BY ORDER OF THE
SECRETARY OF THE AIR FORCE

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Flying Operations

INSTRUMENT PROCEDURES

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This publication implements Air Force Policy Directive 11-2, *Aircrew Operations*. It provides guidance and procedures on developing, approving, revising, publishing and deleting instrument approach and departure procedures throughout the Air Force (AF). This manual applies to all civilian employees and uniformed members of the Regular AF, Air National Guard (ANG), and AF Reserve (AFR) performing Terminal Instrument Procedure (TERPS) functions. It applies to flying activities at all AF, ANG, and AFR airfields where the AF, ANG, AFR or an AF 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 using the AF Form 847, *Recommendation for Change of Publication*; route AF Forms 847 from the field through the appropriate functional chain of command. This AF Manual (AFMAN) may be supplemented at any level, but all Supplements and interim changes to previously approved Supplements must be routed to the Office of Primary Responsibility 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 Air Force Instruction (AFI) 33-360, *Publications and Forms Management*, for a description of the authorities associated with the Tier numbers. Submit requests for waivers through the chain of command to the appropriate Tier waiver approval authority IAW **paragraph 1.3** and **paragraph 1.4**, or alternately, to the MAJCOM or AF Component of a Unified Command, Director of Operations (or equivalent) for non-tiered compliance statements. Ensure all records

created as a result of processes prescribed in this publication are maintained in accordance with AFMAN 33-363, *Management of Records*, and disposed of in accordance with the Air Force Records Disposition Schedule 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 Air Force.

SUMMARY OF CHANGES

This document has been substantially revised and needs to be completely reviewed. This rewrite of AFI 11-230 is in response to customer feedback, process improvements, and SAF/AA Compliance Statement Review effort. It reduces the number of acronyms used and eliminates instrument procedure jargon from the previous version; changes the AFI to an AFMAN; deletes guidance duplicated in other governing directives or no longer required; moves attachments into the body of the AFMAN or into AFMAN 13-215, Volume 2, *Airfield Operations Charts and Instrument Procedures Support*, as appropriate, for better continuity; updates and clarifies term definitions and instrument procedure processing guidance; adds guidance to keep pace with rapidly changing US and international instrument procedure criteria; aligns guidance format with governing Federal Aviation Administration (FAA) 8260-series orders; clarifies waiver authority approval levels; deletes office symbols; expands the explanation of HQ Air Force Flight Standards Agency (AFFSA) responsibilities; deletes MAJCOM specific instrument procedure areas of responsibility; aligns AF foreign terminal instrument procedure (FTIP) processes with DoD requirements; revises tables, figures, and checklists to better support policy requirements; deletes references to outdated forms and updates data processing and automation tool guidance.

Chapter 1

ADMINISTRATIVE

1.1. Overview. This publication provides guidance and assigns responsibility for instrument flight procedure (IFP) functions provided by MAJCOM and unit level instrument procedure specialists (**Chapter 1** through **Chapter 3**), flyability check (**Chapter 4**), and instrument procedure flight inspection requirements (**Chapter 5**). It includes guidance for implementing FAA orders (**Chapter 6** through **Chapter 9**) and to North Atlantic Treaty Organization (NATO) agreements and International Civil Aviation Organization (ICAO) instrument procedure criteria (**Chapter 10**). Additionally, instrument procedure automation guidance (**Chapter 11**), host nation acceptance processes (**Chapter 12**), and requirements for the validation and processing of FTIP (**Chapter 13**) are included. **Note**: References to MAJCOM throughout this AFMAN include the ANG TERPS function of the National Guard Bureau and the TERPS function of an AF Component of a Unified Command. The MAJCOM FTIP areas of responsibility (AOR) are aligned with the respective COCOM AOR, except that AMC AOS/OL-J is responsible for SOUTHCOM and Mexico. Deviations must be codified in a written agreement between the affected MAJCOMs.

1.1.1. Apply the guidance in this AFMAN in conjunction with the guidance provided in each of the following approved and adopted publications:

1.1.1.1. FAA Order 8260.3D, *United States Standard for Terminal Instrument Procedures (TERPS).* **Exceptions**: See **Chapter 6** of this AFMAN;

1.1.1.2. FAA Order 8260.19H, *Flight Procedures and Airspace.* **Exceptions**: See **Chapter 7** of this AFMAN;

1.1.1.3. FAA Order 8260.46G, *Departure Procedure (DP) Program.* **Exceptions**: See **Chapter 8** of this AFMAN;

1.1.1.4. FAA Order 8260.58A, *United States Standard for Performance Based Navigation (PBN) Instrument Procedure Design.* **Exceptions**: See **Chapter 9** of this AFMAN;

1.1.1.5. NATO STANAG 3759, Edition 10, North Atlantic Treaty Organization Supplement to ICAO Doc 8168-OPS/611 *Volume II, for the Preparation of Instrument Approach and Departure Procedures* - AATCP-1 Edition E; and

1.1.1.6. ICAO Doc 8168-OPS/611 – *Procedures for Air Navigation Services – Air Operations (PANS-OPS); Volume II, – Construction of Visual and Instrument Flight Procedures*. **Exceptions**: See **Chapter 10** of this AFMAN.

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

1.2. Roles and Responsibilities.

1.2.1. HQ AF/A3:

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

1.2.1.2. Delegates the authority for approving standard instrument flight procedures to the respective MAJCOM, National Guard Bureau, and AF Component of a Unified Command Director of Operations.

1.2.2. HQ AFFSA TERPS Division:

1.2.2.1. Manages the AF TERPS Program in support of AF 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. Reviews MAJCOM initiated waivers on Tier 0 and Tier 1 compliance items; makes recommendations to the MAJCOM waiver authority or HQ USAF, as appropriate. **Note**: There is no requirement for the HQ AFFSA recommendation to the waiver authority for violations to US TERPS criteria on Tier 0 compliance items at any location outside the National Airspace System (NAS);

1.2.2.5. Manages the AF 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) outlining AF requirements and the data required for publication and maintenance of AF developed instrument flight procedures and AF approved FTIP;

1.2.2.7.1. Informs the NGA which AF 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 the NGA.

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

1.2.2.9. Develops and maintains the Airfield Operations TERPS Self-Assessment Communicator;

1.2.2.10. Monitors and manages the HQ AFFSA TERPS Division helpdesk;

1.2.2.11. Posts applicable deliverables to the HQ AFFSA Airfield Operations SharePoint at **https://cs2.eis.af.mil/sites/10539/default.aspx**;

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

1.2.2.13. Develops and maintains agreements with the Aeronautical Information Services office of the FAA outlining the processing of AF instrument flight procedure requirements at US civil and joint-use bases IAW FAA Order 8260.32F, *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 the AF Terminal Instrument Procedures Fundamentals Course; and

1.2.2.16. Consolidates AF Terminal Aeronautical Global Navigation Satellite System Geodetic Survey (TAGGS) data requirements and priorities from the MAJCOM then submits the requirements to HQ AFFSA Safety of Navigation Division for staffing to HQ AF.

1.2.3. MAJCOM or AF Component of a Unified Command, Director of Operations (or equivalent):

1.2.3.1. 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;

1.2.3.2. Authorizes use of special use instrument flight procedures by AF units and other DoD components not specifically noted on the instrument flight procedure;

1.2.3.3. Delegates approval authority for standard, unit or MAJCOM developed instrument flight procedures, ATC charts, and diverse vector areas to the MAJCOM TERPS function under his/her direction;

1.2.3.4. Approves non-tiered compliance items within this AFMAN, regardless of grade; and

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

1.2.4. MAJCOM terminal instrument procedure manager. The MAJCOM terminal instrument procedure manager is responsible for all AF instrument and radar flight procedure requirements at locations under their operational control and:

1.2.4.1. Confirms unit level compliance with all standards required in this AFMAN. **Note:** MAJCOMs that have assumed their supported unit TERPS function also assume all base/unit level TERPS function responsibilities described in **paragraph 1.2.5**;

1.2.4.2. 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;

1.2.4.3. 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;

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

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

1.2.4.6. Performs host nation accreditation as applicable and required IAW **Chapter 12**;

1.2.4.7. Implements FTIP criteria validation processes as applicable and required IAW **Chapter 13**;

1.2.4.8. Complies with FAA Order 8260.32F, as applicable;

1.2.4.9. Ensures the current version of GPD software is installed IAW the HQ AFFSA Airfield Operations Directorate message announcing the next version release for use;

1.2.4.10. Reviews and submits instrument flight procedures designated for flight inspection IAW **Chapter 5**;

1.2.4.11. Submits required documentation from unit TERPS functions within the MAJCOM TERPS area of responsibility to the NGA IAW **paragraph 2.2** after MAJCOM quality control review; and

1.2.4.12. Creates and maintains a MAJCOM supplement to this AFMAN IAW AFI 33-360, when more restrictive or organization-specific guidance is warranted.

1.2.5. Base and unit level TERPS functions shall:

1.2.5.1. 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. **(T-3)**. **Note:** When instrument procedure development and maintenance responsibility has been assumed at the supporting MAJCOM, the Operations Group Commander's responsibility is limited to establishing instrument flight procedure requirements (the type of instrument flight procedure(s); how many; high, low [or both]; to which runways; etc.) for the base;

1.2.5.2. Develop a MOC as required in **paragraph 3.3** of this AFMAN. **(T-3)**;

1.2.5.3. Develop, process, and maintain instrument flight procedures, diverse vector areas, and ATC charts. **(T-3)**;

1.2.5.3.1. 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. **(T-3)**.

1.2.5.3.2. Coordinate new, revised, and deleted instrument flight procedures with all required signatory agencies. **(T-3)**.

1.2.5.3.3. Submit requests to delete, publish, or amend instrument flight procedures, diverse vector areas, and ATC charts to the MAJCOM instrument procedure function for MAJCOM quality control review. **(T-3)**.

1.2.5.4. Develop Minimum Safe Altitude Warning and Low Altitude Alerting System submissions as required by location in coordination with the facility Chief Controller. **(T-3)**;

1.2.5.4.1. When requested by the Chief Controller, support non-radar board development per AFI 13-204, Volume 3, *Airfield Operations Procedures and Programs* and AFMAN 13-215V2. **(T-3)**.

1.2.5.4.2. 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. **(T-3)**.

1.2.5.5. Provide required data and assistance to support the Non-commissioned Officer in Charge, Airfield Automation Manager develop adaptation, mapping, and Minimum Safe Altitude Warning. **(T-3)**;

1.2.5.6. Report changes to navigational aid (NAVAID) and radar data IAW FAA Order 7900.2D, *Submitting Aeronautical Data to Aeronautical Information Services in Support of the National Airspace System (NAS)*, and **paragraph 1.6.3** of this AFMAN. **(T-3)**;

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

1.2.5.8. Perform review of flight information publications and other TERPS related data IAW **paragraph 2.5**. **(T-3)**;

1.2.5.9. Maintain aeronautical source data sufficient to meet instrument flight procedure design responsibilities. **(T-3)**; and

1.2.5.10. Review the National Flight Data Digest (NFDD), as required. **(T-3)**.

1.3. Waiver Authority. In accordance with AFI 33-360, directive guidance (for example, "will", "shall", and "must") throughout this AFMAN is tiered at the end of each directive statement, sentence, or paragraph, as applicable, to indicate waiver authority level. Process deviations to instrument procedure criteria IAW **paragraph 1.4**. **Note**: Instrument flight procedures developed by the FAA for the AF IAW FAA Order 8260.32F which do not conform to TERPS criteria are processed by the FAA.

1.3.1. The FAA has delegated waiver authority for mitigating nonstandard conditions in instrument flight procedures developed by the military and based on US criteria to the US Military Service responsible for developing the instrument procedure. The AF has approved and adopted FAA and ICAO criteria except as noted in this AFMAN.

1.3.2. The MAJCOM Commander (delegable no lower than the MAJCOM Director) is the waiver authority for all violations of ICAO Doc 8168-OPS/611 criteria for FTIP based on non-accredited host nation source *and* being published in the DoD Flight Information Publication (FLIP) (Terminal).

1.3.2.1. Waiver authority consideration of violations to any instrument procedure criteria for FTIP based on accredited or special accredited host nation source is not required.

1.3.2.2. Criteria violations documented during FTIP criteria validation for FTIP reviews (including restricted FTIP reviews) do not require waiver authority consideration.

1.4. Documenting and Processing Nonstandard Instrument Flight Procedures (Waiver Requests). Document waivers on AF Form 679, *Air Force Publication Compliance Item Waiver Request/Approval*. When determining package content, refer to **Table 2.1**. Obtain waiver

authority approval for each nonstandard condition prior to flight inspection and provide HQ AFFSA Airfield Operations Directorate a copy of each approved waiver.

1.4.1. Unless otherwise noted within this AFMAN, coordinate deviation(s) from any instrument procedure criteria in AFMAN 11-230; NATO STANAG 3759 (Allied Air Traffic Control Publication [AATCP]-1); ICAO Doc 8168 OPS/611, Vol II; or from any authorized FAA criteria with MAJCOM flying authorities and submit them to the appropriate waiver authority for approval consideration. This requirement applies to instrument flight procedures developed by the AF and published via loose-leaf format or in the DoD FLIP (Terminal), and to AF published FTIP based on non-accredited host nation source.

1.4.2. Unless restricted as addressed in **paragraph 1.4.4**, approved waivers apply to all DoD and civil aircraft using the procedure. Regardless of who is using the published procedure, the waiver authority assumes all responsibility for each nonstandard condition approved for use in the instrument flight procedure. In conjunction with the appropriate, 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.

1.4.3. Provide a justification for each listed violation in the 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.

1.4.4. The waiver authority may restrict or limit the use of a nonstandard procedure. The waiver authority may require the planview be annotated IAW FAA Order 8260.3D, paragraph 1-4-2.b, ("**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**."

1.4.5. 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 the AF Form 679 for each nonstandard condition. Retain waiver documentation in the procedure package and route each nonstandard condition to the appropriate tier waiver authority as follows:

1.4.5.1. Tier 0. Staff a waiver package through the appropriate MAJCOM channels to HQ AFFSA Airfield Operations Directorate. HQ AFFSA Airfield Operations Directorate reviews the package, makes comments as needed, and when required, coordinates with external agencies during waiver consideration;

1.4.5.2. Tier 1. Staff a waiver package through the appropriate MAJCOM channels to HQ AFFSA Airfield Operations Directorate. HQ AFFSA Airfield Operations Directorate reviews the package, makes comments as needed, and submits the package to the Deputy

Chief of Staff, Operations (Approving Official) with recommendation(s). HQ AFFSA Airfield Operations Directorate provides coordination results to the waiver office of primary responsibility for MAJCOM waiver authority action;

1.4.5.3. Tier 2. Staff these waiver requests IAW MAJCOM guidance; and

1.4.5.4. Tier 3. Staff these waiver requests IAW Wing/Direct Reporting Unit/Field Operating Agency (as applicable) guidance.

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 the AF 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 the 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 the 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 the 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. Inform the appropriate ATC facility management when the primary obstacle clearance area of any segment extends into adjacent AF, FAA, or host nation airspace. Coordinate the instrument flight procedure with the adjacent facility management or host nation airspace authority, as applicable, for approval of the overlap condition. Ensure the note "**ATC 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. **Note**: Instrument procedures with ATC radar service requirements should be avoided whenever possible.

1.6. Use of FAA 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 AF use. **Note**: HQ AFFSA Airfield Operations Directorate 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 6** through **Chapter 9** of this AFMAN provide supplemental guidance to FAA orders for AF use when developing instrument flight procedures. Specific FAA guidance that does not apply to the AF is also indicated in these chapters. When "approval of appropriate military authority", "military authority approval", or similar phrases are used in FAA orders, the 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 AF developed instrument flight procedures.

1.6.3. Aeronautical Data.

1.6.3.1. Submit aeronautical data IAW FAA Order 7900.2D for each AF owned and operated NAVAID (including AF locations outside of the Continental US) via the Airport Data Changes (Military) link at **https://www.faa.gov/air_traffic/flight_info/aeronav/aero_data/**. **(T-0)**. Ensure the aeronautical data submitted is contained in the National Airspace System Resource (**https://enasr.faa.gov/eNASR/nasr/**) prior to submitting any FAA Form 8260-2, *Radio Fix and Holding Data Record,* based on the updated data. **Note**: The data in GPD and the corresponding data in the National Airspace System Resource database must match. **(T-3)**.

1.6.3.2. Digital FAA Data Forms are not required on host nation owned and operated NAVAIDs. When these NAVAIDs are used to develop AF instrument procedures, completion of the appropriate type 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 the FAA, as necessary, with any subsequent flight inspection requests. Either complete a digital form or provide a list consisting of the following data to the FAA no later than 3 weeks prior to a scheduled flight inspection:

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

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

1.6.3.2.3. NAVAID frequency and channel;

1.6.3.2.4. 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);

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

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

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

1.6.3.3.1. Equipment Type (localizer);

1.6.3.3.2. Antenna Type (localizer);

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

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

1.6.3.3.5. Course Width (localizer monitor limits);

1.6.3.3.6. Ground Elevation (glide slope);

1.6.3.3.7. Glide Angle (glide path);

1.6.3.3.8. Antenna Type (glide slope);

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

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

1.6.3.4. Review the revised data prior to submission, establish a date for the revision(s) to be effective, and enter the effective date in the appropriate block. Submit required updates via the same National Flight Data Center (NFDC) website. 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.

1.6.3.5. When updating the airport magnetic variation of record (not available on a specific digital FAA 7900-series form), complete the Magnetic Variation Declination Request form IAW **paragraph 7.3** of this AFMAN.

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

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 the FAA when proposed construction or alteration of structures might present a hazard to flight. In turn, the 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. AF 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 under *Mission Compatibility Evaluation Process*, 32 C.F.R. § 211.

1.6.4.1. AF 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 IAW AFI 90-2001, *Encroachment Management*.

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 IAW FAA Advisory Circular 70/7460-1L, *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 the 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 7400.2L, *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 FAA public 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.

1.7. Procedural Information. Procedural information includes the following instrument flight procedure data: any 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 AFMAN. **Note**: Also refer to 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 available from the HQ AFFSA/XA SharePoint at **https://cs2.eis.af.mil/sites/10539/A3A/Shared%20Documents/5.%20%20TERPS/TERPS%20MOUs/IFP_MOU_NGA_Services%20-%20signed_17JAN17.pdf**.

1.8. HQ AFFSA TERPS Division 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 the TERPS helpdesk at: **https://www.terpshelpdesk.com**. AF Form 847, *Recommendation for Change of Publication*, may also be submitted via the TERPS helpdesk as an attachment to an incident when requesting changes to AFMAN 11-230. Submit requests directly to HQ AFFSA TERPS Division by phone or email when the helpdesk is not operational.

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 develop, publish and/or maintain instrument flight procedures where the AF 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). MAJCOMs participating in authorized instrument flight procedure responsibility delegation/transfer agreements (to include FTIP locations) must ensure transfer only after the requirements in this paragraph have been met. **(T-1)**. **Note**: Transfer of FTIP from an AF MAJCOM to another military service or to the NGA must be accomplished IAW 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 HQ AFFSA/XA SharePoint at: **https://cs2.eis.af.mil/sites/10539/A3A/Shared%20Documents/5.%20%20TERPS/TERPS%20MOUs/FTIP%20MOA%20-%20signed.pdf**. **(T-1)**.

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

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

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

1.9.2.3. 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);

1.9.2.4. All maintenance responsibilities that are being transferred to the receiving agency;

1.9.2.4.1. When a transferred instrument flight procedure or FTIP can no longer be maintained IAW 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 Airmen (NOTAM) as soon as practical, if not immediately. **(T-2)**.

1.9.2.4.2. 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 the DoD FLIP (Terminal). **(T-2)**; and

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

1.9.3. Transfer instrument flight procedure documentation to include any/all applicable FAA forms, AF 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.

