior to the effective date of the host source, issue a "**NOT AUTHORIZED**" NOTAM on the DoD procedure as of the effective date of the new host source until validation can be completed.

14.17.1.2. When validation reveals changes that can be corrected by NOTAM, issue a NOTAM that includes the required changes to reinstate the procedure and cancel the "**NOT AUTHORIZED**" NOTAM. When validation reveals major changes not correctable by NOTAM, notify NGA via a tasking letter of the required changes and maintain the "**NOT AUTHORIZED**" NOTAM until the corrected depiction is published in DoD FLIP (Terminal).

14.17.2. When the host nation makes procedural changes to an RNAV instrument flight procedure, coordinate with standardization and evaluation personnel to determine if the procedural change can be safely amended by NOTAM. If not, issue a "**NOT AUTHORIZED**" NOTAM on the corresponding DoD procedure until it is updated by NGA.

14.18. FTIP Package Content and Associated Documentation.

14.18.1. Ensure all requests for publication conform to requirements in this DAFMAN, **Table 2.1**, and in the *Memorandum of Understanding between National Geospatial-Intelligence Agency (NGA) and US Army Aeronautical Services Agency (USAASA), Naval Flight Information Group (NAVFIG), and Air Force Flight Standards Agency (AFFSA).* Process Special Military Requests as described in DoD FLIP, *General Planning (GP),* Chapter 11.

14.18.2. Complete a tasking letter for each publication request. Do not combine a request for an ODP in the IFR Takeoff Minimums and Departure Procedures section of DoD FLIP (Terminal) with a request for an approach or a SID; a separate tasking letter for each instrument procedure (SID, ODP, or approach, as applicable) is required. Ensure "**Rwy XX, Use** (name of host Departure Procedure/standard instrument departure)" is published in the IFR Takeoff Minimums and Departure Procedures section.

14.18.3. When de-combining FTIP to meet DoD publication specifications or other publication requirements outlined in this DAFMAN, altering FTIP identification is authorized and waiver consideration is not required. When the identification differs from FAA Order 8260.3, paragraph **1-6-2** or paragraph **1-6-3** criteria, document the host nation intent of the procedure.

14.18.3.1. Example 1. Document the intent as follows: **The host nation identifies this FTIP as "TACAN/ILS RWY 22" but only provides ILS final approach guidance and minima.** Publish "**NOT AUTHORIZED**" in the S-TAC-22 minima block along with a line for ILS minima.

14.18.3.2. Example 2. Document the intent as follows: **The host nation identifies this FTIP as "TACAN RWY 35" but only provides circling minima.** Publish "**NOT AUTHORIZED**" in the S-TAC-35 minima block along with a line for CIRCLING minima.

14.18.4. When the host nation publishes a time/distance table, depict a time/distance table on DoD procedure even when DME is required for the procedure. This allows timing to be used as a crosscheck or validation of the published DME value of MAP. When FTIP does not depict a time/distance table and there is no indication on FTIP or in supporting host nation source (AIP, NOTAMs, etc.) that timing may not be used, develop and publish an appropriate time/distance table according to the following:

14.18.4.1. Convert distances expressed by the host in statute miles or kilometers to nautical miles. Round this converted nautical mile distance to the nearest tenth for the DoD version;

14.18.4.2. Develop and publish the flying time in minutes and seconds from FAF/PFAF to MAP or from stepdown fix to MAP, as applicable; and

14.18.4.3. When FTIP is published with a time/distance table from FAF/PFAF or from a stepdown fix to the threshold, determine where MAP is located. When the host has published multiple stepdown fixes, publish the time/distance table from the stepdown fix nearest MAP.

14.18.5. When the host publishes alternate minimums, publish all applicable alternate minima. **Exception**: When DoD published version of FTIP includes the note "**NOT FOR CIVIL USE**" (for any reason), *do not publish* alternate minimums.

14.18.6. Publish all FTIP circling restrictions.

14.18.7. When the host does not indicate initial approach fix or intermediate fix location, or when unable to determine initial approach fix or intermediate fix intent from host nation documentation, coordinate with host nation instrument procedure authorities to determine initial approach fix and intermediate fix locations prior to publication in DoD FLIP (Terminal).

14.18.8. Ensure NAVAIDs and holding patterns not part of the instrument procedure but depicted on FTIP are charted on DoD procedure. Identify these NAVAIDs and holding patterns in the tasking letter to NGA for charting on DoD procedure as an ATC requirement.

14.18.9. Include all FTIP feeder routes and associated data and altitudes. Include course, distance and minimum altitude values on terminal routes published on low procedures.

Addition of a route or establishing a minimum flight altitude not published by the host on a current route requires host nation instrument procedure authority approval.

14.18.10. Publish minimum safe altitudes, minimum sector altitudes, and emergency safe altitudes no lower than altitudes specified by the host nation.

14.18.11. Publish all FTIP warning and caution notes. When translating host nation notes (refer to **paragraph 14.12**), use good judgment and ensure notes are clear and concise prior to publication in DoD FLIP (Terminal). When there is confusion, coordinate with standardization and evaluation personnel for assistance when clarification of host nation source is necessary.

14.18.12. Publish all FTIP procedural restrictions. Documentation and/or instructions critical for aircrews may be located in different sections of the host nation AIP (not directly on FTIP). Research host nation AIP and other host documentation to ensure DoD published FTIP is complete and accurate.

14.18.13. When validating data on FTIP in preparation for publication, compare the data to charts and en route charts. Look for discrepancies in altitudes or common fix locations that should be the same on all sources. Coordinate any differences found with host nation authorities to determine the correct information.

14.18.14. Document and maintain instrument procedure packages for FTIP based on USAF Accredited and Special Accredited host nation source. At a minimum, the procedure package will include the following:

14.18.14.1. A copy of the correspondence requesting publication of the procedure (when applicable);

14.18.14.2. A copy of the tasking letter with instructions for publication;

14.18.14.3. A copy of the host published source document;

14.18.14.4. A copy of all approach minima calculations when the host minima are incomplete or not published on the host approach procedure. Include minima computations (showing DA/MDA/circling minimum descent altitude, HAT/HAA, ceiling and visibility value computations) in the procedure package;

14.18.14.5. A procedure log. Track procedural changes, reviews, AutoEval completion, and all other actions taken to keep the instrument procedure current; and

14.18.14.6. One copy each of the current and most recent previous NGA produced procedure plate. **Note**: After FTIP is published, the planview and profile from DoD FLIP (Terminal) may be used to illustrate changes being submitted to NGA.

14.18.14.7. On Accredited host nation source, include a completed FTIP Criteria Validation Checklist (**Attachment 4**) in procedure package.

14.18.15. Document and maintain FTIP based on Non-Accredited host nation source according to **Table 2.1**.

14.18.16. Ensure all FTIP validated with GPD include approval and coordination signatures on the Approach/Departure Signature Page. For USAF Accredited and Special Accredited locations, in lieu of GPD signature pages, include approval authority documentation.

14.18.17. Except for FTIP based on Special Accredited host nation source, FTIP reviews and published FTIP must be reviewed and approved by MAJCOM standardization and evaluation personnel prior to aircrew use.

14.19. Transfer of FTIP Responsibility. FTIP responsibility may be temporarily delegated or permanently transferred from one MAJCOM (transferring agency) to another MAJCOM or to another service provider (receiving agency). MAJCOMs participating in FTIP responsibility delegation/transfer agreements must ensure transfer only after the requirements in **paragraph 1.9** of this DAFMAN have been met.

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

Attachment 1

GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION

References

When references are not dated or version suffix not included, refer to the current version. When a digital or electronic means (CD-ROM, via local area network, internet, etc.) is available to access these references, maintaining paper copies is not required. International Civil Aviation Organization references are only required at DAF TERPS functions performing FTIP criteria validation. North Atlantic Treaty Organization references only required at DAF TERPS functions within NATO performing FTIP criteria validation.

National Environmental Policy Act of 1969, 42 U.S.C. §§ 4321 et seq (1970)

Safe Effective Use and Preservation of Navigable Airspace, 14 C.F.R. § 77

Mission Compatibility Evaluation Process, 32 C.F.R. § 211

Operating Requirements: Domestic, Flag, and Supplemental Operations, 14 C.F.R. § 121

Environmental Impact Analysis Process, 32 C.F.R. § 989 (2001)

Department of Defense Directive 5530.3, *International Agreements,* 4 December 2019

Chairman of the Joint Chiefs of Staff Instruction 3901.01E, *Requirements for Geospatial Information and Services,* 10 February 2023

DAFI 51-403, *International Agreements* 20 June 2023

DAFI 90-160, *Publications and Forms Management* 13 April 2022

DAFMAN 13-201, *Airspace Management* 9 December 2020

DAFMAN 90-161, *Publishing Processing and Procedures*, 17 October 2023

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

AFI Interservice Publication 11-208, *Department of Defense Notice to Airmen System*, 12 February 2018

AFI 13-204, Volume 3, *Airfield Operations Procedures and Programs* 25 April 2024

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

AFI 90-2001, *Mission Sustainment*, 30 July 2019

AFMAN 11-202, Volume 2, *Aircrew Standardization and Evaluation Program*, 29 Aug 2021

AFMAN 11-202, Volume 3, *Flight Operations*, 9 January 2022

AFMAN 13-215, Volume 2, *Airfield Operations Charts and Instrument Procedures Support*, 29 August 2019

AFH 32-7084, *Air Installations Compatible Use Zones Program* 1 November 2017

FAA JO Order 7110.65AA, *Air Traffic Control* 20 April 2023

FAA Order JO 7400.2P, *Procedures for Handling Airspace Matters* 20 April 2023

FAA Order 7610.4X, *Special Operations,* 5 October 2023

FAA Order 7900.2D, *Submitting Aeronautical Data to Aeronautical Information Services in Support of the National Airspace System (NAS)* 12 February 2018

FAA Order 7930.2, *Notice to Air Missions (NOTAM)*, 14 November 2023

FAA Order JO 8200.44A, *Flight Inspection Services Instrument Flight Procedure Coordination,* 18 October 2015

FAA Order 8260.19J, *Flight Procedures and Airspace* 1 June 2023

FAA Order 8260.3F, *United States Standard for Terminal Instrument Procedures (TERPS)* 7 September 2023

FAA Order 8260.26H, *Establishing Submission Cutoff Dates for Civil Instrument Flight Procedures,* 11 November 2020

FAA Order 8260.32G, *U.S. Air Force Terminal Instrument Procedures Service* 15 November 2023

FAA Order 8260.46H, *Departure Procedure (DP) Program* 4 June 2021

FAA Order 8260.58C, *United States Standard for Performance Based Navigation (PBN) Instrument Procedure Design* 15 September 2022

FAA Order 8260.59A, *United States-Instrument Flight Procedures Panel* 5 May 2020

FAA Order 8400.13D, *Procedures for the Evaluation and Approval of Facilities for Special Authorization Category I Operations and All Category II and III Operations* 22 October 2009FAA Order 8200.1D, *United States Standard Flight Inspection Manual 15 April 2015*

FAA Advisory Circular 70/7460-1M, *Obstruction Marking and Lighting* 16 November 2020

National Geospatial-Intelligence Agency Airfield Survey Specification Document for the Terminal Aeronautical GNSS Geodetic Survey Program January 2011

Memorandum of Understanding between National Geospatial-Intelligence Agency (NGA) and US Army Aeronautical Services Agency (USAASA), Naval Flight Information Group (NAVFIG), and Air Force Flight Standards Agency (AFFSA), 26 January 2016

Memorandum of Agreement US Army Aeronautical Services Agency (USAASA) Naval Flight Information Group (NAVFIG) Air National Guard (ANG) Air Force Flight Standards Agency (AFFSA) and National Geospatial-Intelligence Agency (NGA-SFA) for Review, Maintenance, and Publication of Foreign Terminal Instrument Procedures (FTIP), 14 June 2018

STANAG 3759, Edition 10, *NATO Supplement to ICAO Doc 8168 Volume II, for the Preparation of Instrument Approach and Departure Procedures* - AATCP-1, 23 June 2017