1.9.4. Retain a signed and dated copy of the MOA or MFR on file at the MAJCOM TERPS function and provide a digital copy to HQ AFFSA Airfield Operations Directorate.

1.9.5. 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.

1.9.6. MAJCOMs that have previously transferred instrument flight procedure responsibility without meeting these coordination and documentation requirements must complete them within 120 days from the date this version of AFMAN 11-230 is released for use. **(T-3)**.

1.9.7. AF MAJCOMs will only transfer FTIP locations that are on the DoD Accepted Host Nation List to the NGA. **(T-1)**. **Note:** The DoD Accepted Host Nation List may be accessed from the HQ AFFSA SharePoint at **https://cs2.eis.af.mil/sites/10539/A3A/Shared%20Documents/Forms/By%20Title.aspx**.

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

Chapter 2

PROCESSING INSTRUMENT FLIGHT PROCEDURES

2.1. Identifying Instrument Flight Procedure Requirements. The 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. **Note**: The 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 IAW FAA Order 8260.32F:

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. Designation and mailing address 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 Publication of Instrument Flight Procedures in the DoD FLIP (Terminal).

2.2.1. MAJCOM TERPS functions are responsible for submitting requests for new or amended instrument flight procedures and requests to cancel instrument flight procedures to the NGA flight information publications mailbox at **taps@nga.mil**. 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.

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

2.2.1.2. To ensure the Jeppesen® database is kept current, send a courtesy copy of each request (except for FTIP) to Jeppesen® at **document.control@jeppesen.com**.

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	GPD Signature Page	GPD Signature Page	GPD Signature Page	GPD Signature Page
	Maps/Charts & Drawings	Maps/Charts & Drawings	Maps/Charts & Drawings	Maps/Charts & Drawings

Procedures Function	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 IAW paragraph 13.12; 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 13.20 for additional package content requirements.

Note 4. See paragraph 2.3.5 of this AFMAN for instrument flight procedures developed by the FAA in accordance with FAA Order 8260.32F.

Note 5. Do not send any FTIP to Jeppesen®.
Note 6. See paragraph 5.2 for Flight Inspection Procedure Package content requirements.

2.2.1.3. When submitting a climb rate to the 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.

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

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

2.2.3.1. The effective date for instrument flight procedures, aeronautical data, and navigational fixes shall coincide with the effective dates established IAW the Aeronautical Information Regulation and Control (AIRAC) system. **(T-2)**. A description of the AIRAC system can be found in the DoD FLIP, *General Planning (GP)*, **Chapter 3**, paragraph 3-1, *General*. Effective dates can be found in the 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.

2.2.3.2. Coordinate the effective date with all concerned agencies (the NGA, the NFDC, the FAA, etc.) to ensure aeronautical charts and supporting data are not published in the DoD FLIP (Terminal) until after a successful flight inspection and all published procedural data is correct.

2.2.3.3. 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.

2.2.4. When requesting procedural change(s) to an instrument flight procedure distributed via loose-leaf format or published in the 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.

2.2.5. 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**.

2.2.6. 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 the DoD FLIP (Terminal) under any of the conditions below:

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

2.2.6.2. Before a required flight inspection;

2.2.6.3. Before required waiver approval; or

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

2.2.6.4.1. DAFIF cannot contain multiple instrument flight procedures with the same identification. Apply FAA Order 8260.3D, 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.

2.2.6.4.2. 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 the DAFIF and the DoD FLIP (Terminal).

2.2.7. 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:

2.2.7.1. Verification that all requested DAFIF updates have been made;

2.2.7.2. Waiver approval; and

2.2.7.3. Publication of all required fixes in the NFDD.

2.2.8. 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 the DoD FLIP (Terminal). Publish them in the graphic format when operationally required.

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

2.2.8.2. 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.

2.3. 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). **Note**: MAJCOM TERPS functions shall define any additional documentation requirements for new or original instrument flight procedures in the MAJCOM supplement to this AFMAN. **(T-2)**.

2.3.1. For AF developed instrument flight procedures, except as noted elsewhere in this AFMAN, the following are the minimum required coordination signatures. **Note**: Flight Inspection provides an approved FAA Form 8200-17, *Flight Inspection Procedure Control (FIPC)* (**Figure 5.1**):

2.3.1.1. Instrument procedure specialist;

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

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

2.3.1.4. MAJCOM TERPS.

2.3.2. Retain all source documentation relating to aeronautical or obstacle data revisions pertinent to the instrument flight procedure. Include correspondence between the unit and the 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.

2.3.3. GPD export documentation includes the following mandatory files:

2.3.3.1. [workspace name]-wks.pdf;

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

2.3.3.3. [procedure name]-BLD.pdf;

2.3.3.4. [procedure name]-FLIP.pdf;

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

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

2.3.3.7. [procedure name]-PUB.pdf;

2.3.3.8. [procedure name]-Waiver.pdf (when applicable). **Note:** 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;

2.3.3.9. [procedure name]-AutoEval.pdf;

2.3.3.10. [procedure name]-AERO.xml;

2.3.3.11. [procedure name]-ARI; and

2.3.3.12. The following Fix and Holding Data Records:

2.3.3.12.1. [fix name].rtf; and

2.3.3.12.2. [fix name].xml.

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

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

2.4. Revising Instrument Flight Procedures. Submit requests for revisions to procedural information on currently published instrument flight procedures to the NGA. When making multiple changes, document each change individually in the request. Establish a process to respond to requests from local flying organizations 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 the NGA make all required changes.

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

2.4.2. Textual ODPs also require the 'Original' or 'Amendment (number)' notations. Apply the naming guidance from FAA Order 8260.46G 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.

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

2.4.3.1. 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;

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

2.4.3.3. 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.

2.4.4. 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 the DoD FLIP (Terminal).

2.4.4.1. 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.

2.4.4.2. 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).

2.4.4.2.1. 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**.

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

2.4.5. 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:

2.4.5.1. The revised GPD Publication and Build Reports;

2.4.5.2. An additional Approach/Departure Signature Page;

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

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

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

2.4.6. Retain the original signature page and the original 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:

2.4.6.1. The instrument procedure specialist; and

2.4.6.2. MAJCOM TERPS.

2.4.7. 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):

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

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

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

2.4.7.4. Senior Operational Commander (or designated representative).

2.4.8. MAJCOM instrument procedure function responsibilities:

2.4.8.1. Develop and perform MAJCOM quality control review as defined in **Attachment 1**;

2.4.8.1.1. The 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.

2.4.8.1.2. The authority conducting this review signifies the reviewed procedure or chart meets the requirements of the MAJCOM quality control review by signing the AF 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".

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

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

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

2.4.8.4. Forward a request to the NGA for charting of the new controlling obstacle when the controlling obstacle changes in the final approach segment. Only the final approach

segment controlling obstacle is required to be charted on the instrument flight procedure. **Note**: Charting other obstacles is at the discretion of the MAJCOM TERPS authority.

2.5. Post Publication Review of Flight Information Publications and Other TERPS Related Data.

2.5.1. A thorough review of new or revised instrument flight procedures is required prior to the effective date to ensure the information produced by the NGA, either in the DoD FLIP (Terminal) (paper or electronic version) or via loose-leaf format, matches the instrument flight procedure package. When responsible for development and maintenance of instrument flight procedures at a location, complete post publication review as defined in **Attachment 1** on all NGA produced DoD FLIP (Terminal) and loose-leaf formatted instrument flight procedures.

2.5.2. 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:

2.5.2.1. Initiate the appropriate NOTAM IAW AFI Interservice Publication 11-208;

2.5.2.2. Forward a post publication review letter to the NGA that corrects the error(s) or omission(s); and

2.5.2.3. Document flight information publication review results IAW specific MAJCOM guidance.

2.5.3. 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.

2.6. Flight Information Publication Maintenance.

2.6.1. Establish a flight information publication maintenance system. Ensure all instrument flight procedures (including FTIP) published in the 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).

2.6.1.1. Establish a method to track each instrument flight procedure, each fix, and each waiver to criteria applicable to the instrument flight procedures published in the MAJCOM TERPS area of responsibility. **Note**: The MAJCOM TERPS manager is responsible for each AF owned navigational fix published within the applicable TERPS area of responsibility.

2.6.1.2. Track instrument flight procedures developed at domestic civil airports by the FAA IAW guidance outlined in FAA Order 8260.32F and published in the DoD FLIP (Terminal).

2.6.2. Initiate the 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], Digital Vertical Obstruction File

[DVOF], DAFIF, or Shuttle Radar Topography Mission [SRTM] data) or after manual edits are processed.

2.6.3. Establish a host nation point of contact for coordinating changes and resolving questions when publishing FTIP in the DoD FLIP (Terminal).

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

2.6.3.2. Compare new information against the old information and against what is currently published in the DoD FLIP (Terminal) or posted on the 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:

2.6.3.2.1. Host nation Aeronautical Information Publication (AIP);

2.6.3.2.2. US and host nation NOTAMs; and

2.6.3.2.3. Host nation AIRAC amendments.

2.6.3.3. 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.

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

2.7. Removing Instrument Flight Procedures from DoD Publications.

2.7.1. When a request to cancel an instrument flight procedure is received, coordinate deletion of the instrument flight procedure from the DoD FLIP (Terminal) with other agencies and using organizations (transient and tenant flying units, MAJCOM, other DoD service providers, host nation, etc.). The FAA must be notified when cancelling instrument flight procedures published within the 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.

2.7.2. When a FTIP published by the AF in the DoD FLIP (Terminal) is deleted from host nation source (AIP or other document) or after determining an AF developed and maintained instrument flight procedure is no longer required, send the request for deletion to the NGA. Courtesy copy the request (include any attachments) to Jeppesen® at **document.control@jeppesen.com**.

2.7.3. 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.

2.8. 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.

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

2.8.2. Include the following two notes in the planview of all instrument flight procedures developed, published, or reviewed by the AF that use true headings:

2.8.2.1. **Special Aircrew and Aircraft Authorization Required**; and

2.8.2.2. **All Bearings and Directions are True.**

2.8.3. Where grid navigation is used in the south latitudes, only depict grid bearings on instrument flight procedure charts. Orient these charts to Grid North. Include this note, "**All Bearings and Directions are Grid**", in the planview of all instrument procedures developed, published, or reviewed by the AF that use grid bearings.

2.8.4. 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 8260.3D, Section 10-4. Evaluate SA Category I ILS procedures by developing a Category II ILS procedure using GPD. When the Category II height above touchdown (HAT) is less than 150 feet, increase the 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 the ILS has restrictions, SA Category I is not authorized.

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

2.8.4.2. 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**."

2.8.4.3. Ensure all AF developed SA Category I procedures contain the following notes:

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

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

2.8.5. Instrument procedures published in true headings or in grid bearings instead of magnetic headings are *not* nonstandard and do not require waiver authority consideration.

2.9. 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.

2.10. 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.

2.11. Special Use Instrument Flight Procedures. When a special use instrument flight procedure is being produced and distributed in a loose-leaf format, ensure the effective start and termination dates are charted in the margin area. Send requests for all procedural and non-procedural changes to any instrument flight procedure published via loose-leaf format to the NGA. **Note**: Non-procedural changes to instrument procedures published via loose-leaf format by the NGA are not automatically updated.

2.11.1. 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. **Note**: Other aircraft and DoD components may use these procedures only after receiving aircrew command approval.

2.11.2. Waiver authority consideration and approval is required prior to being published or used when special use instrument procedures do not meet applicable criteria.

2.12. Visual Flight Rules (VFR) Procedures. Instrument procedure requirements for obstacle clearance do not apply to VFR procedures. VFR procedures are for use under AF and ICAO VFR cloud clearance and visibility minima rules as stipulated in AFI 11-202V3, *General Flight Rules*, **Chapter 6**, and AFMAN 11-217V2, *Visual Flight Procedures*.

2.12.1. VFR procedures may be published in local flying directives or in a locally-produced format. They may also be sent to the NGA for publication in the DoD FLIP (Terminal) or for charting in loose-leaf format.

2.12.2. Ensure the notes "**CAUTION: For use under VMC only**" and "**CAUTION: Pilot is responsible for terrain/obstacle avoidance**" are included in the planview of graphically depicted VFR procedures and in each VFR procedure published in textual format.

2.12.3. Identify VFR procedures IAW FAA Order 8260.3D, Section 1-6.

2.12.4. For clarity, include the note "**NOT FOR USE IN IMC**" in the planview.

2.12.5. Replace the entire approach minima line (MDA; HAT; height above airport (HAA); DA; decision height (DH); ceiling; and visibility) with the single abbreviation "**VFR**".

2.12.6. VFR procedures do not require flight inspection or waiver consideration.

2.13. Contingency Operations. When developing instrument flight procedures within sovereign host nation airspace, ensure coordination with host nation aviation and diplomatic officials is completed IAW **paragraph 13.15** of this AFMAN. Process requests for instrument flight procedures in support of contingency operations IAW this chapter and the following. **Note:** 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.

2.13.1. The 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.

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

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

2.13.2. 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.

2.13.3. MAJCOM TERPS functions may submit a Crisis/Combat Support request to the 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.

2.13.3.1. The 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 the NGA for publication in the DoD FLIP (Terminal). **Note**: Do not request instrument flight procedures in loose-leaf format to circumvent the normal production process outlined in DoD FLIP, *General Planning (GP)*.

2.13.3.2. When the NGA is unable to support a request, MAJCOMs may produce, locally process, and use the required instrument flight procedure until the NGA product is available. Ensure locally produced and published instrument flight procedure(s) match the 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.

2.13.4. 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 by completing all of the fields on the Special Aeronautical Information Request Form from the NGA at **https://aero.geointel.nga.mil/products/aero/sair/sairRequest.cfm**. **Note**: The use of Airfield Foundation Data does not make an instrument flight procedure nonstandard or require waiver consideration.

2.13.4.1. The suspense date requirement for crisis action support should be for less than two weeks from the date the Special Aeronautical Information Request Form is submitted; otherwise expect normal requirement processing timelines. Enter specific data requirements in the Special Aeronautical Information Request Form block.

2.13.4.2. The NGA has the ability to provide the following (including accuracies): Specific airfield coordinates and elevation (thresholds, hold lines, taxiways, etc.); NAVAID coordinates and heights; a visual search for undocumented obstacles within a 3 nautical mile (NM) radius and individual obstacle verification out to a 7 NM radius. The NGA can validate existing vertical obstruction data, identify any additional obstructions 50 feet AGL

or higher, and add those obstructions to the master vertical obstruction database in DVOF format.

2.13.5. Processing and developing instrument flight procedures for contingency operations.

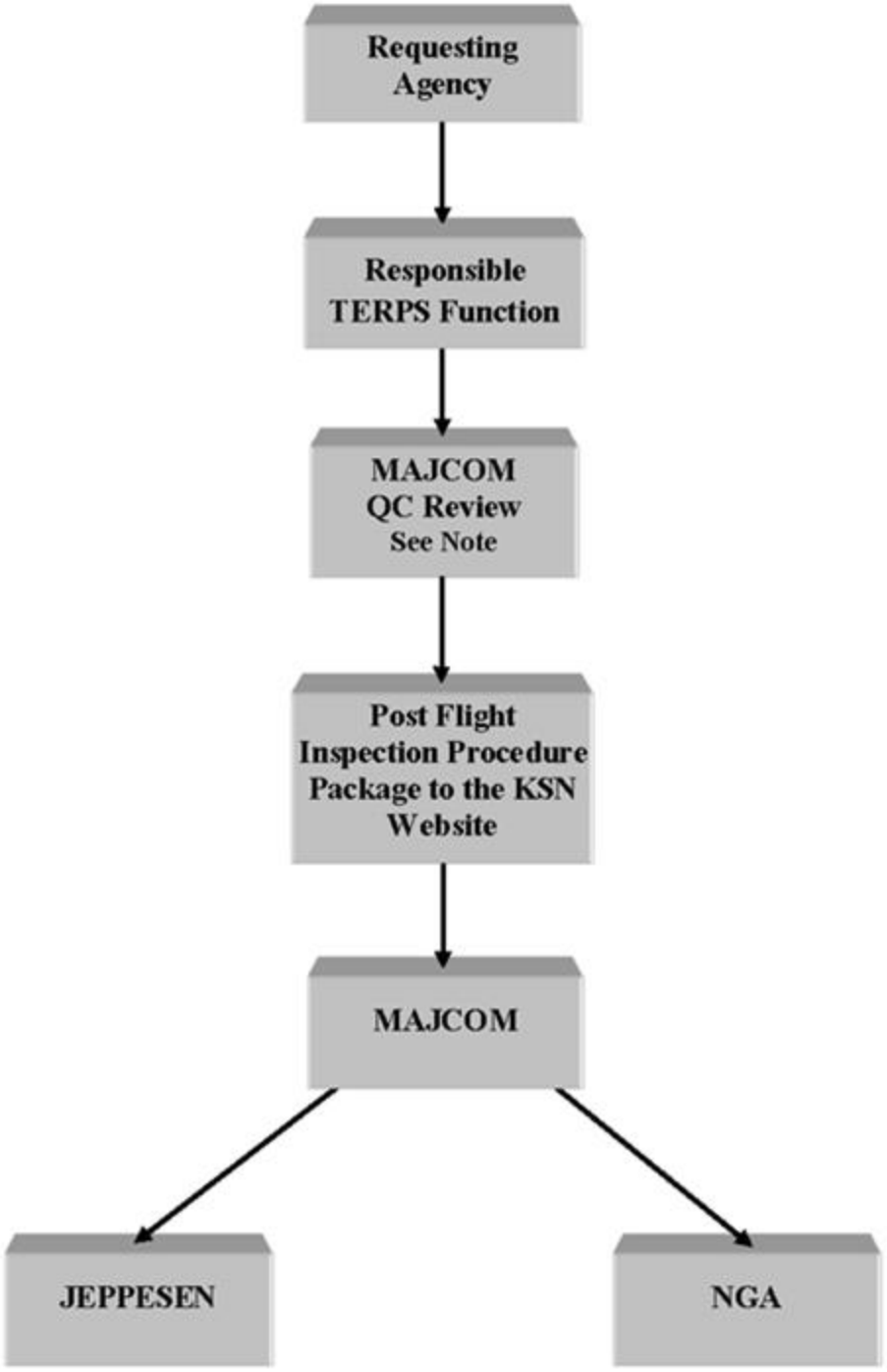
2.13.5.1. When the amount of manual computations, drawings, and other hard copy documentation required in these packages make it impractical to transfer them electronically, process IAW **Figure 2.1** via surface mail.

2.13.5.2. When using paper maps for map studies or manually developed instrument flight procedures, use current, appropriately scaled, paper maps for each segment of the procedure. Ensure hard copy maps meet the scale requirements in **Table 2.2** and are updated with current Obstruction Change File data and other obstacle data available from **https://dvof.geoint.nga.mil/index.cfm**. When the scale required is not available, use the next lower map scale. **Note**: The Obstruction Change File only reports point features, not line features. Line features are available with other NGA vertical obstruction products such as the Vector Vertical Obstruction Data output, Table Formatted Aeronautical Data Set - Obstacles output and shape files from Environmental Systems Research Institute, Inc.

Table 2.2. Map Scales Required for FTIP Criteria Validation or Instrument Flight Procedure Publication in the 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

Figure 2.1. Instrument Flight Procedure Processing and Aeronautical Radio Incorporated 424 Coding Flow for New or Amended Instrument Flight Procedures.



Note: For nonstandard procedures, do not schedule flight inspection prior to waiver approval.

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), SRTM data, the Digital Visual Flight Rules Sectionals (**http://www.faa.gov/air_traffic/flight_info/aeronav/digital_products/vfr/**), raster map and imagery products (Compressed Arc Digitized Raster Graphics, Controlled Image Base, and Vector Map products). The NGA distributes DAFIF and DVOF every 28 days. DTED and other products are updated as necessary by the NGA and the FAA Aeronautical Information Services. **Note**: Use SRTM data when DTED is not available or when operationally advantageous.