ICAO Doc 8168 – *Procedures for Air Navigation Services – Air Operations (PANS-OPS); Volume II, – Construction of Visual and Instrument Flight Procedures*, Seventh Edition 5 November 2020

ICAO Doc 9365, *Manual of All-Weather Operations,* 5th Edition, 2024

ICAO International Standards and Recommended Practices, *Aeronautical Telecommunications,* Annex 10, Volume I, *Radio Navigation Aids,* Part I, *Equipment and Systems,* Seventh Edition, July 2018

DoD Flight Information Publication, *General Planning (GP)*

DoD Flight Information Publication (Terminal)

Unified Facilities Criteria 3-260-01, *Airfield and Heliport Planning and Design*, 4 April 2019

Unified Facilities Criteria 3-535-01, *Visual Air Navigation Facilities* 25 April 2023

Prescribed Forms

AF Form 3640, *Nonprecision Computations*

AF Form 3992, *Instrument Procedure Flyability Check Instrument Approach Procedure (IAP)*

AF Form 3993, *Instrument Procedure Flyability Check Departure Procedure (DP)*

Adopted Forms

AF Form 679, *Air Force Publication Compliance Item Waiver Request/Approval*

AF Form 813, *Request for Environmental Impact Analysis*

AF Form 847, *Recommendation for Change of Publication*

FAA Form 7460-1, *Notice of Proposed Construction or Alteration*

FAA Form 7460-2, *Notice of Actual Construction or Alteration*

FAA Form 8200-17, *Flight Inspection Procedure Control (FIPC)*

FAA Form 8260-2, *Radio Fix and Holding Data Record*

FAA Form 8260-17.1, *STANDARD TERMINAL ARRIVAL (STAR)*

FAA Form 8260-17.2, *STAR (DATA RECORD)*

Abbreviations and Acronyms

AATCP—allied air traffic control publication (NATO)

ACES—Aeronautical Content Exploitation System

ACFT—aircraft

ADF—automatic direction finder

AF—Air Force

AFI—Air Force instruction

AFMAN—Air Force manual

AFPD—Air Force policy directive

AFPP—Allied Flight Procedures Publication

AFR—Air Force Reserve

AGL—above ground level

AIP—Aeronautical Information Publication

AIS—Aeronautical Information Service

AIRAC—Aeronautical Information Regulation and Control

ANG—Air National Guard

AOR—area of responsibility

ASPS—Aeronautical Source Packaging Service

ASR—airport surveillance radar

ATC—air traffic control

AutoEval—automated evaluation

AZ—azimuth

C.F.R.—Code of Federal Regulations

COCOM—combatant command

CRC—cyclic redundancy check

DA—decision altitude

DAFIF®—digital aeronautical flight information file

DAFMAN—Department of the Air Force Manual

DH—decision height

DME—distance measuring equipment

DoD—Department of Defense

DoDD—Department of Defense Directive

Doc—Document

DP—departure procedure

DR—dead reckoning

DTED—digital terrain elevation data

DVA—diverse vector area

DVOF—digital vertical obstruction file

ESA—emergency safe altitude

ESV—expanded service volume

FAA—Federal Aviation Administration

FAF—final approach fix

FALS—full approach light system

FAS—final approach segment

FLIP—flight information publication

FTIP—foreign terminal instrument procedure(s)

GDSS—Global Decision Support System

GNSS—Global Navigation Satellite System

GPD—Global Procedure Designer

GPS—Global Positioning System

GS—Glideslope

HAA—height above airport

HAT—height above touchdown

HPMA—high performance military aircraft (NATO)

HUD—head up display

IAW—in accordance with

ICA—initial climb area

ICAO—International Civil Aviation Organization

IFP—instrument flight procedure

IFR—instrument flight rules

ILS—instrument landing system

IMC—instrument meteorological conditions

LNAV—lateral navigation (RNAV lateral navigation without positive vertical guidance)

LNAV/VNAV—lateral navigation/vertical navigation

LOA—letter of agreement

LOC—localizer

MAP—missed approach point

MDA—minimum descent altitude

MFR—memorandum for record

MLS—microwave landing system

MOA—memorandum of agreement

MOC—master obstruction chart

MOU—memorandum of understanding

MSA—minimum safe/sector altitude

MSL—mean sea level

MSPEC—maintenance specification

MV—magnetic variation

NA or N/A—not available/not authorized/not applicable

NAS—national airspace system

NASR—National Airspace System Resource

NATO—North Atlantic Treaty Organization

NAVAID—navigational aid

NDB—non-directional radio beacon

NFDC—National Flight Data Center

NFDD—National Flight Data Digest

NGA—National Geospatial-Intelligence Agency

NGEALS—Next Generation Expeditionary Airfield Lighting System

NM—nautical mile(s)

NOTAM—notice to air missions

OCS—obstacle clearance surface

ODP—obstacle departure procedure

OE/AAA—Obstruction Evaluation/Airport Airspace Analysis

OIS—obstacle identification surface

OPR—office of primary responsibility

OPSPEC—operation specification

PANS-OPS—Procedures for Air Navigation Services – Aircraft Operations (ICAO)

PAPI—precision approach path indicator

PAR—precision approach radar

PBN—performance based navigation

PCG—positive course guidance

PFAF—precise final approach fix

PinS—point-in-space

PT—procedure turn

QFE—air pressure at the current ground level

QNH—barometric pressure adjusted to sea level

RADAR—radio detection and ranging

RDH—reference datum height

RNAV—area navigation

RNP—required navigation performance

RTEA—runway terrain exclusion area

RTRL—reduced takeoff runway length

RVR—runway visual range

RWY—runway

SA—special authorization

SCA—self-contained approach

SDF—stepdown fix

SIAP—standard instrument approach procedure

SID—standard instrument departure

SRTM—shuttle radar topography mission

STANAG—standardization agreement (NATO)

STAR—standard terminal arrival

STARS—standard terminal automation replacement system

TACAN—tactical air navigation

TAEA—Terrain Adjustment Exclusion Area

TAGGS—Terminal Aeronautical Global Navigation Satellite System Geodetic Survey

TCH—threshold crossing height

TERPS—terminal instrument procedures

UFC—Unified Facilities Criteria

USGS—United States Geological Survey

VCOA—visual climb over airport

VDA—vertical descent angle

VDP—visual descent point

VFR—visual flight rules

VGS—visual guidance surface

VGSI—visual glide slope indicator

VMC—visual meteorological conditions

VNAV—vertical navigation

VOR—very high frequency omni-directional range station

VOR/DME—very high frequency omni-directional range station with distance measuring equipment