3.1.1. Provide updated obstacle data (revised description, height, coordinates, etc.) to the Aeronautical Infrastructure Division of the NGA via Aero Quality Feedback at **quality@nga.ic.gov**. **Note**: Numerous branches within the Aeronautical Infrastructure Division have the responsibility for updating the DVOF database.

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

3.1.2.1. Airport magnetic variation changes, NAVAID magnetic variation changes, and DAFIF updates must be documented by the instrument procedure specialist on the FAA hosted Airport Data Change website (**https://www.faa.gov/air_traffic/flight_info/aeronav/aero_data/**). **(T-3)**. Supporting documents may be attached if necessary. HQ AFFSA Safety of Navigation Division 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**: HQ AFFSA Safety of Navigation Division enters the effective date from the appropriate revision schedule published in the current DoD *General Planning (GP)* document.

3.1.2.2. 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 the DAFIF and corresponding data in the GPD publication report with the NGA on or before the procedure effective date. Notify HQ AFFSA Safety of Navigation Division at **hqaffsa.a3os@tinker.af.mil** when requested changes to the DAFIF are not complete or made in error. Ensure all required NOTAMs are issued on the published instrument flight procedure. A new submission to the FAA hosted Airport Data Change website is not required; HQ AFFSA Safety of Navigation Division 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 the 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 the DAFIF when developing instrument flight procedures is essential to flight safety.

3.1.2.3. Using the GPD Data Manager application, import updates to aeronautical and obstacle data upon receipt. **Note**: When using the DTED disk to update GPD, ensure the

disk being used is current by checking the disk's National Stock Number against the Defense Supply Center Richmond web page listing for that disk at **http://www.dla.mil/Aviation/Offers/Products/Mapping/Digital.aspx**.

3.1.2.3.1. Make manual edits as necessary based on OE/AAA case studies, new construction, NAVAID changes, host nation AIP changes, NOTAMs, etc. After new data is imported and after manual edits are processed, initiate the 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 the GPD Obstacle Properties Notes tab.

3.1.2.3.2. When AutoEval indicates a change has taken place, restore the procedure using the GPD 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, it is 'restored' and re-evaluated based on the current data environment. **Note**: AutoEval is limited to checking those instrument approach and departure procedures (DPs) that GPD currently supports.

3.1.2.3.3. When procedural changes are necessary, export the procedure and process an amendment. Document the completion of the AutoEval on the Procedure Log.

3.1.3. Aeronautical dataset differences. When runway construction, unprompted aeronautical database changes, etc., cause data disparities between the instrument flight procedure build report or official source survey data and the DAFIF or AeroNav2 aeronautical databases, consider the following tolerances to the location of the runway threshold. Changes that exceed the following tolerances require immediate NOTAM action and corrective actions to harmonize aeronautical databases with source survey data and flight inspection results:

3.1.3.1. Plus or minus 50 feet longitudinally;

3.1.3.2. Plus or minus 10 feet laterally; or

3.1.3.3. Plus or minus 3 feet vertically.

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 AF owned or operated locations within the Continental US and outside of the Continental US where the AF 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 AF instrument flight procedures, submit a copy of the survey to the NGA as an attachment to a Special Military Request requesting the survey data be added to the 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. HQ AFFSA TERPS Division 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 HQ AFFSA TERPS Division 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 authorities to confirm items to be surveyed (for example, runway threshold location, runway edges, NAVAIDs, airfield obstacles, etc.) prior to the arrival of the TAGGS team. **Note**: Survey specifications are contained in the NGA Airfield Survey Specification Document for the TAGGS Program. Current geodetic airfield surveys and the Airfield Survey Specification Document for the TAGGS program may be downloaded from **https://aerodata.nga.mil/AeroDownload/?section=taggs**.

3.3. Master Obstruction Chart Data. Except as noted in **paragraph 3.3.1**, a MOC is mandatory when establishing a new instrument procedure program at a location where the AF is responsible for development, publication, and maintenance of instrument flight procedures and when the AF has obtained approval from host nation aviation authorities to develop, maintain, and publish instrument flight procedures at a non-accredited location. The MOC is used to assist in the identification of obstructions on or near the airfield that are not normally included in digital products (for example, DVOF) used by GPD when no other source of airfield data (GeoBase, geodetic airfield surveys, etc.) is available. **Note**: A MOC is not required when only developing and using ATC charts; at any accredited host nation location; or at any host nation location when performing FTIP criteria validation for a FTIP review.

3.3.1. When maps are not available for MOC development at contingency locations, create a GPD database containing the most current DAFIF, DVOF and DTED covering each active workspace. Airfield Foundation Data may also be used in the workspace. Create a workspace (or workspaces) 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 using automation. The instrument procedure specialist shall document the lack of map availability in each affected procedure package. **(T-3)**.

3.3.2. 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. Topographical map equivalents may be used to support the obstacle search. **Note**: Digital geographic information systems or GeoBase Common Installation Picture maps may also be used for obstacle searches and to develop MOCs.

3.3.3. Construct a search area using Topographic charts (1:24,000; 1:25,000; 1:50,000; 1:62,500; or 1:100,000) and Civil Engineering maps.

3.3.3.1. 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).

3.3.3.2. 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. When

the edge of the map extends beyond 10 NM, limit this search area to 10 NM from the airport reference point.

3.3.3.3. 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. **Note**: Objects with a MSL elevation below the lowest threshold elevation at the airport may be excluded.

3.3.4. Enter all identified obstacles, terrain points and vegetation into the GPD obstacle database unless previously identified via digital ingestion (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 shall document the locations and heights of the following items within the splays depicted on the MOC consistent with airfield geometry (runway/ taxiway/ramp layout) **(T-3)**:

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

3.3.4.2. Taxiing aircraft, parked aircraft, and aircraft parking spots. Add the aircraft tail height to the obstacle database with a 3-foot vertical accuracy at the appropriate location with a horizontal accuracy equal to at least the fuselage length of the type aircraft;

3.3.4.3. 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 the 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. **Note**: When available, use the appropriate scale paper map for each segment of the procedure as defined in **Table 2.2**; and

3.3.4.4. Vegetation. When vegetation is present within the search area covered by the 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. GPD has the capability to add a vegetation allowance to the terrain model, however the increased MSL elevation for vegetation *is not applied* to DTED within the following areas and surfaces. **Note**: Because the vegetation allowance is not applied in these areas, a manual search for vegetation for addition to the MOC and entry into the GPD obstacle database is essential:

3.3.4.4.1. Conventional approach procedures. The vegetation allowance is not applied within 1.5 NM (2.8 kilometers for ICAO/NATO) around each runway threshold;

3.3.4.4.1.1. The vegetation allowance is not applied to nonprecision visual or Visual Guidance Surface (VGS) surfaces.

3.3.4.4.1.2. The vegetation allowance is not applied to precision visual, VGS, or final segment surfaces.

3.3.4.4.2. Area navigation (RNAV) approach procedures. The vegetation allowance is not applied within 1 NM (1.75 kilometers for ICAO/NATO) around each runway threshold;

3.3.4.4.2.1. The vegetation allowance is not applied to Lateral Navigation (LNAV) and Localizer Performance visual or VGS surfaces.

3.3.4.4.2.2. The vegetation allowance is not applied to Localizer Performance with vertical guidance, lateral navigation/vertical navigation (LNAV/VNAV), and Required Navigation Performance (RNP) visual, VGS, or final segment surfaces, or missed approach section 1.

3.3.4.4.3. RNP procedures. The vegetation allowance is not applied within 1 NM (1.75 kilometers for ICAO/NATO) around each runway threshold or to visual, VGS, final segment surfaces, or missed section 1; and

3.3.4.4.4. All Departure Procedures. The vegetation allowance is not applied within 1 NM (1.75 kilometers for ICAO/NATO) from the departure end of the runaway (within the Initial Climb Area).

3.3.5. In order 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).

3.3.5.1. 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 shall document the addition of the annual rate of growth in TERPS records. **(T-3)**.

3.3.5.2. When a vegetated (tree covered) area is identified within the obstacle identification splay, The instrument procedure specialist shall document the location of the vegetation as the point closest to the edge of the runway and identify the obstruction as multiple trees. **(T-3)**.

3.3.6. Obstacle accuracies.

3.3.6.1. When a vertical accuracy value is not applied to manually added obstacles, GPD automatically adds 125 feet to the obstacle height entered. To prevent this automatic addition, manually input an accuracy value. For example, the appropriate authority has provided the maximum height of any tree in a given area as 90 feet. Add the trees as 89-foot AGL trees with a vertical accuracy of ± 1-foot; GPD then evaluates the trees at 90 feet AGL.

3.3.6.2. Manually developed instrument flight procedures and manually developed instrument flight procedure segments require a map study that includes holding patterns, holding pattern buffer areas, and each initial approach fix area for terrain, vegetation, and man-made obstacles. When deriving data directly from paper map products, apply the appropriate horizontal and vertical accuracies from **Table 11.2**.

3.3.7. The instrument procedure specialist shall apply adverse assumption when determining the most critical height of un-measurable objects (trees, power poles, power lines, etc.). When

assumptions are made, document the source(s) used to determine the assumed values and retain in TERPS records. **(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; apply adverse assumption by using the 'one foot less than the next map contour line interval' technique. The following sub-paragraphs illustrate this technique. **Note**: Do not use printed or plotted Compressed Arc Digitized Raster Graphics maps in-lieu-of the appropriate scale paper map when conducting these map studies.

3.3.7.1. Given the following: map contour interval is 20 feet; the highest contour line identified within the applicable map study area is 300 feet; the reported height of the object is 100 feet AGL; and the vertical accuracy associated with the object is 25 feet.

3.3.7.2. Assume the MSL elevation value of the ground used to determine the MSL value of the obstacle to be 319 feet (320 – 1 = 319) in this example.

3.3.7.3. This value is then added to the reported AGL height of the object to derive the MSL elevation of the object (319 + 100 = 419). The vertical accuracy value associated with the object is then added to determine the final MSL value of the object for TERPS obstruction considerations.

3.3.7.4. Using the technique described above with the values provided, the object's final MSL height used to evaluate it for TERPS considerations would be 444 feet MSL (319 + 100 + 25 = 444).

3.3.8. Forward unit developed MOCs to the responsible MAJCOM for review and approval. Once the obstacle data (vegetation, buildings, towers, terrain points, etc.) identified on the MOC is included in the GPD obstacle database and a copy of the completed, original MOC is saved either electronically or hard copy, follow-up maintenance or review of the MOC is not required.

3.4. 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 the GPD database for evaluation purposes is allowed. Do not amend any instrument flight procedure or ATC chart based on the evaluation until it is determined actual construction has started.

Chapter 4

FLYABILITY CHECKS

4.1. Purpose. The intent of a flyability check is to determine whether or not 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 the DoD FLIP (Terminal). FTIP, regardless of accreditation status, do not require a flyability check prior to initial publication in the DoD FLIP (Terminal). **Note**: See **paragraph 5.3.2** for an exception.

4.2. 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.

4.3. Live (airborne) Flyability Checks.

4.3.1. 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:

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

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

4.3.1.3. 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;

4.3.1.4. 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

4.3.1.5. Verify the procedure provides for safety of flight using the guidance in AFMAN 11-217V1, *Instrument Flight Procedures,* or as explained in the procedure.

4.3.2. Live flyability checks should be flown under day visual meteorological conditions (VMC) by a DoD aircrew to the maximum extent possible. The MAJCOM Director of Operations (or equivalent) may approve live flyability checks by aircrews under his/her operational control at night after Operational Risk Management 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 ("desired aiming point") - the pilot should be able to maneuver the aircraft safely to touchdown.

4.3.3. When conducting live flyability checks at host nation airfields, aircrews may find it difficult to evaluate all segments of the procedure. However, they may be able to assess the

probability of satisfactory NAVAID and radio reception, and obstacle and terrain clearance, for certain portions of the instrument procedure that cannot be flown. For example, when the missed approach segment cannot be flown on arrival, an assessment may be made by the aircrew when departing. Assessment of segments and holding patterns not flown may be completed via simulator evaluation or tabletop review methods.

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

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

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

4.3.4.2.1. 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.

4.3.4.2.2. The depicted procedure should clearly indicate to which runway(s) a circling approach can be made, and what areas, if any, cannot be used during the circling maneuver.

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

4.4. 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 (including non-accredited FTIP) cannot be assessed. For example: the 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.

4.5. Requirements.

4.5.1. The flyability check should be performed within 120 days of the original request. When the flyability check cannot be completed within 120 days, re-accomplish the instrument flight procedure and obtain a new flyability check.

4.5.2. To the maximum extent possible, ensure a DoD aircrew completes the flyability check.

4.5.3. When a new, original, instrument flight procedure is scheduled to be flight inspected by the FAA before initial publication in the DoD FLIP (Terminal), or when changes to a currently published instrument flight procedure are scheduled for flight inspection, a flyability check is not required. Ensure any flyability check considerations are addressed by the flight inspection pilot on the flight inspection report. **Note**: Neither flyability check form would be required in this instance.

4.6. Documentation. Flyability checks are documented on AF Form 3992, *Instrument Procedure Flyability Check Instrument Approach Procedure (IAP),* or AF Form 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, the AF Form 3992 or AF Form 3993 is not required; maintain the flight inspection report with the TERPS package.

4.6.1. 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.

4.6.2. 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**.

4.6.3. The flyability check pilot is responsible for completing and signing the applicable flyability check form (see examples below in **Figure 4.1**, **Figure 4.2**, and **Figure 4.3**). 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.

Figure 4.1. 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

Figure 4.2. 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 tablle gradient, whichever is greater. Vigiliance 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)

Figure 4.3. ***Sample AF Form 3993, Instrument Procedure Flyability Check Departure Procedure (DP).***

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

Chapter 5

FLIGHT INSPECTION

5.1. Flight Inspection of Instrument Procedures. The FAA Flight Inspection Service Mission Control Team provides centralized scheduling, coordination, flight planning, and flight following for all FAA flight inspection activities. Except as indicated in this AFMAN, instrument flight procedures developed or amended by the AF for use under IFR shall be flight inspected IAW FAA Order 8200.1D, *United States Standard Flight Inspection Manual*, **Chapter 6**. **(T-1)**. Flight inspection IAW **paragraph 5.3** is required prior to the initial publication of FTIP in the DoD FLIP (Terminal). When the MAJCOM has been given the authority to develop and publish instrument flight procedures at a host nation location; apply **paragraph 1.6.3.2**, as required. International flight inspections are scheduled three months in advance; earliest possible notification of potential flight inspection requirements at locations outside of the Continental US improves the ability for flight inspection to respond in a timely manner. To determine whether or not an amendment needs to be evaluated via an actual flight inspection, refer to FAA Order JO 8200.44B, *Flight Inspection Services Instrument Flight Procedure Coordination*, **Chapter 2**. N**ote**: Flight inspection requirements in overseas theaters may be delayed or prohibited due to the requirement for country clearance and diplomatic visa requests.

5.2. Flight Inspection Procedure Package. Develop and process the flight inspection procedure package IAW guidance from FAA Order JO 8200.44B, and as amended in this chapter. The flight inspection procedure package shall include all associated electronic instrument flight procedure documents. **(T-1)**. Arrange the package contents IAW FAA Order JO 8200.44B, **Chapter 5**.

5.2.1. Flight inspection procedure package cover letter. Arrange the cover letter IAW FAA Order JO 8200.44B, **Chapter 5**.

5.2.1.1. 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."

5.2.1.2. Indicate how DPs are to be published; either in a graphic or a textual format.

5.2.1.3. When applicable, the instrument procedure specialist must document the Circling Approach Radius. **(T-3)**.

5.2.2. 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**."

5.2.3. Procedure Publication Report. Include each GPD produced signature page with all applicable signatures.

5.2.4. For nonstandard procedures, ensure applicable waiver documentation is also included. **Note**: Do not schedule flight inspection prior to waiver approval.

5.2.5. Include flight inspection maps IAW FAA Order JO 8200.44B, **Chapter 2**.

5.3. FTIP Flight Inspection Requirements.

5.3.1. FTIP based on non-accredited host nation source require flight inspection or flight validation prior to the initial publication in the DoD FLIP (Terminal). This requirement does not apply after initial publication in the DoD FLIP (Terminal). Any one of the following three items satisfy the flight inspection or flight validation requirement:

5.3.1.1. Host nation source, the appropriate US Defense Attaché Office, or the MAJCOM TERPS authority verifies that flight validation is being performed on the FTIP as described in ICAO Doc 8168 OPS/611, Vol II, Part I, Section 2, **Chapter 4**, **paragraph 4.6**;

5.3.1.2. Host nation source, the appropriate US Defense Attaché Office, or the MAJCOM TERPS authority verifies that flight inspection is being performed on the FTIP IAW ICAO or FAA flight inspection requirements; or

5.3.1.3. An air carrier operating under the *Operating Requirements: Domestic, Flag, and Supplemental Operations*, 14 C.F.R. § 121, routinely serves the location.

5.3.1.3.1. 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)**.

5.3.1.3.2. When the air carrier has established restrictions, attempt to obtain and evaluate these restrictions to determine whether or not they should be applied to the DoD published procedure.

5.3.2. When the instrument procedure specialist is unable to validate the requirements defined in **paragraph 5.3.1.1** and **paragraph 5.3.1.3.2**, a flyability check must be conducted IAW **Chapter 4** of this AFMAN on non-accredited FTIP prior to initial publication in the DoD FLIP (Terminal). **(T-3)**.

5.4. Flight Inspection of Special Use Instrument Flight Procedures.

5.4.1. 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:

5.4.1.1. The special use procedure has received a live (airborne) flyability check that verifies the controlling obstacle and NAVAID reception in each segment of the procedure;

5.4.1.2. 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 sortie being performed;

5.4.1.3. The special use procedure uses NAVAIDs that have been flight inspected; and

5.4.1.4. 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). **Note:** This restriction does not apply to self-contained approaches, ASR or PAR procedures.

5.4.2. The 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 shall 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)**.

Figure 5.1. 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)

5.5. Best Fit Straight Line Application to Threshold Crossing Height. Do not use any flight inspection derived best fit straight line reference datum height data when developing instrument flight procedures.

Chapter 6

IMPLEMENTING FEDERAL AVIATION ADMINISTRATION ORDER 8260-3D

6.1. Paragraph 1-2-3. Approval. Refer to guidance in AFI 32-1042, *Standards for Marking Airfields*, and Unified Facilities Criteria 3-260-01, *Airfield and Heliport Planning and Design*, as needed. AFI 32-1044, *Visual Air Navigation Systems*, and Unified Facilities Criteria 3-535-01, *Visual Air Navigation Facilities*, define requirements and establish standards for all visual air navigation facilities at AF locations within the Continental US and at overseas locations supporting AF flight operations. **Note**: Non-compliance with these directives may require waiver by Civil Engineering authorities but do not require TERPS waiver consideration.

6.2. Paragraph 1-3-1. Responsibility. Notify the Regional Airspace and Procedures Team through the appropriate AF Representative to the FAA when instrument flight procedures within the NAS are canceled at military airports and when military instrument flight procedures at civil airports are no longer required.

6.3. Paragraph 1-4-2. Nonstandard IFPs. Process violations to standard instrument procedure criteria IAW **paragraph 1.3** and **paragraph 1.4** of this AFMAN when developing instrument flight procedures or when validating FTIP based on non-accredited host nation source for publication in the DoD FLIP (Terminal).

6.4. Paragraph 1-4-3. Amendments. Process non-procedural changes IAW DoD FLIP, *General Planning (GP)*, **Chapter 11**, paragraph 11-2, *Revisions*. Process procedural changes IAW **paragraph 2.4** of this AFMAN.

6.5. 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 the NGA. Limit the combining of instrument flight procedures to the conditions of this paragraph. When excessive chart clutter results, do not request combined charting.

6.5.1. VOR/distance measuring equipment (DME) and VOR procedures, VOR/DME and TACAN procedures predicated on VORTAC facilities may be combined by the NGA for publishing on a single chart. Ensure the following when making this request:

6.5.1.1. Each instrument flight procedure is developed as a stand-alone procedure;

6.5.1.2. Each instrument flight procedure is sent to flight inspection as a stand-alone procedure;

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

6.5.1.4. The final and missed approach courses are identical on each procedure.

6.5.1.4.1. The final approach fix (FAF)/precise final approach fix (PFAF) location and altitude, any stepdown fixes and altitudes are identical on each procedure.

6.5.1.4.2. The missed approach instructions are identical on each procedure.

6.5.2. ILS and localizer procedures may be developed in GPD as a combined instrument procedure prior to flight inspection and publishing. Ensure the localizer box is checked so that both the localizer and the ILS are built simultaneously.

6.5.2.1. Send a single package with both procedures to flight inspection and then to the NGA for publication.

6.5.2.2. Whenever a VDP is published for the localizer procedure on any ILS procedure, indicate the VDP applies only to the localizer by ensuring **"LOC only"** is published on the profile view. **Note:** When required due to space limitations in the profile view, the NGA identifies the procedure to which the VDP applies with an asterisk (*) or other symbol.

6.5.3. Apply FAA Order 8260.19H, paragraph 8-6-7.d.(1) to AF 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.

6.5.3.1. 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 the FAF to threshold crossing height (TCH), publish the greatest VDA along with the 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**.

6.5.3.2. 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.

6.5.3.3. Annotate the stepdown fix altitude of all ILS and RNAV procedures with **"LOC only", "LNAV only",** or **"AZ only"**, as applicable, in the profile view.

6.6. Paragraph 2-1-4-b. Climbing on departure 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. **Note:** Specify a "climb to" altitude or a fix where the minimum climb gradient can be resumed.

6.6.1. Departure climb gradients. Apply climb gradient guidance from FAA Order 8260.46G, and FAA Order 8260.3D, paragraph 14-1-4. AF development of DPs and Diverse Vector Areas requiring climb gradients 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 8260.3D, paragraph 14-1-4.a. **Note:** When a lower climb gradient is desired and can be achieved, apply the Military Option from the same paragraph.

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

6.6.1.2. Use the Military Option formula where the AF exercises TERPS authority at host nation locations and at all AF 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.

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

6.6.2. Precision missed approach climb gradients. Apply FAA Order 8260.3D, paragraph 10-3-4. Except for the guidance pertaining to the completion of FAA forms, also apply FAA Order 8260.19H, paragraph 8-6-6.f.(2) and paragraph 8-6-7.a through paragraph 8-6-7.h. AF development and publication of precision procedures requiring missed approach climb gradients that exceed 425 feet per NM is authorized and waiver of TERPS criteria is not required.

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

6.6.3.1. 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 the 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, AF development and publication of nonprecision missed approach procedures requiring climb gradients that exceed 200 feet per NM (400 feet per NM for rotary wing) is authorized and waiver of TERPS criteria is not required. Use **Figure 6.1** and the formulas in **paragraph 6.6.3.2** and **paragraph 6.6.3.3** to establish the climb gradient termination altitude and a missed approach climb gradient for these conventional, nonprecision approach procedures.

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

Table 6.1. Formula.

$$CG_{term} = (48 \times D) + O_{elev} + MDA - OCS_{elevMAP}$$

6.6.3.2.1. Round the result up to the next 100-foot increment when calculating the missed approach climb gradient (**paragraph 6.6.3.3**).

6.6.3.2.2. Request publication of the note "**CAUTION: Missed Approach Minimum Climb Rate to** (rounded CG_{term} altitude)" above the minimum climb table.

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

Table 6.2. Formula.

$CG = \frac{CG_{term} - MDA}{D}$

6.6.3.3.1. 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.

6.6.3.3.2. 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. The NGA calculates and publishes the subsequent vertical velocity values from 120 to 360 knots indicated airspeed, as required, for the table.

Figure 6.1. 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

6.6.4. When establishing or revising instrument flight procedures within the 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 AF instrument flight procedures at AF locations outside the NAS.

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

6.7. Paragraph 2-1-6. Positive Course Guidance (PCG). Apply PCG when developing missed approach segments (**Figure 6.2**). When PCG cannot be established within 10 NM of the 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 "**Missed approach requires use of RNAV or ATC RADAR monitoring**" on the planview. **Note**: This guidance is not applicable when publishing FTIP in the DoD FLIP (Terminal) or when validating FTIP for a FTIP review.

6.8. Section 2-2. Standard Terminal Arrival (STAR) Procedures. When a requirement for a STAR exists that cannot be met by the FAA, develop STARs only when feeder routes and initial approach segments do not suffice. 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 the STAR. These FAA Forms are available from the HQ AFFSA Airfield Operations Directorate SharePoint. See FAA Order 8260.19H, **Chapter 4**, Section 4-5 for STAR documentation guidance. **Note**: Do not apply this guidance when publishing FTIP in the DoD FLIP (Terminal), when validating FTIP for a FTIP review, or to AF instrument flight procedures at AF locations outside the NAS.

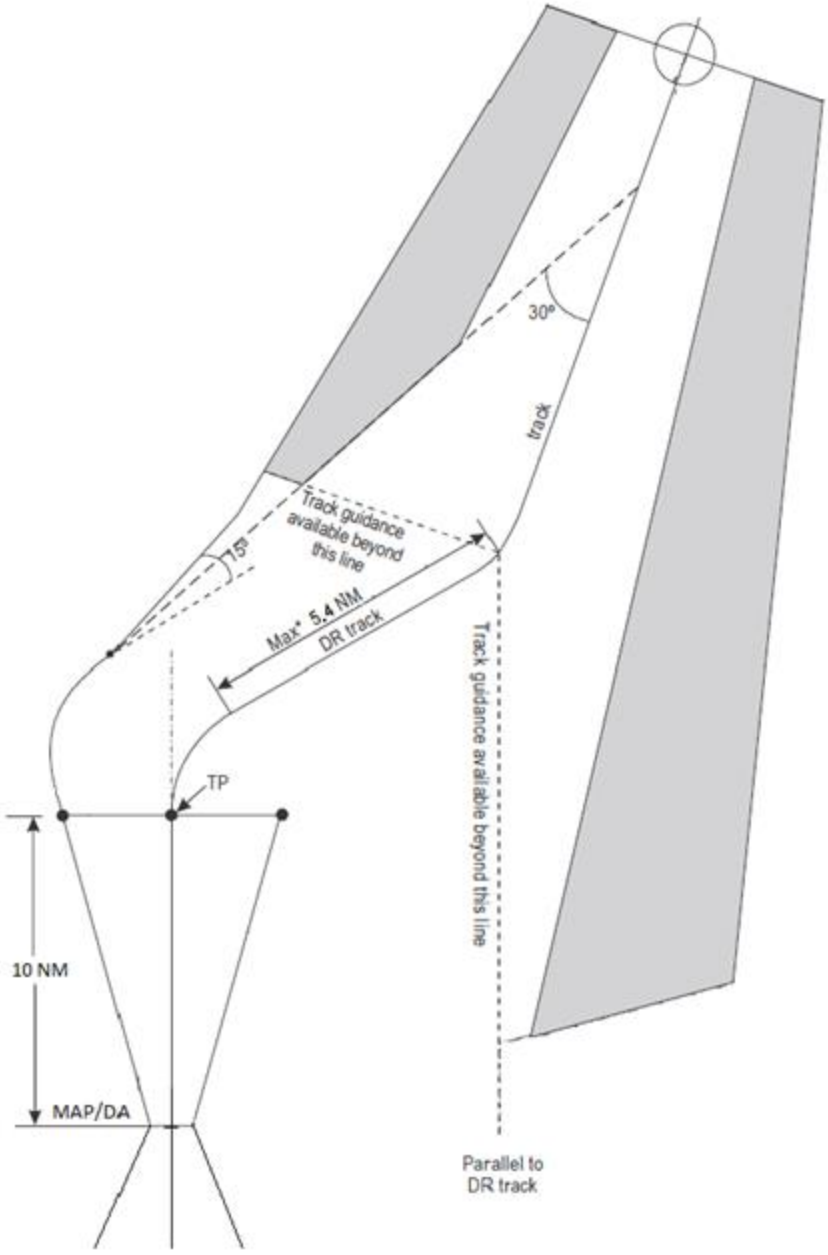
6.9. Paragraph 2-4-3.a.(1) Straight Courses. When the turn between initial sub-segments is over a facility and exceeds 90°, a lead radial or bearing which provides at least a 2 NM lead *is not* required.

6.10. 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).

6.11. 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**."

6.12. 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 6.2. Missed Approach Positive Course Guidance.



6.13. Paragraph 2-5-3.b.(1) Length.

6.13.1. When unable to comply with the minimum intermediate approach segment length outside the NAS, waiver consideration is not required. Mitigate this nonstandard condition by annotating the procedure with a note. Example: **CAUTION: Short intermediate segment; recommend early configuration**.

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

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

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

6.15.1. 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.

6.15.2. Vertical descent angle. When the instrument procedure specialist is constructing nonprecision approach procedures IAW paragraph 2-6-2, 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 the VGSI angle is not between 2.50° and 3.50° or when the VGSI TCH is not within the parameters of FAA Order 8260.3D, **Chapter 10**, Table 10-1-1, 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 the VGSI angle for a runway, publish the appropriate note from FAA Order 8260.19H, paragraph 8-6-9.m.

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

6.16.1. Do not establish a VDP for ASR approaches.

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

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

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

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

6.18.1. 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.

6.18.2. 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.

6.18.3. Do not publish a VDP for sidestep maneuvers.

6.18.4. 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.

6.19. Paragraph 2-8-1. Missed Approach Segment. Missed approach segments using DME arcs are nonstandard and require waiver authority consideration. **Note**: When alternate missed approach instructions are required, provide them to ATC facility management.

6.20. Paragraph 2-8-3. MAP. A crossing radial may be used to define the 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 the MAP at or prior to the first usable landing surface. The on-airport NAVAID may be identified as the MAP only when a usable, satisfactory DME fix or crossing radial is not available.

6.21. 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.

6.21.1. 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 6.6** and publish a climb gradient that eliminates the penetration.

6.21.2. 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 (AF 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 on the planview. **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)**.

6.22. 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 the MDA or visibility. Waiver authority consideration is not required. **Note**: Justify criteria violations by entering the operational requirement into GPD and referencing this paragraph number.

6.22.1. 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.

6.22.2. 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.

6.22.3. 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.

6.23. 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.

6.24. Paragraph 3-1-2. Establishment. Establishing and publishing alternate minima for AF 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.

6.25. Paragraph 3-1-2.c. Approach lighting systems. Apply this guidance to all instrument procedures developed by the AF and to all FTIP published in the DoD FLIP (Terminal) or posted to 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.

6.25.1. 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.

6.25.2. 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.

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

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

6.27. Paragraph 3-3-2.c.(4)(b). 20:1 OIS. Restrict night operations when the 20:1 OIS is penetrated and the 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 8260.19H, 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).

6.27.1. When a VGSI system is installed:

6.27.1.1. 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

6.27.1.2. Also chart the following note to inform AF 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.**"

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

6.27.2.1. 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);

6.27.2.2. 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**";

6.27.2.3. Also chart the following note to inform AF 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

6.27.2.4. 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.

6.27.3. When numerous like obstacles need to be annotated while charting the notes in **paragraph 6.27.1** and **paragraph 6.27.2**, 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**.

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

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

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

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

6.30.1. Apply guidance from this paragraph and Table 10-1-1 when determining the TCH value for precision procedures. Use "AFMAN 11-230, **paragraph 6.30**" as justification to TCH violations on precision approach procedures and approach with vertical guidance procedures based on ICAO Doc 8168 OPS/611, Vol II, criteria.

6.30.2. 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: "**Warning: LOW TCH –** (number) **feet**." **Note**: Currently, GPD does not output a charting note for the low TCH.

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

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

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

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

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

6.32.4. 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 the DA. **(T-1)**.

6.32.5. 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)**.

6.33. Section 11-2. Radar Approaches. Do not publish a TCH or a descent gradient for ASR approach procedures. When required, calculate recommended altitudes IAW paragraph 11-2-5.g. When requested or when required by host nation authorities, round each recommended altitude to the nearest 100-foot increment.

6.34. Paragraph 12-2-2. PinS Approach. Except for helicopter point-in-space (PinS) procedures, these are special use instrument procedures and require annotation per **paragraph 2.11** of this AFMAN.

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

6.34.2. Apply **paragraph 2.12** of this AFMAN to PinS procedures when all appropriate instrument procedure criteria has not been applied.

6.35. Chapter 13. VOR/DME RNAV. Do not apply any guidance from this chapter.

6.36. Paragraph 14-1-3. Departure OCS Application. Unless specified otherwise in this AFMAN, the departure OCS begins at the departure end of runway at the departure end of runway elevation *even when a clearway is present.*

6.37. Paragraph 14-1-3.a. Low, close-in OCS penetrations. Publish the location of low, close-in obstacles IAW guidance in FAA Order 8260.46G. Sample takeoff obstacle notes can be found in FAA Order 8260.46G, 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.

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

6.37.2. 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.

6.38. Formula 14-1-4. 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.

6.39. Paragraph 14-1-4.d. Reduced Takeoff Runway Length (RTRL). Do not apply the RTRL option when any obstruction penetrates the 40:1 OCS by more than 35 feet.

6.40. Paragraph 14-1-6. Initial Climb Area (ICA). Do not develop departures requiring a turn prior to reaching 400 feet above the departure end of runway elevation.

6.41. Paragraph 14-3-2. 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.

6.41.1. 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.

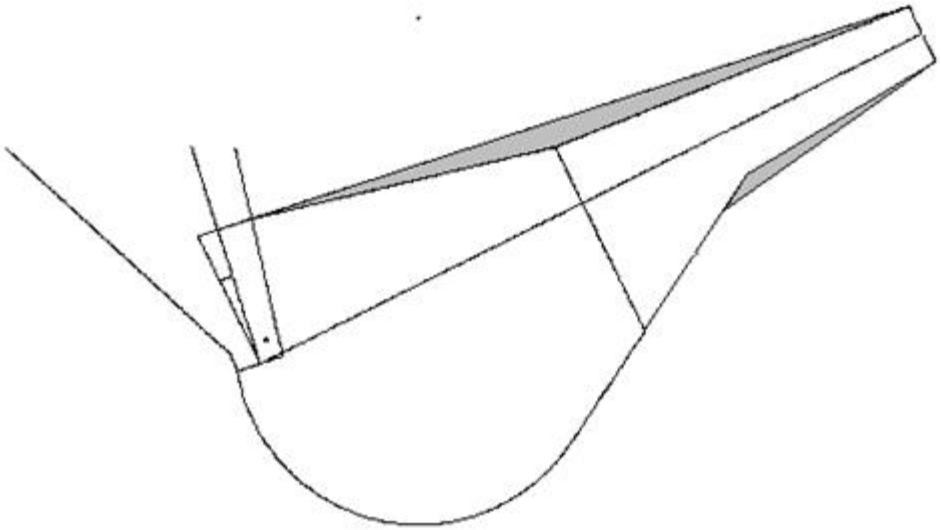
6.41.2. Publish headings (not DR tracks) to be flown. For example: "**Climb heading 220 to 3000 …**" or "**Climbing left turn direct ABC VOR …**"

6.42. Paragraph 14-3-4. Turning Segment Construction. Apply a minimum airspeed of 310 knots indicated airspeed to Category E aircraft *at all altitudes*.

6.43. Paragraph 14-3-6. Multiple Turns. Apply this criteria to all departures with turns equal to or greater than 90° regardless of the number of turns.

6.43.1. 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 6.3**).

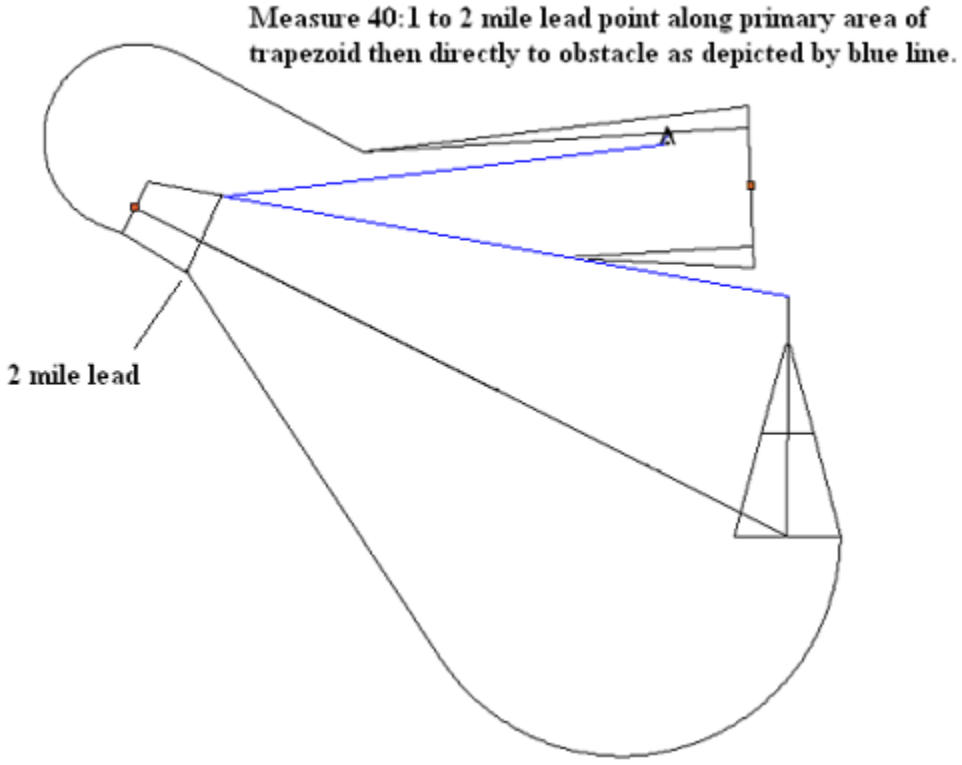
Figure 6.3. Outer Boundary Turn Expansion Continued to Join the Next Segment.



Outer boundary turn expansion continued to join next segment.

6.43.2. 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 6.4**).

Figure 6.4. Distance Measurements for Obstacle Evaluations; Turns Greater than 90°.