VORTAC—VOR and TACAN navigation facilities (collocated)

WGS—World Geodetic System

Office Symbols

AF/A3—Air Force Deputy Chief of Staff, Operations

AF/A3O—Air Force Director, Current Operations

AFFSA/XO—Air Force Flight Standards Agency Division Chief, Flight Operations Policy and Standards

AFFSA/XOS—Air Force Flight Standards Agency Chief, Safety of Navigation

AMC/A3A—Air Mobility Command Deputy Division Chief

AMC/A3AT—Air Mobility Command Chief, Terminal Instrument Procedures

ANGRC/CC—Air National Guard Readiness Center Commander

MAJCOM/CC—Major Command Commander

NGB/CF—Two-letter for the National Guard Bureau

Terms

AeroNav2—The FAA maintained aeronautical database used by flight inspection personnel to perform flight inspection on instrument procedures.

Air Force Flight Standards Agency (AFFSA)—DAF level agency responsible for the day-to-day management of the AF Terminal Instrument Procedure Program.

Airfield Foundation Data—National Geospatial-Intelligence Agency provided, comprehensive, high-fidelity aeronautical information for airfields around the globe. Airfield features are collected in 2 ½ D shapefile format for use by DOD and other federal agencies in geographic information system applications. Accuracy is dependent upon method used to extract (Stereo or Monoscopic collection), source imagery and applicable elevation data.

Automated Evaluation (AutoEval)—Refers to the use of the automated evaluation application within GPD. This function evaluates ATC charts and instrument approach and departure procedures for required changes due to updates in aeronautical, obstacle and terrain data.

Comparison Evaluation—An assessment comparing a host nation produced instrument flight procedure and the corresponding commercially reproduced FTIP line-by-line, word-for-word, number-for-number, note-for-note, etc., and the documentation of the differences between the two products. **Note**: This is *not* an assessment of FTIP for compliance with an accepted instrument procedure criteria or standard.

Continental US (CONUS)—For the purposes of DAF TERPS and the guidance in this DAFMAN, apply the term “Continental US” to the following locations: all 50 states; American Samoa; the Federated States of Micronesia; Guam; the Marshall Islands; the Northern Mariana Islands; Puerto Rico; the US Minor Outlying Islands (Baker Island, Howland Island, Jarvis Island, Kingman Reef, Navassa Island and Wake Island); and the Virgin Islands of the US. All other locations are defined as locations outside of the Continental US.

Diverse Vector Area (DVA)—An area in which a prescribed departure route is not required. Radar vectors may be issued below the minimum vectoring or minimum IFR altitude. It can be established for diverse departure, departure sectors, and/or video map radar areas portraying obstacles and terrain.

Effective Height—The height of an obstacle when the appropriate vertical accuracy is added to the obstruction's reported MSL elevation.

Equivalent Height—The height of an obstacle used to determine the required obstacle clearance for a particular segment of an instrument procedure when that obstacle is located in the secondary area of that segment.

Final Approval Authority—The designated individual or agency that guarantees an instrument procedure meets all criteria as stipulated in FAA Order 8260.3, NATO AATCP-1, this DAFMAN, and other applicable directives. This authority also ensures the procedure package is complete.

Flight Inspection—An inspection conducted per FAA Order 8200.1D, *United States Standard Flight Inspection Manual*, or ICAO Annex 10, Volume I, Part I, *Equipment and Systems*. This inspection may also include checks for flyability of the instrument procedure.

Flight Information Publication Maintenance—Systematic procedure(s) used by unit and MAJCOM TERPS functions for tracking changes to instrument procedures and ensuring instrument procedures are kept current.

Flight Information Publication Review—A review of instrument flight procedures published in DoD FLIP (Terminal) or via loose-leaf to identify changes which have occurred since the last AIRAC publication cycle.

Flyability Check—A live, simulator or tabletop check normally accomplished by the flying unit requesting an instrument procedure to determine the operational acceptability of the instrument procedure prior to flight inspection.

Foreign Terminal Instrument Procedure (FTIP)—Instrument flight procedures developed by a non-USG (foreign nation) instrument procedure authority and published in a host nation AIP or other host nation flight information publication format such as the Agency for Aerial Navigation Safety in Africa and Madagascar (ASECNA) or the Central and Northern Region (CENOR) flight information publication.

FTIP Criteria Validation—The process of evaluating FTIP by a MAJCOM TERPS authority for compliance with US TERPS criteria, ICAO PANS-OPS, or NATO instrument procedure criteria which results in a published FTIP or a FTIP review.

FTIP Review—The documented results of FTIP criteria validation, limited to a specific mission requirement and to a specified length of time, and *is not published* in DoD FLIP (Terminal).

GeoBase Common Installation Picture Foundations—The distinct minimum set of geospatial features and imagery necessary to provide a foundational map depicting DoD installations and sites.

Geodetic Airfield Survey—An airfield survey that meets all requirements outlined in the current National Geospatial-Intelligence Agency Airfield Survey Specification Document for the Terminal Aeronautical GNSS Geodetic Survey Program.

Global Procedure Designer (GPD)—Refers to the collection of four automation modules/ applications used to evaluate the effect of obstacles on instrument approaches, departures and ATC charts. The four modules consist of the Automated Evaluation, Data Manager, Procedure Designer, and Chart Designer applications.

Grid North—A navigational term referring to the direction northwards along the grid lines of a map projection.

High Altitude Instrument Procedure—A terminal instrument procedure that usually begins (approach) or ends (departure) at or above 18,000 feet MSL. The beginning or ending altitude may be lower to achieve compatibility with airspace constraints and optimum traffic flows or to comply with host nation airspace and ATC practices.

Instrument Flight Procedure—A charted flight path defined by a series of navigation fixes, altitudes, and courses provided with lateral and vertical protection from obstacles from the beginning of the path to a termination point. Instrument flight procedures can be DPs, STAR Procedures, and Instrument Approach Procedures (IAPs).