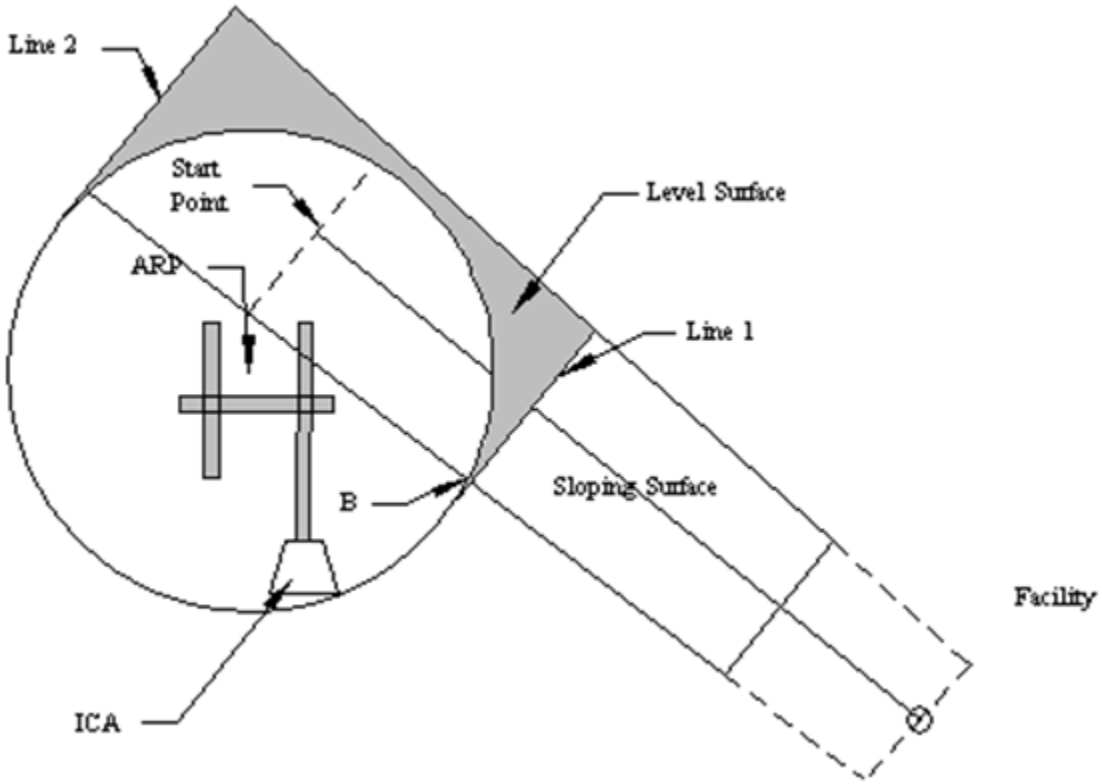
6.44. Section 14-4. Visual Climb Over Airport (VCOA). Develop a VCOA procedure in conjunction with an ODP per FAA Order 8260.46G, Table 2-1-1, ODP Development Combinations. Publish the VCOA procedure in the IFR Take-off Minimums and Departure Procedures section of the DoD FLIP (Terminal) in a textual 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 the 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.

6.45. Paragraph 14-4-3. VCOA Assessment.

6.45.1. 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.

6.45.2. 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 6.5**) and bounded by the side of the basic route outside of the visual climb area (shaded area of **Figure 6.5**).

Figure 6.5. Basic Visual Climb Over Airport Area Extension.



6.46. Paragraph 14-4-4. Ceiling and Visibility. Publish ceiling and visibility IAW FAA Order 8260.46G**.**

6.47. Paragraph 14-4-5. Published Annotations. Publish low, close-in obstacle notes IAW **paragraph 6.37**; do not publish other obstacles identified in the VCOA evaluation. Also, apply guidance from FAA Order 8260.46G, **Chapter 2**.

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

6.47.2. 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.

6.47.3. 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.**"

6.48. Section 14-5. Diverse Vector Area (DVA) Assessment. Apply the guidance from this section.

6.49. Section 17-2. Pattern Components. Except as noted in the sub-paragraphs below, apply holding pattern criteria as established in FAA Order 8260.3D, **Chapter 17**. Apply guidance from ICAO Doc 8168 OPS/611, 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 IAW guidance in FAA Order 8260.19H, paragraph 8-5-2.

6.49.1. Paragraph 17-2-2. Outbound Leg Length. Do not request depiction of standard (timed) holding leg lengths within any holding pattern on the planview.

6.49.2. Paragraph 17-2-3. Maximum Holding Airspeed. Develop all holding patterns to accommodate a maximum holding airspeed of 310 knots indicated airspeed. Except as noted in **paragraph 6.52** of this AFMAN, apply the values from Table 17-7-1. 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 17-3-1 and ensure the airspeed used with the smaller pattern is noted within the holding pattern on the planview.

6.50. Paragraph 17-3-6. 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.

6.51. Paragraph 17-7-1. Climb-in-Hold Evaluations. When missed approach climb-in-hold is required, apply the applicable missed approach instruction guidance from FAA Order 8260.19H, paragraph 8-6-6.g.

6.52. Paragraph 17-10-4. RNAV Holding Patterns. Apply FAA Order 8260.3D, Section 17-10 when developing RNAV holding. Use the values specified in Table 17-7-1 under the "**15-29.9 NM and RNAV**" column when determining RNAV holding pattern sizes.

6.53. Paragraph 17-12-1. Turbulent Air Operation. Provide all restrictions related to turbulent air holding to the ATC facility manager.

6.54. Self-Contained Approach (SCA) Criteria. SCAs are special use procedures restricted to aircraft with MAJCOM approved airborne systems under the command of the approving authority. MAJCOM flying authorities are responsible for the safety and flyability of SCAs developed by their personnel. Waiver consideration of violations to instrument procedure criteria is at the discretion of the developing command authority. MAJCOM specific waiver processes should be documented in a MAJCOM supplement to this manual. 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 IAW FAA Order 8260.3D.

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

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

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

6.54.2. Intermediate Approach Segment. Apply FAA Order 8260.3D, **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 the MSA (without ATC radar).

6.54.3. Final Approach Segment. Apply FAA Order 8260.3D, **Chapter 2**, Section 2-6. **Exceptions**:

6.54.3.1. 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 self-contained approach procedures in GPD with this paragraph. **Note**: Waiver authority consideration is not required;

6.54.3.2. 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

6.54.3.3. Area. The area considered for obstacle clearance begins at the 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.

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

6.54.3.3.2. 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.

6.54.3.3.3. 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.

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

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

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

6.54.7. Develop a single sector (360°) MSA unless an operational requirement exists. Coordinate a multiple sector MSA with the requesting agency prior to implementation to ensure the users can identify multiple sectors.

6.54.8. 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 a self-contained approach as RNAV waypoints. Include RNAV waypoints on self-contained approach procedures to assist aircrews in maintaining situational awareness.

6.54.8.1. Fix error for all self-contained approach fixes is ± 0.5 NM.

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

6.54.8.3. Document waypoints associated with the published self-contained approaches on FAA Form 8260-2 IAW FAA Order 8260.19H and this manual.

6.54.9. When using GPD to develop self-contained approaches, select “ARA” under approach type.

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

6.54.11. Ensure the specific equipment used to support the self-contained approach is clearly annotated on the published plate. Example note: “**FOR USE BY AIRCRAFT EQUIPPED WITH AIRBORNE RADAR**.”

Chapter 7

IMPLEMENTING FEDERAL AVIATION ADMINISTRATION ORDER 8260.19H

7.1. 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.

7.1.1. 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 the arrow at the first dropdown window and then select 'Title 32 – *National Defense*'. Then click on the 'Go' button; select the '800-1099' option under the 'Browse Parts' column and scroll down/select Part 989.

7.1.2. 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*.

7.1.3. Coordinate the 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 IAW AFI 32-7063, *Air Installations Compatible Use Zones Program,* or other environmental resources.

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

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

7.2.1. 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.

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

7.2.1.2. Holding Patterns. An ESV evaluation is not required when portions of the holding pattern (other than the primary holding fix) are outside the service volume of the NAVAID. That is, when the primary holding fix is within the service volume of the NAVAID, an ESV is not required.

7.2.2. When an ESV evaluation is indicated for US owned and operated NAVAIDs at AF locations within the Continental US, access the on-line ESV request form via the FAA's public web site at **http://www.faa.gov/about/office_org/headquarters_offices/ato/service_units/techops/safety_ops_support/spec_management/library/esvms.cfm**. 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. Annotate the appropriate NAVAID 3-letter identification and frequency. Enter the remaining information on the on-line form as follows:

7.2.2.1. General Information. Enter the name of the point of contact and the street mailing address in the 'From:' space; include zip code. Enter an airspace docket number only if

the request is associated with an airspace action. The 'State' space is auto-filled with the two-letter state abbreviation where the NAVAID is located;

7.2.2.2. Facility Data. Enter the instrument approach or departure procedure title in the 'Chart Name' field. For a new instrument procedure, enter the procedure name as specified in the flight inspection package. The remaining fields are auto-filled IAW data stored in the system; and

7.2.2.3. Expanded service volume data. Enter the radial(s) required, the minimum and maximum MSL altitudes desired, and the NM distances required. Enter all operational use requirements that are beyond the standard service volume. **Note:** Enter altitudes as follows: '040' for 4,000 feet and '450' for 45,000 feet, etc.

7.2.2.3.1. The 'Requirement' space is limited to approximately 250 characters. It should contain a specific narrative addressing all requirements for flight inspection during the ESV evaluation.

7.2.2.3.2. The 'Routing Symbol' space is not used for electronic routing as may be expected and is limited to approximately 11 characters. Simply enter the abbreviation and office symbol for the MAJCOM making the request.

7.2.3. Submit the completed ESV request by clicking the blue 'Submit' button at the bottom of the on-line form. When the Expanded Service Volume Management System data submission request is successful, the system assigns a tracking number.

7.2.4. After a successful transmission of the ESV request, various email confirmations are sent as the request is being routed to the appropriate offices for updating in the Expanded Service Volume Management System. For example, the module shows both the date the request was sent to the Frequency Management Office and the date the request was approved. Frequency management guidance can be found in FAA Order 6050.32B, *Spectrum Management Regulations and Procedures Manual*. **Note**: A phone listing of the FAA Regional Service Area Frequency/Spectrum Management Offices may be downloaded from **http://www.faa.gov/about/office_org/headquarters_offices/ato/service_units/techops/safety_ops_support/spec_management/locations/fmos.cfm**.

7.2.4.1. To ensure the 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.

7.2.4.2. 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. Retain a print-out of the completed and approved ESV in the procedure package. Ensure ESV results submitted to the FAA on the applicable facility data form are reflected in the FAA's datasheet website at **http://webdatasheet.faa.gov/**. **Note**: An ESV requires specific 'NAVAID tuning' during the ESV flight evaluation. Coordination with the MAJCOM NAVAID maintenance office is essential to ensure qualified maintenance personnel are available during the evaluation.

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

7.2.6. 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.

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

7.3.1. Request the current magnetic variation for AF locations via the TERPS helpdesk and apply the guidance from Section 2-5 when implementing, maintaining, and updating Epoch Year magnetic variation values on AF owned and operated airports and NAVAIDs.

7.3.2. Notify the HQ AFFSA Maintenance and Policy Directorate at **HQAFFSA.XM.ATCALS.1@us.af.mil** when the magnetic variation 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.

7.3.2.1. Include ASR, PAR, 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 the AF 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.

7.3.2.2. Once this timeline is established, provide the revised magnetic variation value and the effective date to FAA Aeronautical Information Services, the NGA, and for Continental US locations, to the NFDC. The NFDC publishes the change in the NFDD. Coordinate the new date with all affected agencies when the proposed effective date needs to be revised.

7.3.3. At least 160 days prior to the desired effective date, go to **https://www.faa.gov/air_traffic/flight_info/aeronav/aero_data/** and select 'Airport Data Changes (Military)' under the 'Submit Aeronautical Data' heading.

7.3.3.1. Select 'Military Airport Data Change Form' to open the NFDC Portal Login. Enter the requested information to open the Airport Data Change Form (Military).

7.3.3.2. Select "Military" from the "Airport Data Change Type:" dropdown menu.

7.3.3.3. Select "OTHER" from the "Military Publication:" dropdown menu.

7.3.3.4. Determine the official to enter as the "Authorizing Official."

7.3.3.5. Enter "See attached worksheet" or "See attached host nation NAVAID data list", as applicable, in both the "Revisions From:" and the "Revisions To:" text entry boxes.

7.3.3.6. Complete the Supporting Documents section by uploading the applicable magnetic variation worksheet.

7.3.4. Access and complete the Magnetic Variation Declination Request form from the HQ AFFSA Airfield Operations Directorate SharePoint under "TERPS" then "TERPS Resources" and then "Forms". Use this form's 'PTS Estimated Chart Date' dropdown box to select the effective date for the new magnetic variation value. The date should coincide with the flight information publication and the DAFIF publication date. **Note**: Ignore the 'Lead/Manager' and 'PIT' buttons on the form that apply only to the FAA.

7.3.5. Validate all information and save the Magnetic Variation Declination Request form as a '.pdf'. Upload the completed '.pdf' version to the NFDC Airport Data Change Form (Military) form (under 'Supporting Documents') and select the submit button. Retain the 'Data Submission Receipt Tracking Number' for future reference.

7.3.6. Digital ASR systems are *normally* aligned to true north. Older Digital ASR systems aligned to magnetic north are being realigned to true north by maintenance personnel. The operations support facility ensures associated STARS equipment displays the proper radar presentation.

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

7.4. Section 2-6. Notices to Airmen (NOTAMs). Apply the applicable guidance from AFI Interservice Publication 11-208, *Department of Defense Notice to Airmen System.*

7.5. Section 2-10. Navigational Fixes. The NFDC maintains fixes in the National Airspace System Resource database. Each named fix is processed by the NFDC for publication in the NFDD. **Note**: The NFDD is published daily (except weekends and Federal holidays) by the NFDC and is available through the FAA at **https://www.faa.gov/air_traffic/flight_info/aeronav/aero_data/NFDD/**.

7.5.1. When establishing, modifying, or cancelling navigational fixes, holding patterns, and/or reporting points, use FAA Form 8260-2 to document these requests. Additional guidance for completing this form may be found in the FAA Form 8260-2 Information Pamphlet available on the HQ AFFSA Airfield Operations Directorate SharePoint.

7.5.2. The MAJCOM TERPS Manager:

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

7.5.2.2. Assigns a NFDC point of contact within the MAJCOM instrument procedure function.

7.5.3. The MAJCOM NFDC point of contact:

7.5.3.1. Ensures new, revised, or cancelled fix data is published in the NFDD with an effective date that matches the publication date of the instrument flight procedure *prior to the change being published* in the DoD FLIP (Terminal). The NFDD cut-off schedule is contained in FAA Order 8260.26F, *Establishing Submission Cutoff Dates for Civil Instrument Flight Procedures*, Appendix A. The DoD FLIP cut-off schedule is contained in the DoD FLIP, *General Planning, (GP),* **Chapter 11**, *Revision Schedules;*

7.5.3.2. Reports NFDD inaccuracies to the FAA NFDC Airspace and Procedures specialist with responsibility for the area and, when necessary, ensures the appropriate NOTAM action is taken; and

7.5.3.3. Requests and obtains new fix name(s) from the FAA NFDC Airspace and Procedures specialist.

7.5.4. Paragraph 2-10-5. Naming navigational fixes. DME leg length distances on published holding patterns do not require naming.

7.5.5. Paragraph 2-10-6. Documenting navigational fixes.

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

7.5.5.2. 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.

7.5.5.3. To determine whether or not a new fix or waypoint name change is required, see FAA Order JO 7400.2L, **Chapter 3**, Section 3, paragraph 3-3-4.f.

7.5.6. The NFDC promulgates new and amended fixes via the NFDD for Continental US locations. Review the NFDD for accuracy and to confirm when submitted fixes for Continental US locations are established, modified or cancelled.

7.5.7. When designing instrument approach procedures at locations outside of the Continental US, the responsible MAJCOM TERPS function shall establish a process to obtain and process fix names applicable to their TERPS AOR.

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

7.5.7.2. When publishing host nation procedures in the DoD FLIP (Terminal) and the host has not named all fixes IAW US criteria, do not obtain fix names for the host nation procedure; publish these fixes as they appear in the host nation source documentation.

7.5.7.3. When publishing fix names at AF locations outside of the Continental US in the DoD FLIP (Terminal), the instrument procedure specialist will ensure the fix name published at the AF location does not duplicate any fix name used by the host nation. **(T-2)**. When made aware that this has occurred, it is the MAJCOM TERPS function responsibility to rename the AF charted fix to eliminate any fix name duplication.

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

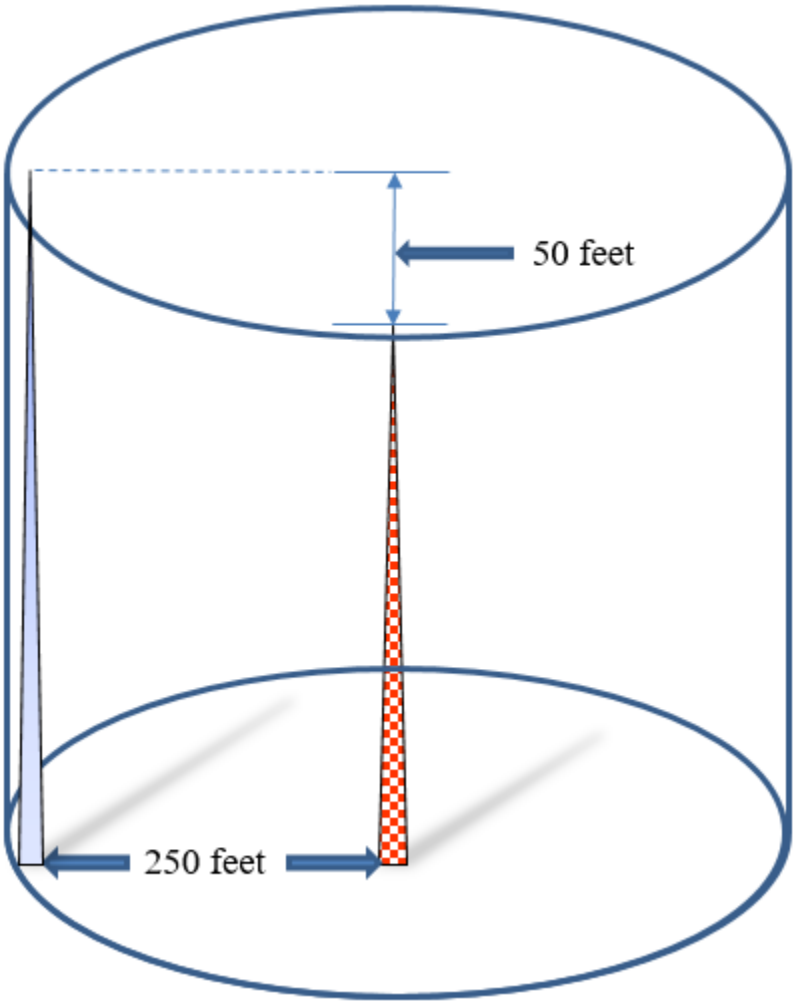
7.6. Paragraph 2-11-4. Accuracy standards application. Apply horizontal and vertical accuracy adjustments to raw obstacle data. Add the appropriate adjustment for vertical and horizontal accuracies to man-made structures. Add the value of the reported or user-declared horizontal and vertical accuracy to the location and MSL elevation of the obstruction prior to identifying the controlling obstacle. For horizontal adjustments, consider the greater of either the

reported or user-declared horizontal accuracy or the accuracy of the geodetic coordinates. This process effectively creates a three-dimensional cylinder (**Figure 7.1**) of a specified height and radius.

7.7. Paragraph 2-11-5. Controlling obstacles. Do not apply FAA Adverse Assumption Obstacle guidance. Apply the guidance from **paragraph 7.6** and **paragraph 7.7** when determining which obstruction is the controlling obstacle.

7.7.1. Equivalent Height Definition. When PCG is provided and both primary and secondary areas are being evaluated to determine a segment's controlling obstacle, obstructions in the secondary area are evaluated based on their equivalent height value. The equivalent height value for obstructions in secondary areas is determined by subtracting the amount of OCS rise in the secondary area (measured from the edge of the primary area to the obstruction) from the obstruction's reported MSL elevation. This adjusted (lower) MSL elevation value is known as the obstruction's "equivalent height." Even though the precision final segment X surface is primary area, an equivalent height is determined for both the X and Y surfaces. The equivalent height is determined by the obstruction's MSL elevation, minus the amount of X or Y surface rise (combined, when applicable) from the edge of the W surface.

Figure 7.1. Adjustment of Obstacle Height and Location Based on Vertical and Horizontal Accuracies.



7.7.2. Effective Height Definition. When adding vertical accuracy to an obstruction's reported MSL elevation, the resulting value is known as the obstruction's "effective height."

7.7.2.1. The effective height of an obstruction in the primary area with a reported vertical accuracy is equal to its reported MSL value plus vertical accuracy.

7.7.2.2. The effective height of an obstruction in the secondary area with a reported vertical accuracy is equal to its reported MSL value plus vertical accuracy minus secondary OCS rise.

7.7.3. The minimum segment altitude is defined as an obstruction's effective height plus the appropriate required obstacle clearance for the segment plus adjustments.

7.7.4. Identify the controlling obstacle in the final approach segment for charting on all nonprecision instrument approach procedures submitted for publication to the NGA. When submitting the obstacle data to the NGA, do not add any vertical or horizontal accuracy value; submit the reported MSL height of the obstacle. **Note**: The NGA charts all requested obstacles IAW current charting specifications and cartographic judgment.

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

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

7.10. Paragraph 4-1-3. Airspace requirements. Within the 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 AFMAN.

7.10.1. 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.

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

7.10.3. 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.

7.11. 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.

7.11.1. 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 the departure end of runway of the opposite direction runway on the Runway Supplementary Data Tab to match the coordinate and elevation of the displaced threshold. 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.

7.11.2. When the AutoEval results in a glidepath qualification surface 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.

7.11.3. 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.

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

7.12. Paragraph 4-6-3. Developing RNAV waypoint. When designing RNAV procedures, use **Table 7.1** to determine whether the waypoint is to be designed as a fly-by waypoint or as a fly-over waypoint. **Note**: All stepdown fixes are along track distances and should be developed and coded as fly-by fixes.

Table 7.1. Waypoint Design Standard (see Note).

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 (see Note)		X
Landing Threshold Point or Fictitious Threshold Point (offset procedures)		X
Note: 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.		

7.13. Paragraph 4-6-9. DME/DME screening model. The AF does not conduct any type of screening modeling to determine the adequacy of DME signal reception. Ensure all AF developed RNAV instrument flight procedures have the note "**GPS Required**" charted in the planview.

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

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

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

7.17. Paragraph 8-5-2.r. Office of primary responsibility. Due to increased coordination and processing time, using FAA owned fixes on AF instrument flight procedures is discouraged. When required to use a fix owned by the FAA, complete the FAA Form 8260-2, *Data Worksheet*, at Appendix D in FAA Order 8260.19H. Email the completed worksheet to the FAA Manager of the Instrument Procedures Coordination Team and courtesy copy the 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 for these groups is posted on the HQ AFFSA TERPS Division SharePoint in the "TERPS Resources" folder. **Note**: Do not establish a new fix in the same location as the FAA's fix or attempt to modify the existing FAA Form 8260-2 for the FAA fix.

7.18. Paragraph 8-6-6.d. Missed approach instructions. Apply guidance from this paragraph to AF developed RNAV missed approach instructions.

7.19. Paragraph 8-6-8. Equipment requirements notes for conventional instrument procedures and performance based navigation (PBN) instrument flight procedures. When DME and radar identify the FAF, add "**RADAR or DME REQUIRED**" to the planview of the procedure unless this equipment is named in the procedure identification. **Note**: Except for TACAN, this notation requirement for additional equipment applies to any equipment required (for example, **ADF or DME REQUIRED** or **ADF or RADAR REQUIRED**, etc.) that is not included in the procedure identification or may be required to complete the approach; that is, the missed approach.

7.20. Appendix A. Administrative Information . This appendix is not applicable to the AF.

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

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

7.23. Appendix D. FAA Form 8260-2, Data Worksheet. See **Paragraph 7.17**.

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

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

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

7.27. Appendix H. Standard Instrument Approach Procedure, FAA Form 8260-5 . This appendix is not applicable to the AF.

7.28. 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 the AF.

7.29. Appendix J. Standard Instrument Approach Procedure, FAA Form 8260-9 . This appendix is not applicable to the AF.

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

7.31. 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.

7.32. Appendix M. Instrument Flight Procedures (IFP) Lifecycle . This appendix is not applicable to the AF.

Chapter 8

IMPLEMENTING FEDERAL AVIATION ADMINISTRATION ORDER 8260.46G

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

8.1.1. Flight inspection of ODPs and SIDs is required except as noted in **paragraph 5.4.1**.

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

8.1.3. Establishment of ESAs and MSAs for a graphic DP is authorized.

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

8.1.5. Computer Identification Codes. Coordinate all DPs that affect the NAS with the appropriate FAA ATC facility. MAJCOM terminal instrument procedure functions outside of the Continental US should determine whether or not DPs that affect host nation airspace require coordination with host nation ATC officials for host nation assigned computer codes.

8.2. RNAV DPs. Apply FAA Order 8260.46G, FAA Order 8260.58A, and other applicable FAA orders, as specified, when developing RNAV DPs. Annotate each AF RNAV DP IAW FAA Order 8260.46G, paragraph 3-1-5.d.

8.3. Supplemented Departure Criteria from FAA Order 8260.46G, Chapter 2.

8.3.1. Paragraph 2-1-1. Departure Procedure (DP) Guidelines; Table 2-1-1, ODP development combinations. Classify the results of AF diverse departure obstacle assessments as one of nine ODP cases (**paragraph 8.3.1.5**).

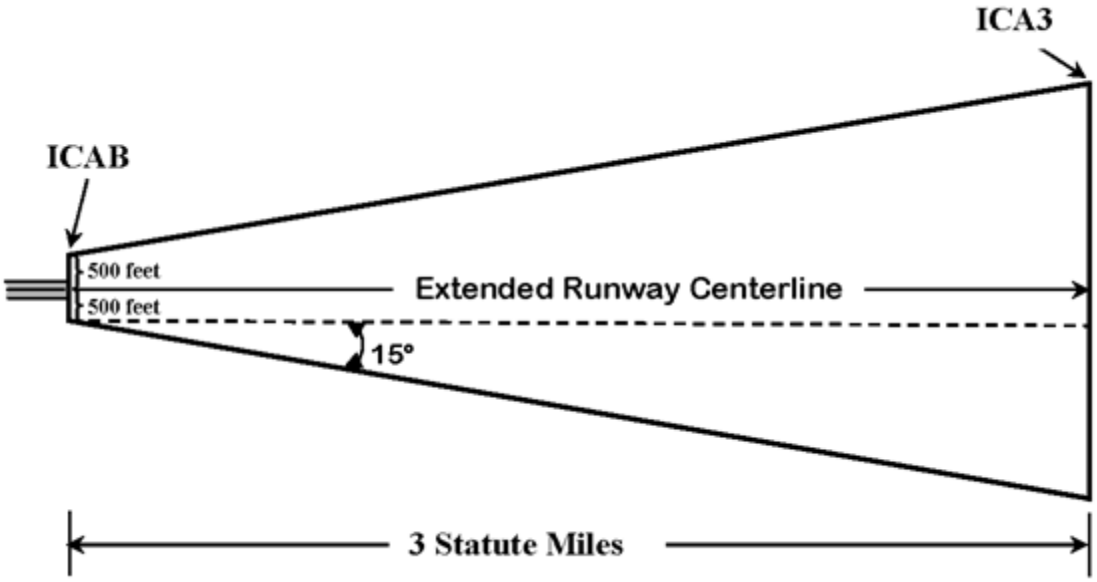
8.3.1.1. Obstacle Departure Procedure – a single action or a combination of actions from Table 2-1-1 developed to assist departing aircraft avoid obstacles that penetrate a 40:1 OCS. Develop and publish only one ODP for each runway.

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

8.3.1.3. ICA3 – a line, 3 statute miles from the ICAB line (departure end of runway), perpendicular to the runway centerline extended (see **Figure 8.1**).

8.3.1.4. Initial Climb Area (extended) – that area (**Figure 8.1**) between the ICAB line and the 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 8.1** to determine which one of the nine ODP cases to apply when obstructions penetrate the 40:1 OCS.

Figure 8.1. Initial Climb Area (extended).



8.3.1.5. 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 8.3.1.5.1** through **paragraph 8.3.1.5.9** of this AFMAN. Each ODP combination defined below constitutes *one* ODP. Compare calculated climb gradient values when making this determination in Cases 6, 7, 8, and 9. When the climb gradient values inside and outside the ICA (extended) are identical, use the climb gradient *outside* the ICA (extended) as the highest climb gradient and do not apply Cases 6 and 7.

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

8.3.1.5.1.1. 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.

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

8.3.1.5.2. ODP Case 2 – 40:1 OCS penetrations exist only within the 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*. Apply the following:

8.3.1.5.2.1. Only develop and publish low, close-in obstacle notes (**paragraph 6.37**); and

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

8.3.1.5.3. ODP Case 3 – 40:1 OCS penetrations exist only within the 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*. Develop and publish only *one* of the following ODP combinations:

8.3.1.5.3.1. 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.

8.3.1.5.3.2. Combination 2:

8.3.1.5.3.2.1. A ceiling and visibility to avoid the penetrations;

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

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

8.3.1.5.3.2.4. Provide the RTRL option.

8.3.1.5.3.3. Combination 3:

8.3.1.5.3.3.1. 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;

8.3.1.5.3.3.2. A ceiling and visibility to avoid the penetrations;

8.3.1.5.3.3.3. 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;

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

8.3.1.5.3.3.5. Provide the RTRL option.

8.3.1.5.4. ODP Case 4 – 40:1 OCS penetrations exist only within the 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. Develop and publish low, close-in obstacle notes *and* one of the three combinations from ODP Case 3.

8.3.1.5.5. ODP Case 5 – 40:1 OCS penetrations only exist outside the ICA (extended); no low, close-in obstacles. Develop and publish only *one* of the following ODP combinations. **Note**: When there are 40:1 OCS penetrations outside the ICA (extended) *with* low, close-in obstacles, develop and publish low, close-in obstacle notes and *one* of the three combinations from ODP Case 8.

8.3.1.5.5.1. 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.

8.3.1.5.5.2. Combination 2:

8.3.1.5.5.2.1. 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

8.3.1.5.5.2.2. Provide a VCOA.

8.3.1.5.5.3. Combination 3:

8.3.1.5.5.3.1. 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;

8.3.1.5.5.3.2. 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;

8.3.1.5.5.3.3. Provide the RTRL option; and

8.3.1.5.5.3.4. Provide a VCOA.

8.3.1.5.6. ODP Case 6 – 40:1 OCS penetrations exist both inside and outside the 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 the ICA (extended); no low, close-in obstacles. Develop and publish only *one* of the following ODP combinations:

8.3.1.5.6.1. 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.

8.3.1.5.6.2. Combination 2:

8.3.1.5.6.2.1. Standard takeoff minimums *and* a climb gradient to clear the obstacle within the 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;

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

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

8.3.1.5.6.2.4. Provide a VCOA.

8.3.1.5.6.3. Combination 3:

8.3.1.5.6.3.1. 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;

8.3.1.5.6.3.2. Standard takeoff minimums *and* a climb gradient to clear the obstacle within the 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;

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

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

8.3.1.5.6.3.5. Provide a VCOA.

8.3.1.5.7. ODP Case 7 – 40:1 OCS penetrations exist both inside and outside the 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 the ICA (extended). Develop and publish low, close-in obstacle notes and *one* of the three combinations from ODP Case 6.

8.3.1.5.8. ODP Case 8 – 40:1 OCS penetrations exist both inside and outside the 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 the ICA (extended); no low, close-in obstacles. Develop and publish only *one* of the following ODP combinations:

8.3.1.5.8.1. 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.

8.3.1.5.8.2. Combination 2:

8.3.1.5.8.2.1. 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;

8.3.1.5.8.2.2. Provide the RTRL option; and

8.3.1.5.8.2.3. Provide a VCOA.

8.3.1.5.8.3. Combination 3:

8.3.1.5.8.3.1. 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;

8.3.1.5.8.3.2. 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 the ICA (extended); *and* a climb gradient to a fix or altitude to mitigate the 40:1 OCS penetrations outside the ICA (extended);

8.3.1.5.8.3.3. Provide the RTRL option; and

8.3.1.5.8.3.4. Provide a VCOA.

8.3.1.5.9. ODP Case 9 – 40:1 OCS penetrations exist both inside and outside the 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 the ICA (extended). Develop and publish low, close-in obstacle notes and *one* of the three combinations from ODP Case 8.

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

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

8.3.1.6.2. Process the procedure package IAW **Chapter 2**; and

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

8.3.1.7. When the actions in **paragraph 8.3.1.5.2** through **paragraph 8.3.1.5.9** 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.

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

8.3.1.9. When the actions in **paragraph 8.3.1.5.2** through **paragraph 8.3.1.5.9** *and* a stand-alone VCOA are not feasible, IFR departures are not authorized.

8.3.2. FAA Order 8260.46G, paragraph 2-1-1.d.(2). Do not consider DPs with a climb gradient as nonstandard; that is, waiver consideration for a DP with a climb gradient is not required.

8.3.3. FAA Order 8260.46G, paragraph 2-1-1.e.(1)(f). The guidance in this paragraph is not applicable to the AF.

8.4. Special Departure Procedure Support. AF instrument procedure specialists support operator development of One Engine Inoperative/Special Departure Procedures at fixed base locations. The 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. The MAJCOM TERPS function forwards these edits in a new GPD OBS.txt file to HQ AMC/A3AT at **amc.terps@us.af.mil** not later than three business days prior to the beginning of the next DVOF cycle.

Chapter 9

IMPLEMENTING FEDERAL AVIATION ADMINISTRATION ORDER 8260.58A

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

9.2. 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.

9.3. Appendix B. DF Leg Feasibility Analysis . This appendix is not applicable to the AF.

Chapter 10

IMPLEMENTING ICAO PANS-OPS AND NATO INSTRUMENT PROCEDURE CRITERIA

10.1. Implementation Requirements. When directed by the host nation, and only after the MAJCOM TERPS staff has determined a sufficient number of personnel are trained in ICAO PANS-OPS standards and design methods, implement PANS-OPS or NATO criteria (as applicable) at all locations outside of the Continental US where the AF has instrument procedure responsibility. Do not implement PANS-OPS criteria until it is determined by airfield authorities that the airfield meets ICAO Annex 14 airfield design criteria.

10.2. Definitions.

10.2.1. ICAO PANS-OPS. References to ICAO PANS-OPS apply to the standards defined in ICAO Document (Doc) 8168-OPS/611, *Procedures for Air Navigation Services – Aircraft Operations (PANS-OPS) Volume II, Construction of Visual and Instrument Flight Procedures*. This criteria is applied when selecting the "ICAO" button in GPD.

10.2.2. NATO PANS-OPS. NATO Standardization Agreement (STANAG) 3759, (AATCP-1) is the NATO supplement to ICAO Doc 8168-OPS/611, Volume II. NATO PANS-OPS refers to the instrument procedure criteria in AATCP-1 and includes instrument procedure criteria applicable to military aircraft. This criteria is applied when selecting the "NATO" button in GPD.

10.3. 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 NATO PANS-OPS criteria. Inform the host nation when using US TERPS criteria at locations where the host nation operates the airfield and the AF has instrument procedure responsibility.

10.3.1. When a specific requirement exists for a type of instrument procedure that is not addressed in this chapter, AATCP-1, or in Doc 8168-OPS/611, apply the FAA guidance as supplemented in this AFMAN.

10.3.2. 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.

10.3.3. Use of AATCP-1.

10.3.3.1. **Chapter 1.** Administrative. The AF acts as the National Authority.

10.3.3.2. **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.

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

10.3.3.3.1. 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.

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

10.3.3.4. **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 Doc 8168-OPS/611 or AATCP-1.

10.3.3.5. **Chapter 8.** Additional Military Criteria – Helicopters. Not applicable.

10.3.3.6. **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 AFMAN.

10.3.4. Use of Doc 8168-OPS/611.

10.3.4.1. Part I. GENERAL.

10.3.4.1.1. 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.

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

10.3.4.1.3. Section 3, **Chapter 2**, **paragraph 2.6**, *Obstacle Identification Surface (OIS)*. Within GPD, the 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 the 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.

10.3.4.1.4. Section 3, **Chapter 4**, **paragraph 4.3.1**, *Turn Initiation Area OIS*. Apply **paragraph 10.3.4.1.3**.

10.3.4.1.5. 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).

10.3.4.1.6. 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 the DR leg and the 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 the DR leg.

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

10.3.4.1.8. 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.

10.3.4.1.9. Section 4, **Chapter 7**, Appendix to **Chapter 7**, VISUAL MANOEUVRING USING PRESCRIBED TRACK. Not applicable to the AF.

10.3.4.2. Part II. CONVENTIONAL PROCEDURES.

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

10.3.4.2.2. 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 Doc 8168-OPS/611 or AATCP-1.

10.3.4.2.3. 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.

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

10.3.5. Criteria in addition to AATCP-1 and Doc 8168-OPS/611.

10.3.5.1. Unless otherwise stated in Doc 8168-OPS/611, the rise in secondary obstacle clearance surfaces is measured perpendicular to the nominal flight track.

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

10.3.5.3. Reference Doc 8168-OPS/611, the minimum RVR standard is 200 meters for Category III ILS.

10.4. Use of Automation. Use of GPD is mandatory when required to review or design precision final approach segments IAW NATO or ICAO PANS-OPS criteria. **Note**: Except for precision final segments, when GPD does not support a particular segment type or procedure to be reviewed or designed, manual methods for instrument procedure design and review is authorized.

Chapter 11

INSTRUMENT PROCEDURE AUTOMATION

11.1. Instrument Procedure Software. AF GPD is the only software authorized for use when designing, reviewing, or maintaining instrument flight procedures and ATC charts. Software updates with new FAA, NATO, ICAO, and AF developed instrument procedure criteria may take between 12 and 24 months after the criteria is promulgated for it to be programmed, tested, and distributed for use. Instrument flight procedures developed with older criteria remain valid until they are updated in the DoD FLIP (Terminal) with the current software version. MAJCOMs should establish the process for maintaining the required back-up files in a MAJCOM operating instruction or in the MAJCOM supplement to this AFMAN. **Note**: HQ AFFSA TERPS Division recommends all users back-up GPD at least monthly and retain at a minimum the most recent back-up on an approved medium external to the computer running GPD.

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

11.2.1. Evaluate accuracy and reconcile aeronautical data discrepancies. Verify all data imported from the DAFIF against source information. Convert non-WGS-84 coordinates to WGS-84 when necessary and ensure all coordinates entered into GPD are stated in the 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.

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

11.2.2.1. Aerodrome assigned (magnetic) variation;

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

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

11.2.2.4. 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;

11.2.2.5. Add all ASR and PAR data, as needed. This data may be obtained from air traffic control and landing systems personnel; and

11.2.2.6. Supplementary Data. Add values to the supplementary data required for TERPS analysis that are not contained in DAFIF. **Note:** Enable supplementary data for each runway and add RVR availability when appropriate. Also enable the supplementary data for each visual glidepath system, adding TCH, VGSI angle and all light bar distances from threshold (as appropriate).

11.2.3. Runway centerline elevations are required when developing ILS Category II/III or PAR approaches with a HAT of less than 200 feet.

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

11.2.3.2. Enter the runway centerline elevation 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. Runway centerline elevation data is available in most NGA airfield surveys. This data may also be available from HQ AFFSA Air Traffic Control and Landing Systems Evaluation Division at **hqaffsa.a3ae@us.af.mil**.

11.2.4. Enter sourced aeronautical data elements into GPD as listed in **Table 11.1** of this AFMAN. **Note:** The items in **Table 11.1** 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.

11.2.5. Ensure assigned magnetic variation values used by GPD for locations in the Continental US and AF 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 HQ AFFSA TERPS Division.

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

11.2.7. Evaluate the accuracy and completeness of obstacle data.

11.2.7.1. 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 11.2** of this AFMAN when accuracies cannot be determined from the data source.