Loose-leaf Format—Any instrument flight procedure depiction limited to a specific mission requirement and a specific length of time that is not published in DoD FLIP (Terminal). It may be a GPD-produced flight information publication graphic, a locally-produced instrument flight procedure representation, or generated by NGA, and may be delivered directly to the requesting flying unit or posted to GDSS.

Low Altitude Instrument Procedure—A terminal instrument procedure that usually begins (approach) or ends (departure) below 18,000 feet MSL.

Minimum Segment Altitude—is an obstruction's effective height plus the appropriate required obstacle clearance for the segment plus adjustments.

Magnetic Variation—The angular difference (in degrees) between true (geographic) north and magnetic north at a given location at a given time. This value can change from day to day.

Magnetic Variation of Record—The fixed value of magnetic variation assigned to each NAVAID and airport, expressed as a whole number. **Exception**: Host nation values may be expressed in tenths of a degree.

MAJCOM Quality Control Review—TERPS management function to ensure each new or revised air traffic control chart, instrument, or radar approach procedure, and each new or revised instrument departure/ODP meets the requirements of federal and/or international law. It ensures IFPs meet the requirements of federal law, that is, the Code of Federal Regulations and the National Environmental Policy Act of 1969, 42 U.S.C. §§ 4321. This review equates to ICAO ground validation.

Mountainous Area (ICAO)—An area of changing terrain profile where the changes of terrain elevation exceed 900 meters (3000 feet) within a distance of 18.5 km (10.0 NM).

National Flight Data Digest (NFDD)—A daily (except weekends and Federal holidays) publication of flight information appropriate to aeronautical charts, aeronautical publications, Notice to Air Missions, or other media serving the purpose of providing operational flight data essential to safe and efficient aircraft operations within NAS.

Navigational Aid (NAVAID) Slave Variation—A fixed value of magnetic variation applied within equipment functioning as an aid to navigation to the true direction (course or bearing) in order to obtain the magnetic values for radials (courses) and bearings to and from the NAVAID. Setting this value in a NAVAID is a maintenance procedure that adjusts the facility to the assigned magnetic variation of record. Recalibrating the facility may be required when differences between True North and the assigned magnetic variation of record differs by a given value.

Navigational Fix—A generic term used to define a predetermined geographical position. A fix may be a ground-based NAVAID, waypoint or defined by reference to one or more radio NAVAIDs.

Nonstandard Procedure—An instrument flight procedure that contains one or more deviations to criteria or requirements of this manual; any FAA order referred to or supplemented in this manual; ICAO Doc 8168, Vol II; NATO AATCP-1 or any approved supplement to these documents.

Notify—Inform (someone) of something in a formal or official manner.

Positive Course Guidance—Positive course guidance is a continuous display of navigational data, which enables an aircraft to be flown along a specific course line. DAF assumes sub-segments based on radar or RNAV meet this definition.

Post Publication Review—An in-depth review of the planview, profile, minima block, RADAR INSTRUMENT APPROACH MINIMUMS, operational and procedural data notes, caution and advisory notes, airport sketch, airport diagram (when available), graphic departures, and textual departures. This review is performed by DAF TERPS function responsible for the instrument flight procedure and validates that NGA and Jeppesen® produced an error-free version of newly established and revised instrument flight procedures.

Procedure Package—A collection of documentation used to develop, revise, review and approve an instrument procedure. Examples of documents include maps, charts, automated products, computation sheets, and excerpts from host nation AIPs.

Public Use Procedure—An instrument procedure that is not limited in use; it may be used by any agency or person.

Published FTIP—The documented results of FTIP criteria validation, published in DoD FLIP (Terminal) or via loose-leaf format, and is being maintained by a DoD instrument procedure authority.

"RADAR required" or "RADAR monitoring required" notes—Charting one of these notes or any other similarly worded note on an instrument flight procedure signifies that aircraft using the procedure is provided ATC radar service as defined in FAA JO Order 7110.65, *Air Traffic Control,* during a particular phase of flight or throughout the entire procedure, *as specified in the note*. Before adding this type of notation to any instrument procedure, coordinate with the applicable ATC authority to ensure ATC has the capability and agrees to provide these services.

Record—to set down in writing applicable evidence of organization, functions, policies, procedures, decisions and activities pursuant to a reference.

Regular Air Force—The Regular Air Force is the component of the Air Force that consists of persons whose continuous service on active duty in both peace and war is contemplated by law, and of retired members of the Regular Air Force.

Restricted Use Procedure—An instrument procedure that is limited in use by notation; for example, "**USAF ONLY**" or "**NOT FOR CIVIL USE**".

Self—Contained Approach—A MAJCOM approved arrival procedure that is flown from a minimum IFR altitude to a landing surface using only the navigational equipment on-board the aircraft (GPS, airborne radar or other sensors). These procedures may be practiced in NAS (or elsewhere with host nation approval) under radar control, in conjunction with a published instrument approach procedure, in special use airspace or under visual flight rules. **Note**: DAF flying authority guidance for IMC use of self-contained approaches may be found in AFMAN 11-202V3.

Screen Height—Runway end crossing height.

Sidestep Maneuver—A sidestep maneuver is a visual alignment maneuver, required by a pilot executing a straight-in approach to one runway (referred to as the primary runway), and cleared to land on an offset/staggered or parallel runway (referred to as the sidestep runway).

Special Use Procedure—An instrument flight procedure developed for a unique operational requirement and maintained according to regulatory guidance specified in this manual. It may be published in DoD FLIP (Terminal), posted to GDSS, or distributed in a loose-leaf format.

Standard Procedure—An instrument flight procedure that conforms to the criteria and requirements of this manual; any FAA order referred to or supplemented in this manual; ICAO Doc 8168, PANS-OPS Vol II; NATO AATCP-1 or any approved supplement to these documents.

Standard Terminal Arrival—A STAR is a published IFR ATC arrival procedure that provides a transition from the en route structure to the terminal area. STARs may include one or more runway transitions providing guidance to either a standard instrument approach procedure or a point in space from which radar vectors are provided by ATC.

Terrain Adjustment Exclusion Area—a circular area centered on the runway threshold with a radius of 1.5 NM (2.8 km for ICAO/NATO) for conventional approach procedures, and 1 NM (1.75 km for ICAO/NATO) for RNAV/RNP approach procedures and departures.

Unified Facilities Criteria—System is prescribed by MIL-STD 3007 and provides planning, design, construction, sustainment, restoration, and modernization criteria, and applies to the Military Departments, the Defense Agencies, and the DoD Field Activities.

Visual Maneuver—A maneuver performed by a pilot using natural vision to align an aircraft for an approach to a runway.

World Geodetic System (WGS)-84—A standard for use in cartography, geodesy, and satellite navigation including GPS. This standard includes the definition of the coordinate system's fundamental and derived constants, the ellipsoidal (normal) Earth Gravitational Model (EGM), a description of the associated World Magnetic Model (WMM), and a current list of local datum transformations.

Attachment 2

AFFSA TERPS PANELS, WORKING GROUPS AND ASSEMBLIES

A2.1. AFFSA TERPS represents DAF and DoD interests at the following panels.

A2.1.1. US-Instrument Flight Procedures Panel. FAA Order 8260.59, *United States-Instrument Flight Procedures Panel*, establishes the US-Instrument Flight Procedures Panel to provide a single FAA focal point of coordination for recommended new or revised instrument flight procedure standards. DAF is a core panel voting member.

A2.1.2. ICAO-Instrument Flight Procedures Panel. When required, AFFSA Instrument Procedures Division participates as the US military advisor to the US delegate (FAA) and provides military technical and operational feasibility of ICAO provisions to the Air Navigation Commission.

A2.2. AFFSA TERPS represents DAF and DoD interests at the following working groups.

A2.2.1. Aeronautical Information Services Working Group. This group meets to promote efficient processing, maintenance, and transfer of aeronautical information within FAA and between FAA and participating DoD agencies; to resolve issues and make recommendations to improve effectiveness; and to address requirements for special projects when required normal processing does not achieve national objectives.

A2.2.2. Flight Information Publications and Data Aeronautical Working Group. This group oversees the Vertical Obstruction Working Group, the Digital Working Group and any other subgroup they create. All of these working groups help define operational requirements for flight information publications, digital aeronautical products, vertical obstructions, and navigation planning charts for routing through the Executive Steering Group via the Chairman of the Joint Chiefs of Staff Instruction 3901.01, *Requirements for Geospatial Information and Services*, requirements process.

A2.2.3. DoD Foreign Terminal Instrument Procedures Working Group. As a standing subcommittee of the Safety of Navigation Executive Steering Group, representatives from the Military Services meet semi-annually to address common challenges, exploit common capabilities and streamline Military Services and National Guard Bureau cooperation under a joint concept to fulfill DoD requirements for providing US approved host nation instrument flight procedures to DoD aircrews.

A2.3. AFFSA TERPS represents DAF and DoD interests at the following assemblies.

A2.3.1. Government/Industry Aeronautical Charting Meeting (ACM). AFFSA TERPS drafts and submits recommendation documents as the primary method for adding or modifying informational content and design of US government aeronautical charts and flight information publication products. AFFSA TERPS briefs these recommendations at one of two sessions; the Instrument Procedures Group or the Charting Group.

A2.3.2. Coordinating Organization for Navigation Programs. The Coordinating Organization for Navigation meets to discuss next generation transformation subjects such as Ground-Based Augmentation System, Automatic Dependent Surveillance-Broadcast, navigational aid (NAVAID) decommissioning, Performance Based Navigation strategy, and Wide Area Augmentation System improvement. AFFSA TERPS participates as required.

A2.3.3. Implementation, Impact, and Coordination Meeting. This group of FAA and DAF instrument procedure specialists meets to evaluate the resource impact on federal organizations of changes to TERPS design criteria. AFFSA TERPS participates as required.

A2.3.4. Digital Coding Standards Task Group. As a standing subcommittee of the Digital Working Group, the Digital Coding Standards Task Group analyzes technical approaches to navigation and aeronautical data issues as directed by the Digital Working Group service representatives. The Digital Coding Standards Task Group is responsible for developing Digital Aeronautical Flight Information File (DAFIF®) specifications and acts as subject matter expert advisors on digital coding standards to the Digital Working Group. AFFSA TERPS participates as required.

A2.3.5. Military Instrument Procedure Standardization Panel (MIPSP). The panel reports to NATO's Air Traffic Management Operations and Integration Working Group (ATOMI WG) as it administers to the standardization and interoperability of military instrument flight procedures with regards to terminal area air navigation. The panel reviews implications of changes adopted in ICAO criteria and when necessary, formulates additional military centric criteria requirements and practices published in NATO STANAG 3759, AATCP-1.

Attachment 3

SAMPLE AF FORMS

A3.1. Sample AF Form 3992, *Instrument Procedure Flyability Check Instrument Approach Procedure (IAP)*.

Figure A3.1. Sample AF Form 3992, *Instrument Procedure Flyability Check Instrument Approach Procedure (IAP)*.

INSTRUMENT PROCEDURE FLYABILITY CHECK
INSTRUMENT APPROACH PROCEDURE (IAP)

LOCATION	DATE CHECK FLOWN
Anywhere AFB, FL	20040720
NAME OF PROCEDURE	TYPE AIRCRAFT
TACAN or ILS RWY 36R	C-17

METHOD *(Check one)*

☒ LIVE *(Actually Flown)* ☐ SIMULATOR ☐ TABLE TOP REVIEW ONLY

NOTE: PLEASE REFER TO AFMAN 11-230, ATTACHMENT 9, PARAGRAPHS A9.1 THROUGH A9.5 FOR GUIDANCE/METHODS TO BE FOLLOWED BEFOR CONDUCTING THIS FLYABILITY CHECK.

SEGMENTS NOT FLOWN OR CHECKED SHALL BE ANNOTATED "NF" IN THE "REMARKS" COLUMN. ITEMS THAT ARE NOT APPLICABLE SHOULD BE MARKE "NA". EACH MUST BE MARKED OR ANNOTATED.