11.2.7.2. Apply the worst-case horizontal and vertical accuracy from **Table 11.2** and when unable to comply, annotate actions taken in GPD with user-entered notes.

11.2.7.3. In accordance with FAA Order 8260.19H, 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.

11.2.8. 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 the NGA for charting purposes.

Table 11.1. 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	1
Runway Data		

Length	Whole foot	1
Width	Whole foot	1
Threshold 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	Hundredth of a foot	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 11.2. Horizontal and Vertical Accuracies as Determined by Map Source.

Map Type	Horizontal Accuracy	Vertical Accuracy (see Note 5)
USAF 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) (see Note 3)
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) (see Note 4)
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 8260.19H, 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 the 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 3.3.6 of this AFMAN.
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).

11.3. GPD Hardware Requirements. Minimum hardware requirements for desktop and laptop systems are listed in **Table 11.3** and **Table 11.4** respectively.

Table 11.3. GPD Hardware (Desktop).

DESKTOP WORKSTATION	
OPERATING SYSTEM	Current GPD certified Microsoft Windows operating system
Central Processing Unit (CPU)	Quad Core Intel i7 processor, 3+ GHz (or better)
RAM	16 GB (or higher)
GRAPHICS CARD	NVIDIA 2 GB RAM, dual monitor VGA or DVI/VGA capable, OpenGL version 4.0, Shader Model 4.0 or better
MONITORS	Two 24" (flat panel recommended), or equivalent viewing area (single 48" screen)
HARD DRIVE	Minimum: 500 GB SSD (or higher)
2nd HARD DRIVE	Internal/External 500 GB (or higher)
DVD	Required: DVD+/-RW

NETWORK CARD	ETHERNET PCMCIA 10/100/1000 Base T (or appropriate LAN interface card)

Table 11.4. GPD Hardware (Laptop).

LAPTOP	
OPERATING SYSTEM	Current GPD certified Microsoft Windows operating system
Central Processing Unit (CPU)	Quad Core Intel i7 processor, 3+ GHz (or better)
RAM	16 GB (or higher)
GRAPHICS CARD	NVIDIA 2 GB RAM, OpenGL version 4.0, Shader Model 4.0 (or better)
HARD DRIVE	Minimum: 500 GB SSD
2nd HARD DRIVE	Optional: 500 GB
DVD/CD-R/W	Required: DVD+/-RW
NETWORK CARD	ETHERNET PCMCIA 10/100/1000 Base T (or appropriate LAN interface card)

11.4. 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.

11.4.1. Therefore, when it appears that the obstacle in question may affect the instrument procedure, coordinate with the NGA or the host nation for the location of the obstacle in the WGS-84 datum. When the NGA or the host nation is not able to provide the obstacle's location in the WGS-84 datum, check the WGS-84 box and apply the larger of the reported horizontal accuracy or 3400 feet (1000m).

11.4.2. When making manual additions and revisions to aeronautical or obstacle data in GPD, enter geodetic coordinates in the WGS-84 datum. Convert coordinates from any other datum to WGS-84 prior to use.

11.4.3. Do not use the GPD administrator log-in and password (ADMIN, ADMIN) when developing instrument flight procedures intended for flight operations.

11.4.4. Workspace development. Do not establish the center of the workspace any farther than 5 NM from the following:

11.4.4.1. The departure end of runway for departures;

11.4.4.2. The airport reference point for Diverse Vector Areas and circling approaches;

11.4.4.3. 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

11.4.4.4. The runway threshold for instrument approaches.

11.4.5. 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. Whenever the digital resources noted in this paragraph are not available, complete a manual, hard-copy map study of the entire instrument flight procedure or affected segment, as applicable, to evaluate the terrain elevation data.

11.4.5.1. 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” (**Figure 11.1** and **Figure 11.2**).

11.4.5.2. Evaluate terrain in the area identified and add obstacles to the GPD Data Manager application as necessary. Use of Vector Map (**Figure 11.3**) products is authorized to determine the highest contour elevation.

11.4.5.2.1. Add horizontal and vertical accuracies equivalent to the NGA 1:250,000 Joint Operations Graphic-Air (JOG) for Vector Map 1 and Vector Map 2 and equivalent to a World Aeronautical Chart for Vector Map 0.

11.4.5.2.2. 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 procedure remarks actions taken along with supporting rationale.

Figure 11.1. Terrain Analysis Incomplete Warning.

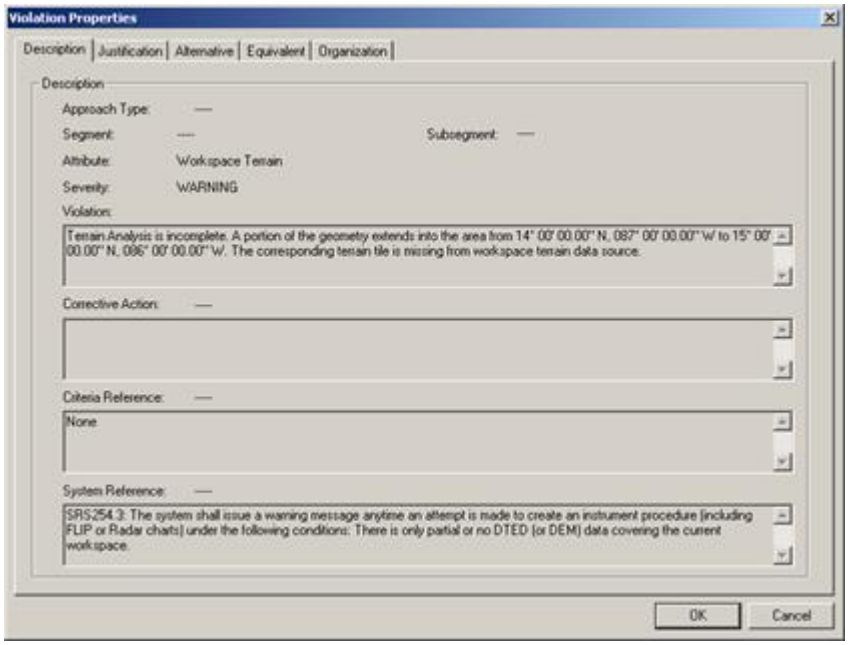


Figure 11.2. Area with Missing Terrain Data.

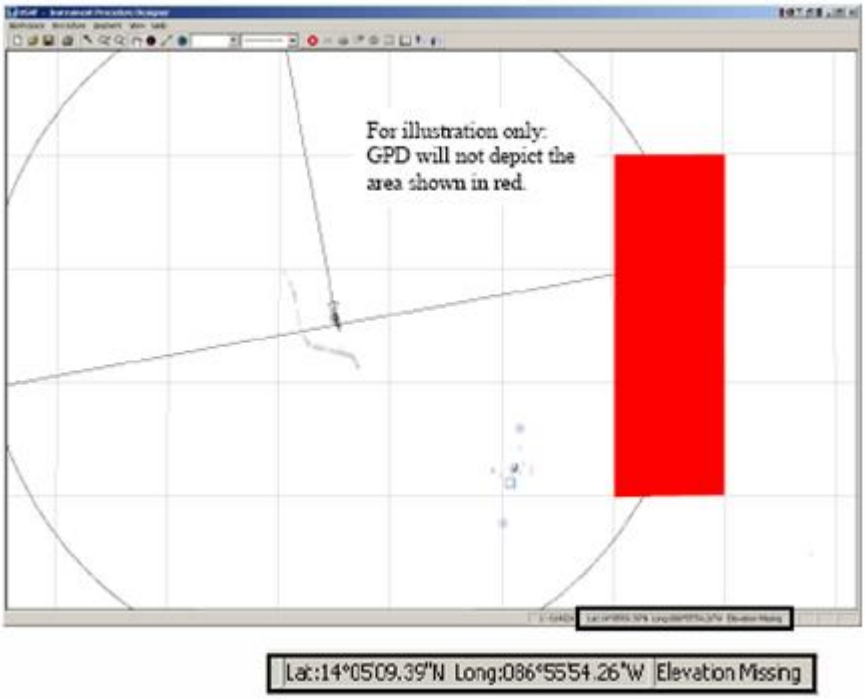
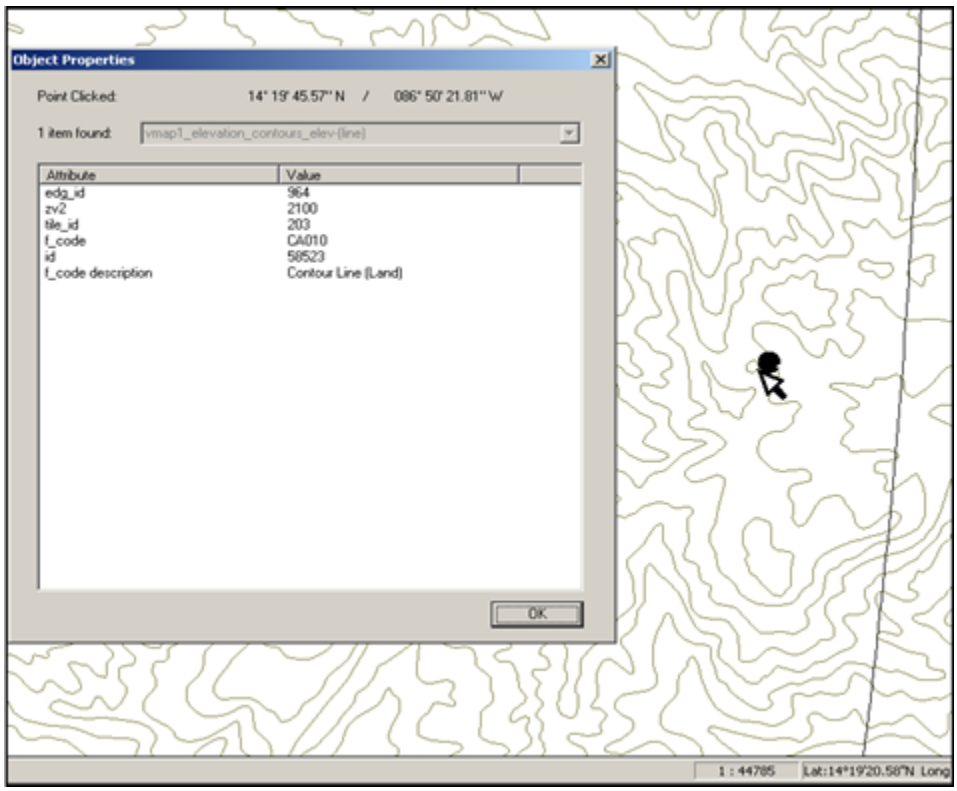


Figure 11.3. Determining the Contour Elevation Using Vector Map.



11.4.5.2.3. When Vector Map products are not available, the instrument procedure specialist must conduct a terrain analysis on current, chummed, paper copy maps. **(T-**

3). Ensure these maps are scaled as required in **Table 2.2**. The results of the terrain analysis must be documented by the specialist in the procedure package. **(T-3)**. **Note**: Compressed Arc Digitized Raster Graphics maps are not authorized for terrain analysis.

11.4.5.3. 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.

11.4.6. Runway Terrain Exclusion Area (RTEA). Activate the 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)**.

11.4.6.1. When the RTEA is activated:

11.4.6.1.1. Adjust the size of the 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 the 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

11.4.6.1.2. Ensure the terrain within the RTEA is accurately modeled. Manually enter terrain points into the database as obstacles to model the actual terrain within the RTEA area. The number of obstacles that are entered into the database depends on the size of the RTEA.

11.4.6.2. Terrain points can be obtained either by requesting a survey of the terrain within the 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 the GPD database.

11.4.6.2.1. Apply one foot less than the map contour line interval and subtract one additional foot. In the GPD Obstacle Properties Notes tab, enter 1 foot in the AGL accuracy and 1 foot in the horizontal accuracy fields. **Note**: By doing this, the actual terrain within the RTEA can be accurately modeled.

11.4.6.2.2. For example, a point is located between contour elevations 315 and 320. Using the adverse assumption technique, the MSL altitude of the point is 319 feet. Now subtract one additional foot. Enter into the Obstacle Properties Notes tab 318 feet for the 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.

11.4.7. TERPS development software problem reporting. Timely software problem reporting is essential to ensure errors are corrected within a reasonable timeframe. Submit an incident through the TERPS helpdesk as soon as practical after encountering or suspecting a problem with the software or when suggesting software improvements. Do not attempt to develop local or MAJCOM specific work-arounds.

11.4.8. The instrument procedure specialist must document missed approach and alternate missed approach instructions in the Missed Approach Instructions tab of the Missed Approach Properties dialogue within the GPD Procedure Designer application. **(T-3)**.

11.5. 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 AF 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 12

UNITED STATES AIR FORCE FTIP ACCEPTANCE PROGRAM

12.1. Program Overview. 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. The AF FTIP Acceptance Program implements this policy for the AF. 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 the AF in the DoD FLIP (Terminal) or validated and posted to 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 Military Instrument Procedures Standardization.

12.1.1. 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 the USAF Accredited Host Nation List. FTIP in this category require an in-depth evaluation that includes obstruction analysis and when deviations to standards are found, require waiver of the nonstandard condition. In conjunction with the appropriate, 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.

12.1.2. 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 the USAF Accredited Host Nation List. Prior to acceptance, completion of the Host Nation Accreditation Checklist at **Figure 12.1** by the MAJCOM TERPS function is required. Apply the following validation and documentation guidance for each item when completing this checklist.

12.1.2.1. Item 1. The response to this item applies to the host nation itself as listed at **https://www.icao.int/about-icao/Pages/member-states.aspx**; not to the instrument procedure program. When the host nation program (civil or military) is administered by a *country* that is listed as an ICAO member state or as a Special Administrative Region, simply check **YES**; if not, check **NO**. **Note**: It is not necessary to submit a copy of the current ICAO Contracting States with the required documentation.

12.1.2.2. Item 2. Validate a positive response to this item by including documentation for all known locations (for example, other states, territories, Special Administrative Regions, etc.) where the host nation program also has instrument procedure authority (that is, performs the instrument procedure function), even though these other locations may be outside the submitting MAJCOM's area of responsibility.

12.1.2.3. Item 3. Validate the response to this item with a complete description of the host nation relationship between the civil and military instrument procedure programs. Include specific clarification when host nation military instrument flight procedure development

guidance is conducted by host nation civil aviation authorities or when military host nation instrument flight procedures are published in the civil AIP.

12.1.2.4. Item 4. Validate the response to this item by providing the ENR 1.5 Approach and Departure Procedures section from the current host nation military or civil AIP, as applicable.

12.1.2.5. Item 5. Validate the response to this item by providing the GEN 1.7 Differences from ICAO Standards, Recommended Practices and Procedures section from the current host nation military or civil AIP. When differences are known to exist but are not documented in the applicable AIP, attempt to validate them with host nation instrument procedure and aviation authorities or other source documentation (for example, email response from the appropriate host nation instrument flight procedure authority, applicable pages from the current ICAO Catalogue of Flight Inspection Units, etc.).

12.1.2.6. Item 6. Validate the response to this item by providing the GEN 1.7 section from the current host nation military or civil AIP, or other source documentation (for example, email response from the appropriate host nation instrument flight procedure authority, the applicable US Defense Attaché Office, etc.). Document all known and declared host civil or military exceptions to flight validation standards.

12.1.2.7. Item 7. Document the response to this item with a checkmark in one of the columns. Validate a negative response to this item by explaining why the information is not being provided.

12.1.2.8. Item 8. Document the response to this item with a checkmark in one of the columns. Validate a negative response with an explanation of how not having an open line of communication with the host nation office of primary responsibility has affected (or not affected) the MAJCOM's ability to provide instrument procedure support.

12.1.2.9. Item 9. Validate the response to this item by providing the GEN 3.1 Aeronautical Information Services section from the current host nation military or civil AIP, as applicable. Also include copies of host nation produced NOTAMs for the location.

12.1.2.10. Item 10. Validate the response to this item with one or two explanatory sentences.

12.1.2.11. Item 11. Validate the response to this item by providing copies of US NOTAMs for the location that correspond with the host nation produced NOTAMs provided for Item 9.

12.1.2.12. Item 12 and Item 13. Validate the responses to these items by providing the GEN 2.1 Measuring System, Aircraft Markings, and Holidays section from the current host nation military or civil AIP, as applicable, or other host nation source (Aeronautical Information Regulation and Control, flight information publication, NOTAMs, etc.). When the host nation uses a non-WGS-84 geodesic coordinate system, explain how it affects the MAJCOM's ability to provide instrument procedure services.

Figure 12.1. Host Nation Accreditation Checklist.

ACCREDITATION CHECKLIST ITEMS	YES	NO	N/A
1. Is the instrument procedure program managed by civil or military authorities from an ICAO Contracting State (member nation) or from a Special Administrative Region?			
2. When the host nation AIP includes more than one country, are the individual instrument procedure program methods and practices clearly discernible for each country?			
3. When the host nation AIP includes military and civilian IFPs, and separate aviation authorities are responsible for their development, are the methods and practices employed by each agency specified in the AIP?			
4. Is US TERPS, ICAO PANS-OPS, or NATO AATCP-1 utilized for the design of IFPs, including departure procedures? ***Note**: Each criteria or standard is accepted.* Identify the criteria or standard used here: _____.			
5. Does host nation source documentation indicate flight inspection is performed IAW ICAO Annex 10, *Aeronautical Telecommunications* or FAA Order 8200.1D, *US Standard Flight Inspection Manual*, even when performed by a private company or a host government contractor?			
6. Does host nation source documentation indicate flight validation is performed IAW PANS-OPS, (Doc 8168) Volume II, Part I, Section 2, Chapter 4, *Quality Assurance* or FAA Order 8200.1D, *US Standard Flight Inspection Manual*, even if performed by a private company or a host government contractor?			
7. Have all known exceptions to accepted criteria or standards been provided to HQ AFFSA TERPS Division for review?			
8. Does the MAJCOM TERPS function have an open line of communication with the host nation instrument procedure and aviation data Office of Primary Responsibility?			
9. Does the agency responsible for the program being evaluated develop and send appropriate NOTAMs when required to ensure host nation published IFPs remain accurate, current, and useable?			
10. Does the MAJCOM TERPS function receive host nation NOTAMs soon enough to ensure corrective action(s) can be taken on non-USG IFPs published in the DoD FLIP (Terminal) to coincide with the effective date of the host nation change?			
11. Are host nation NOTAMs for temporary and permanent changes to non-USG IFPs published in the DoD FLIP (Terminal) being incorporated into the US NOTAM system?			
12. Does host nation source documentation (AIP, Aeronautical Information Regulation and Control, FLIP, NOTAMs, etc.) indicate coordinates are being expressed in the WGS-84 reference datum? When 'NO', identify the datum used here: _____.			
13. When coordinates are expressed in the WGS-84 datum, how they are being derived? Via SURVEY? ☐ Via MATHEMATICAL CONVERSION? ☐			
14. Does the candidate program publish all source documentation (AIP, FLIP data, NOTAMs, etc.) in easily understandable English?			
15. Does the host nation instrument procedure authority conduct any Quality Control of their instrument procedures before being published?			
16. Does the host nation instrument procedure authority conduct a Post Publication Review of their published instrument procedures?			
17. Does the host nation instrument procedure authority continually demonstrate the ability to meet accepted criteria or standards, and maintain published IFPs that are safe and flyable?			

12.1.2.13. Item 14. Validate the response to this item by providing two different representative examples each of current host nation STARs, approaches, and DPs. When available, include Departure Route Descriptions with SIDs. Validate a negative response to this item by explaining why the host nation qualifies for the accredited status even though they do not publish in English.

12.1.2.14. Item 15 and Item 16. Validate a negative response to either one of these items by explaining what procedures or processes are used by the host nation to assure a quality product is published in their AIP.

12.1.2.15. Item 17. Provide a statement to validate the response to this item; do not submit previous approval letters. **Note**: A negative response disqualifies the candidate program from consideration.