1. INITIAL APPROACH FIX (IAF) HOLDING PATTERN. TERPS SPECIALIST COMMENTS/CONCERNS *(Continue on separate sheet of paper)*:

Holding pattern designed to accomodate speeds up to 310 KIAS. If possible, evaluate holding pattern at this speed.

INITIAL APPROACH FIX *(IAF)* HOLDING PATTERN	SAT	UN SAT	REMARKS	INITIAL APPROACH FIX *(IAF)* HOLDING PATTERN	SAT	UN SAT	REMARKS
A. ENTRY	☒	☐		D. MANEUVERING	☒	☐	
B. LEG LENGTH	☒	☐		E. SPEED RESTRICTIONS	☒	☐	
C. NAVAID RECEPTION	☒	☐		F. ATC COMMUNICATIONS	☒	☐	

2. IAF TO FINAL APPROACH FIX (FAF). TERPS SPECIALIST COMMENTS/CONCERNS *(Continue on separate sheet of paper)*:

Intermediate segment length is 5 NM. Determine if this segment length is sufficient to configure aircraft after turning on from the 15 DME arc.

IAF TO FINAL APPROACH FIX *(FAF)*	SAT	UN SAT	REMARKS	IAF TO FINAL APPROACH FIX *(FAF)*	SAT	UN SAT	REMARKS
A. CHARTED COURSES/ARCS/ RADIALS, ETC.	☒	☐		E. COCKPIT WORKLOAD	☒	☐	
B. ALTITUDES	☒	☐		F. NAVAID RECEPTION	☒	☐	
C. ALTITUDES AIRCRAFT MANEUVERING ALTITUDES	☒	☐		G. ATC COMMUNICATIONS	☒	☐	
D. TIME/DISTANCE TO PRE-PARE FOR FAF	☒	☐		H. DESCENT GRADIENT	☒	☐	

3. FAF TO MISSED APPROACH POINT (MAP). TERPS SPECIALIST COMMENTS/CONCERNS *(Continue on separate sheet of paper)*:

TACAN and Localizer missed approach point was moved from .8 DME to .5 DME. VDP was changed to 1.1 DME due to the installation of a new PAPI system.

FAF TO MISSED APPROACH POINT (MAP)	SAT	UN SAT	REMARKS
A. OBSTACLE CLEARANCE	☒	☐	
B. FINAL APPROACH COURSE ALIGNMENT	☒	☐	
C. AIRCRAFT MANEUVERING	☒	☐	
D. VISUAL DESCENT POINT (VDP)	☒	☐	
E. MAP LOCATION	☒	☐	New location works fine.
F. COCKPIT WORKLOAD	☒	☐	
G. DESCENT GRADIENT	☒	☐	
H. NAVAID RECEPTION	☒	☐	
I. APPROACH LIGHTS	☐	☒	Trees/shrubs are growing up through the approach lights (see block #6)
J. LANDING MINIMUMS	☒	☐	
K. ATC COMMUNICATIONS	☒	☐	

AF IMT 3992, 19961201, V2

A3.2. Sample AF Form 3992, *Instrument Procedure Flyability Check Instrument Approach Procedure (IAP) (Reverse)*.

Figure A3.2. Sample AF Form 3992, *Instrument Procedure Flyability Check Instrument Approach Procedure (IAP) (Reverse)*.

4. MISSED APPROACH *(NOTE: Missed approach should be flown at approximately 160 FPNM (450 Ft/MinVVI at 180 KIAS) or at missed approach climb table gradient, whichever is greater. Vigilance for obstruction is critical.)* TERPS SPECIALIST COMMENTS/CONCERNS:

The procedure requires a missed approach climb gradient of 250 ft/NM due to a 1998' (MSL) antenna located appromimately 3.5 NM from the departure end of the runway (6.1 NM from missed approach point, 1.5 NM right of flight track).

MISSED APPROACH	SAT	UN SAT	REMARKS	MISSED APPROACH	SAT	UN SAT	REMARKS
A. UNDERSTANDABLE	☒	☐		E. COCKPIT WORKLOAD	☒	☐	
B. AIRCRAFT MANEUVERING	☒	☐		F. ATC COMMUNICATIONS	☐	☐	
C. OBSTACLE CLEARANCE	☒	☐		G. CLIMB GRADIENT	☒	☐	
D. NAVAID RECEIPTION	☒	☐					

5. CIRCLING AREAS (NOTE: If the circling maneuvering is not flown ("N/F") make comments as to the safeness of the circling area. For approaches with CAT D, minimums, look for obstacles within 3 NM of the runway in all directions. For approaches with CAT E minimums, look for obstacles within 5 NM of the runway in all directions. The location and estimated height of questionable obstacles should be noted in the remarks section of this checklist.) TERPS SPECIALIST COMMENTS/CONCERNS:

Evaluate to Cat E circling area. Make note of the 1998' (MSL) antenna approximately 3.5 NM off the departure end of runway 36R.

CIRCLING AREAS	SAT	UN SAT	REMARKS
A. AIRCRAFT MANEUVERING	☒	☐	See comments below.
B. OBSTACLE CLEARANCE	☒	☐	See comments below.
C. ABSENCE OF OPTICAL ILLUSIONS	☒	☐	See comments below.
D. ATC COMMUNICATIONS	☒	☐	

6. ADDITIONAL COMMENTS:

Block 3I: Trees/shrubs are growing up through the first line of approach lighting bars, obscuring the lights.

Blocks 5A, 5B and 5C: Cat E circling area was flown and evaluated. We conducted this check during daylight hours. however, the 1998' (MSL) antenna located in the Cat E circling area could be hazardous during the hours of darkness. The antenna contains the appropriate red lighting, however it may blend in with other ground lighting and could be difficult to acquire when performing the circling maneuver. I recommend that this circling area be evaluated at night or consider Cat E circling not be authorized in that quadrant.

I CONSIDER THE ABOVE SPECIFIED INSTRUMENT PROCEDURE AS FLYABLE AND SATISFACTORY.

SIGNATURE		DATE
John Q. Smith		20040722
PRINT/TYPE NAME AND RANK	UNIT AND MAJCOM	DUTY PHONE *(DSN/Commerical)*
John Q. Smith, Major, USAF	123 AW AMC	DSN 777-6789 Comm (789) 777-6789

AF IMT 3992, 19961201, V2 (REVERSE)

A3.3. Sample AF Form 3993, *Instrument Procedure Flyability Check Departure Procedure*.

Figure A3.3. Sample AF Form 3993, *Instrument Procedure Flyability Check Departure Procedure*.

INSTRUMENT PROCEDURE FLYABILITY CHECK
DEPARTURE PROCEDURE (DP)

LOCATION	ICAO IDENTIFICATION
Anywhere AFB, FL	KBDA

NAME OF PROCEDURE
Anywhere 1 Departure

TYPE AIRCRAFT	PILOT
C-17	Maj. John Q. Smith

METHOD

☒ LIVE *(Actually flown)*	☐ SIMULATOR	☐ TABLE TOP REVIEW ONLY

TERPS SPECIALIST COMMENTS

Evaluate the 420 ft/NM climb gradient for acceptability. This climb gradient is required to provide the appropriate obstacle clearance over a 1998' (MSL) antenna located 3.5 NM from the departure end of the runway, approximately 1/4 NM East of the proposed ground track.

NOTE: *Departures are to be flown at 200 feet per Nautical Mile (i.e., 600 Ft/Min. VVI at 180 KIAS) or at the published Rate of Climb as indicated in a Climb Table, whichever is greater. Vigilance for obstructions that could be unsafe is critical. Areas not checked/flown should be annotated "NF" in the remarks section*

SAT	UNSAT		REMARKS
☒	☐	AIRCRAFT MANEUVERING	
☒	☐	ALTITUDE RESTRICTIONS	
☒	☐	NAVAID RECEPTION	
☒	☐	COCKPIT WORKLOAD	
☒	☐	OBSTACLE CLEARANCE	
☒	☐	EASY TO UNDERSTAND	

FLYABILITY CHECK PILOT COMMENTS

The climb gradient of 420 ft/NM was found to be acceptable for our particular mission profile, however, note that this climb gradient may be unacceptable for certain aircraft operating at or near gross weight. Consideration should be given to altering the departure course to the West, if possible, to avoid the obstacle and reduce the climb gradient.

I CONSIDER THE ABOVE SPECIFIED INSTRUMENT PROCEDURE AS FLYABLE IAW THIS CHECKLIST

SIGNATURE		DATE
		20040722

PRINTED/TYPED NAME AND RANK	DUTY PHONE *(DSN/COMMERCIAL)*	UNIT/MAJCOM
John Q. Smith, Major, USAF	DSN 777-6789 Comm (789) 777-6789	123 AW AMC

AF IMT 3993, 19961201, V3

Attachment 4

FTIP CRITERIA VALIDATION CHECKLIST

A4.1. FTIP CRITERIA VALIDATION CHECKLIST.

Figure A4.1. FTIP CRITERIA VALIDATION CHECKLIST.

Name of HN IFP: _____ **Date Checklist Completed:** _____

CHECKLIST ITEMS	Complies with criteria?		
1. MSA	**YES**	**NO**	**N/A**
NAVAID			
SOURCE			
2. HOLDING PATTERNS	**YES**	**NO**	**N/A**
LEG LENGTH			
NO COURSE SIGNAL ZONE			
AIRSPEED REQUIREMENTS			
3. INITIAL SEGMENT	**YES**	**NO**	**N/A**
FIX IDENTIFICATION			
ALTITUDES			
TEARDROP ANGLE OF DIVERGENCE			
ARC LENGTH			
SEGMENT LENGTH			
DESCENT GRADIENT			
LEAD RADIAL			
COURSE ALIGNMENT			
SPECIAL NOTES			
4. INTERMEDIATE SEGMENT	**YES**	**NO**	**N/A**
FIX IDENTIFICATION			
ALTITUDES			
SEGMENT LENGTH			
DESCENT GRADIENT			
LEAD RADIAL			
COURSE ALIGNMENT			
SPECIAL NOTES			
5. PLANVIEW	**YES**	**NO**	**N/A**
LEGIBILITY			
RESTRICTIONS			
SPECIAL NOTES			
MSA DEPICTION			
6. PROFILE	**YES**	**NO**	**N/A**
LEGIBILITY			
RESTRICTIONS			
SPECIAL NOTES			
7. CIRCLING	**YES**	**NO**	**N/A**
RESTRICTIONS			

CHECKLIST ITEMS (Cont.)	Complies with criteria?		
8. FINAL SEGMENT	**YES**	**NO**	**N/A**
FIX IDENTIFICATION			
ALTITUDES			
SEGMENT LENGTH			
DESCENT GRADIENT			
COURSE ALIGNMENT			
STEPDOWN FIX(ES)			
MISSED APPROACH POINT LOCATION			
THRESHOLD CROSSING HEIGHT			
APPROACH MINIMUMS			
SPECIAL NOTES			
9. MISSED APPROACH SEGMENT	**YES**	**NO**	**N/A**
COURSE ALIGNMENT			
CLIMB GRADIENT			
SPECIAL NOTES			
REVIEW WORDING OF MISSED APPROACH INSTRUCTIONS			
10. DEPARTURE PROCEDURES	**YES**	**NO**	**N/A**
Has the HN established departure procedures for obstacle avoidance?			
DER CROSSING HEIGHT			
CLOSE-IN OBSTACLE DEPICTION			
EARLY TURNS			
CLIMB GRADIENTS			
CROSSING ALTITUDES			
POSITIVE COURSE GUIDANCE			
SPECIAL NOTES			
RESTRICTIONS			
COMPLEXITY (Determine if text depiction, graphic depiction, or both depictions are needed)	**Text**	**Graphic**	**Both**
11. FLYABILITY CONCERNS	**YES**	**NO**	**N/A**
Have all instrument procedure specialist areas of concern been documented on AF Form 3992 or 3993, as applicable?			
12. MISCELLANEOUS	**YES**	**NO**	**N/A**

SPECIAL NOTES				Do the primary areas of any segment overlap any Special Use Airspace?			
13. The HN IFP named below complies with/does not comply with _____ criteria.							
Procedure Specialist's Printed Name: _____				**Procedure Specialist's Signature: _____**			