12.1.3. Host nation programs meeting the requirements of this chapter fall into one of two categories; accredited and special accredited. Individual host nation airports are not eligible for the 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.

12.1.3.1. Host nation instrument procedure programs and airports may be categorized as special accredited only when the AF 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 equal to DoD or FAA programs.

12.1.3.2. Host nation instrument procedure programs may be categorized as accredited only when the AF 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 limited validation before a FTIP review is posted to GDSS in the Airfield Suitability and Restrictions Report or being published in the DoD FLIP (Terminal).

12.1.4. The responsible MAJCOM TERPS function only evaluates and submits candidate host nation programs and airports that are within their area of responsibility. **Exception**: See **paragraph 12.1.5**.

12.1.4.1. Evaluate each country's military and civilian instrument procedure development and publication process separately when each uses different methods, criteria, or standards, or when performed by separate offices.

12.1.4.2. 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 the TERPS helpdesk to the HQ AFFSA Airfield Operations Directorate. Do not submit accreditation requests for multiple programs or airports in a single submission or attached to (or part of) another document such as a trip report.

12.1.4.3. Ensure each FTIP acceptance request is approved and endorsed by the 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).

12.1.5. When submitting documentation supporting the requirement in **paragraph 12.1.2.2**, and the additional locations are in another MAJCOM's area of responsibility, obtain concurrence with the requested action from the other MAJCOM's instrument procedure function. When there are no objections, include the additional locations in the accreditation request.

12.1.6. Accredited programs are listed and tracked on the USAF Accredited Host Nation List. Special Accredited programs and airports are listed and tracked on the DoD Accepted Host Nation List.

12.2. Evaluation and Acceptance Requirements – Accredited Category.

12.2.1. In addition to the requirements in **paragraph 12.1**, the following requirements apply when submitting candidate instrument procedure programs for initial acceptance:

12.2.1.1. Inform HQ AFFSA Airfield Operations Directorate as soon as practical that a host nation instrument procedure program is being considered for accreditation purposes. Identify the country name and which program (civil, military, or both) is being considered;

12.2.1.2. Inform the applicable US Defense Attaché Office that a host nation instrument procedure program is being considered for addition to the USAF Accredited Host Nation List. Request input for any concerns that office has that may discourage acceptance of the candidate program; and

12.2.1.3. Access information from the following documents for data that supports the accreditation request and for potential concerns that may discourage acceptance of the candidate program:

12.2.1.3.1. FAA Notices to Airman-Domestic/International; and

12.2.1.3.2. Foreign Facilities Approved for Category II/III Operations at **https://www.faa.gov/about/office_org/headquarters_offices/avs/offices/afx/afs/afs400/afs420/**.

12.2.2. 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.

12.2.3. Document a historical listing of any obstacle clearance related discrepancies previously discovered as part of the FTIP criteria validation process while the program was non-accredited. Provide rationale that explains how these discrepancies no longer affect safety of flight.

12.3. Evaluation and Acceptance Requirements – Special Accredited Category.

12.3.1. In addition to the requirements in **paragraph 12.1** and **paragraph 12.2**, ensure the following when submitting a host nation's civil or military program for upgrade to the special accredited category:

12.3.1.1. Completion of the Host Nation Program Acceptance Checklist from **Attachment 3** of the DoD Memorandum of Agreement for Review, Maintenance, and Publication of FTIP. **Note:** This checklist can also be found at **Figure 12.2**; and

12.3.1.2. The program has been categorized as "accredited" on the USAF Accredited Host Nation List for a minimum of 36 consecutive months.

12.3.2. The special accredited status cannot be granted to a host nation instrument procedure program unless specific justification is provided when:

12.3.2.1. Host nation source documentation (AIP, flight information publication data, NOTAMs, instrument flight procedures, etc.) is not published in easily understandable English; or

12.3.2.2. 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.

12.3.3. 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 (a trip report format is acceptable) and forward to HQ AFFSA Airfield Operations Directorate 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, review and document instrument procedure specialist experience and training, host nation flight inspection and flight validation practices, procedure development standards, and instrument flight procedure publication processes.

12.3.4. Include a statement indicating all requirements in **paragraph 12.2** and **paragraph 12.3** 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). HQ AFFSA Airfield Operations Directorate makes the final decision based on the documentation and rationale provided.

12.4. Evaluation and Acceptance Requirements – Host Nation Airports. Individual host nation airports may only be considered for the 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 categorized as "accredited" on the USAF Accredited Host Nation List for a minimum of 36 consecutive months.

12.4.1. Completion of the Host Nation Program Acceptance Checklist from **Attachment 3** of the DoD Memorandum of Agreement for Review, Maintenance, and Publication of FTIP (or at **Figure 12.2**) is required. 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.

Figure 12.2. Host Nation Program Acceptance Checklist.

HOST NATION PROGRAM or AIRPORT ACCEPTANCE CHECKLIST FOR

Note 1. Items 2, 3, & 4 are hard stop items. If the answer is "No" to any of these 3 questions, acceptance cannot be approved. This form and supporting documentation must be retained for historical reference.

Note 2. When the candidate program is contracted, the contract shall include maintenance of the host nation procedures on a real-time basis. A method to resolve issues shall also be addressed in the contract.

Note 3. Written documentation of a candidate's obstacle evaluation program is not required. However, host nation aviation or instrument procedure authorities shall be able to explain the process.

	Item	Yes	No	Attachments
1.	Is the Host Nation (HN) candidate program managed by civil or military authorities from either:			
	a. An ICAO Contracting State (member nation)?			
	b. A Special Administrative Region (SAR)?			

*2.	Does the HN candidate program have an office dedicated to maintenance of AIP publications and the instrument procedure program?			
	a. When available, provide details of the contracted or HN government controlled program.			
*3.	Does the HN candidate program have an effective obstacle evaluation process?			
	a. Explain how the HN candidate program receives obstacle data and how it evaluates the impact of existing, proposed or new obstacles on instrument procedures.			
	b. Does the HN candidate program establish segment altitudes that ensure minimum obstacle clearance IAW the criteria or standard documented in the HN AIP?			
*4.	Does the HN candidate program validate, develop, and issue NOTAMS for their IFPs?			
	a. Is there a central HN NOTAM office or authority?			
	b. Does the US NOTAM system accurately capture the candidate program's NOTAMS?			
	c. Are the HN NOTAMs being issued to ensure published IFPs remain accurate, current, and useable?			
	d. Are the HN NOTAMs issued soon enough to allow corrective action(s) to be taken on FTIP published in the DoD FLIP (Terminal) to coincide with the effective date of the HN change?			
5.	Does the HN have a certification mandate for employees and contractors performing instrument procedure design?			
	a. Is there a competency or standard training requirement for instrument procedure design?			
	b. Is there a competency or certification requirement for instrument procedure design software use?			
6.	Are all known significant differences between national regulations and practices of the HN and relevant ICAO Annexes documented in the host nation AIP?			

Item (continued)		**Yes**	**No**	**Attachments**
7.	Document the method or process the HN authority employs to conduct Quality Control (QC) or a Post Publication Review of their published instrument procedures.			
8.	Are HN AIRAC issues received in a timely manner and before their effective dates?			
9.	When a host nation AIP includes more than one country, document how the individual instrument procedure program methods and practices are clearly defined in the AIP for each country.			
10.	When a host nation AIP includes military and civilian IFPs and separate aviation authorities are responsible for their development, document how the methods and practices employed by each agency are specified in the AIP.			
11.	Does host nation source documentation (AIP, AIRAC, FLIP, NOTAMs, etc.) indicate coordinates are published in the WGS-84 reference datum?			

	a. When 'No', identify the datum used here: _____			
	b. When WGS-84 is indicated in host source, indicate how the coordinates are derived.			
	1). Via SURVEY?			
	2). Via MATHEMATICAL CONVERSION?			
	c. When WGS-84 coordinates are transformed by mathematical conversion, do they meet the requirements of ICAO Annex 4 and ICAO Annex 15?			
12.	What criterion does the HN candidate program use to design, develop, and maintain IFPs?			
13.	Is flight inspection performed to standards in accordance with ICAO Annex 10, Aeronautical Telecommunications or FAA Order 8200.1D, *US Standard Flight Inspection Manual*?			
	a. Is flight inspection performed by a government agency?			
	b. Is flight inspection performed by a contracted/private company?			
14.	Is flight validation performed to standards in accordance with PANS-OPS, (Doc 8168) Volume II, Part I, Section 2, Chapter 4, Quality Assurance or FAA Order 8200.1D, *US Standard Flight Inspection Manual*?			
	a. Is flight validation performed by a government agency?			
	b. Is flight validation performed by a contracted/private company?			
15.	Describe how the Service TERPS authority communicates with the HN instrument procedure and aviation data OPR(s) to report errors or resolve/clarify procedure design and data concerns.			
16.	Does the HN instrument procedure authority for the candidate program continually demonstrate the ability to develop, publish and maintain IFPs that are safe and flyable?			
17.	Does the HN instrument procedure authority for the candidate program continually demonstrate the ability to develop, publish and maintain IFPs that meet accepted criteria or standards?			

12.4.2. Document the requirements as outlined in **paragraph 12.3** (except for the requirement in **paragraph 12.3.2**) and **paragraph 12.4** have been met unless rationale is provided for submitting the airport for special accredited category without meeting the requirement(s).

12.4.3. HQ AFFSA Airfield Operations Directorate makes the final decision based on the documentation and rationale provided.

12.5. HQ AFFSA Airfield Operations Directorate Acceptance Approval Responsibilities.

12.5.1. Solicit and consolidate comments from other MAJCOMs, the NGA, the US Army Aeronautical Services Agency, the Naval Flight Information Group, and from the FAA regarding the suitability of programs or airports submitted for initial acceptance and inform these agencies of completed acceptance actions.

12.5.1.1. 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.

12.5.1.2. 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.

12.5.2. Maintain the USAF Accredited Host Nation List, the DoD Accepted Host Nation List, and distribute them whenever updates are made.

12.5.3. Notify the appropriate MAJCOM TERPS function when made aware of changes that may affect the status of host nation instrument procedure programs or airports.

12.6. Maintaining FTIP Acceptance Approval. The responsible MAJCOM TERPS function is required to periodically revalidate programs and airports accepted under the USAF FTIP acceptance program. Submit revalidation packages to HQ AFFSA Airfield Operations Directorate 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 12.2** through **paragraph 12.4**, as applicable. When required, forward revalidation extension requests to HQ AFFSA Airfield Operations Directorate 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. **Note**: The AIP RUSSIA should be reviewed annually (not later than 31 January) by USAFE-AFAFRICA/APF to determine whether any of the remaining Commonwealth of Independent States countries have separated and established their own AIP.

12.6.1. Accredited Category. Complete the Host Nation Accreditation Checklist (**Figure 12.1**). 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 accredited host nation program and requesting upgrade to the special accredited category, complete the Host Nation Program Acceptance Checklist at **Figure 12.2** or from **Attachment 3** of the DoD Memorandum of Agreement for Review, Maintenance, and Publication of FTIP; do not use the Host Nation Accreditation Checklist.

12.6.1.1. When the 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:

12.6.1.1.1. Issue a "**NOT AUTHORIZED**" NOTAM on all affected instrument procedures pending downgrade to the non-accredited status; and

12.6.1.1.2. Notify HQ AFFSA Airfield Operations Directorate of the new trend(s), condition(s) or change(s) to the host nation program. Include one of the following recommendations in this notification:

12.6.1.1.2.1. To maintain the accredited category; or

12.6.1.1.2.2. To downgrade the program to the non-accredited category.

12.6.1.2. Final action is based on the HQ AFFSA Airfield Operations Directorate evaluation of the MAJCOM recommendation. When host nation programs are downgraded from the accredited category, perform the following:

12.6.1.2.1. Rebuild each affected host nation procedure in GPD and amend the published procedures as necessary; and

12.6.1.2.2. Issue all required waiver actions as necessary.

12.6.1.3. When removing the FTIP from the DoD FLIP (Terminal), it may be necessary to complete FTIP criteria validation and FTIP review IAW **Chapter 13** of this AFMAN and posting the host nation procedure in the GDSS.

12.6.2. Special Accredited Category. Complete the Host Nation Program Acceptance Checklist from **Attachment 3** of the DoD Memorandum of Agreement for Review, Maintenance, and Publication of FTIP or at **Figure 12.2**. Include a recommendation for the program or airport to either retain the current status or for it to be downgraded. **Note:** Host nation visits are not required when conducting revalidation, but are highly recommended when there is any indication that the host nation program or airport no longer meets standards.

12.6.2.1. When the 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:

12.6.2.1.1. Issue a "**NOT AUTHORIZED**" NOTAM on all affected instrument procedures until the appropriate review is completed; and

12.6.2.1.2. Notify HQ AFFSA Airfield Operations Directorate of the new trend(s), condition(s), or change(s) to the host nation program. Include one of the following recommendations in this notification:

12.6.2.1.2.1. To maintain the special accredited category; or

12.6.2.1.2.2. To downgrade the program or airport.

12.6.2.2. Final action is based on the HQ AFFSA Airfield Operations Directorate evaluation of the MAJCOM recommendation. Host nation programs downgraded to the accredited category are placed on the USAF Accredited Host Nation List for a maximum period of 12 months without being revalidated.

12.6.2.3. When a special accredited program is downgraded to the accredited category, ensure the FTIP is validated IAW **Chapter 13** and that any required procedural changes are sent to the NGA via a new tasking letter.

12.6.2.4. When a special accredited airport is downgraded, it is removed from the 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 13

FOREIGN TERMINAL INSTRUMENT PROCEDURES

13.1. Validation of FTIP. When host nation instrument flight procedures are not published by the US government, they must be validated as safe and accurate by the FAA or the appropriate US military authority before they can be flown. **(T-1)**. 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 is already providing these services. **Exception**: Provide the required assistance when requested by another authority during contingency conditions or emergency situations.

13.1.1. The FTIP criteria validation process includes an evaluation of the FTIP for compliance with an accepted instrument procedure criteria or standard and, when requested, a comparison between the FTIP and the corresponding commercially produced instrument flight procedure. The comparison evaluation only verifies the reproduction accuracy provided by the commercial vendor; it does not evaluate compliance with instrument procedure criteria or standards. **Note**: The requirement for comparison evaluation does not apply to FTIP reproduced by Jeppesen®.

13.1.2. MAJCOM instrument procedure functions may not arbitrarily absolve themselves of FTIP criteria validation responsibility by unsolicited re-assignment but may delegate or transfer this authority (**paragraph 13.21**). Prior to beginning FTIP criteria validation, the HQ AMC GDSS Airfield Suitability and Restrictions Report should be checked to determine whether or not the requested FTIP review is already posted. Submit FTIP reviews approved by the MAJCOM flying operations authority to HQ AMC for posting to the GDSS.

13.1.3. When a command has no "in-house" TERPS function or when the FTIP criteria validation responsibility is temporarily delegated to another MAJCOM (that is, the reviewing MAJCOM), the Operational Risk Management decision(s) and final approval to use the FTIP is the responsibility of:

13.1.3.1. The flying operations authority of the MAJCOM requesting validation (that is, the requesting MAJCOM); or

13.1.3.2. The command authority exercising operational control of the mission aircraft. **Note:** The requesting MAJCOM determines the office in which this authority is vested.

13.1.4. FTIP criteria validation may be waived when a FTIP review or a restricted 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)**.

13.1.5. The requesting agency is responsible for identifying all FTIP requiring validation and any commercially produced products requiring a comparison evaluation. Establish guidance for FTIP criteria validation requests to be directed to the MAJCOM TERPS function. When the requested FTIP is in the 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. Guidance should include the following:

13.1.5.1. An amount of lead time sufficient to ensure validation requests are completed before the mission start date. 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 would be required when multiple instrument flight procedures are requested;

13.1.5.2. The applicable four-letter ICAO location identifier(s);

13.1.5.3. The airport name(s);

13.1.5.4. Mission start and termination dates;

13.1.5.5. The aircraft category and aircraft instrument capability (for example, NDB, VOR, TACAN, PBN, etc.); and

13.1.5.6. The specific name of each FTIP required.

13.1.6. Obtain copies of the applicable host nation's AIP or terminal flight information publication products from the NGA. These products are available from the NGA Aeronautical Source Packaging Service (ASPS) at **https://asps.leidos.com/**; an account and password are required to access this system. Alternately, access the NGA Aeronautical Content Exploitation System (ACES) at **https://aerodata.nga.mil/AeroBrowser/**. **Note**: Do not use or distribute to aircrews host nation instrument procedures downloaded from foreign internet web sites.

13.1.7. Obtain FTIP acceptability endorsement from the appropriate, MAJCOM determined, standardization and evaluation function. Validation results should include appropriate recommendations or limitations concerning the procedure from standardization and evaluation.

13.2. Conducting Comparison Evaluation. When requested, conduct a comparison evaluation to determine how accurately the commercial vendor has reproduced all of 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. When the reviewing MAJCOM does not have access to the requested commercially produced product or when current copies are not readily available from the NGA or from the vendor, inform the requesting agency that a comparison evaluation cannot be accomplished.

13.3. Conducting Instrument Procedure Evaluation. Validate host nation produced instrument flight procedures using the FTIP Criteria Validation Checklist (**Figure 13.1**) or GPD software (as appropriate), the process described in **Figure 13.2**, Basic Process for Validating FTIP, and guidance from this chapter. When using GPD, ensure all items on the FTIP Criteria Validation Checklist are evaluated. When the reviewing MAJCOM has personnel assigned that have completed PANS-OPS training, FTIP criteria validation may be conducted using ICAO standards by the trained individuals; otherwise use US TERPS criteria.

13.3.1. Except for PAR and ASR approaches and as indicated in **paragraph 13.3.2**, the instrument procedure specialist must evaluate all segments of the FTIP; include associated holding patterns, landing minima, and minimum sector altitudes. **(T-1)**. Host nation STARs and airway structure do not require evaluation. When unable to perform an evaluation of a segment using automation, or when GPD does not support the type procedure, evaluate the segment or procedure manually.

13.3.1.1. Host nation DPs and missed approaches with DME arc segments may be validated with GPD by selecting the "FTIP Review" button. **Note**: GPD generates a violation when validating the arc segment; waiver authority consideration may be required.

13.3.1.2. When track guidance is not provided in a particular segment of the host nation procedure, publish the following note: **Caution: Track guidance not available in the** (appropriate segment) **segment**.

13.3.2. FTIP criteria validation of special accredited category FTIP is not required, however, the MAJCOM TERPS function may establish validation requirements for this category at their discretion. **Note:** When requested, provide ceiling and visibility IAW **paragraph 13.4**.

13.3.3. FTIP criteria validation of 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. In conjunction with the appropriate, MAJCOM determined, standardization and evaluation function, chart an operational or caution note in the planview that notifies users of each deviation and a recommended compensating action. For example: **CAUTION: CAT E short intermediate; recommend early configuration**.

13.3.3.1. Evaluation of obstacles for obstacle clearance is not required. **Exception**: When validating host nation DPs IAW **paragraph 13.5.1**, a departure obstacle assessment is required.

13.3.3.2. Complete, sign, and date the FTIP Criteria Validation Checklist.

13.3.4. FTIP criteria validation of non-accredited category FTIP. Evaluate each segment (include any holding pattern and the MSA) of the instrument procedure for obstacle clearance. Also evaluate landing minima prior to aircrew use of the FTIP. When able, justify each violation listed in the Violations, Warnings, Notes, etc. section of the build or publication report with one or more easily identifiable, written, criteria reference that allows the violation.

13.3.4.1. Initiate waiver action IAW **paragraph 1.4** for criteria violations that cannot be properly justified.

Figure 13.1. FTIP Criteria Validation Checklist.

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			

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**

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			
SPECIAL NOTES			

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**
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.

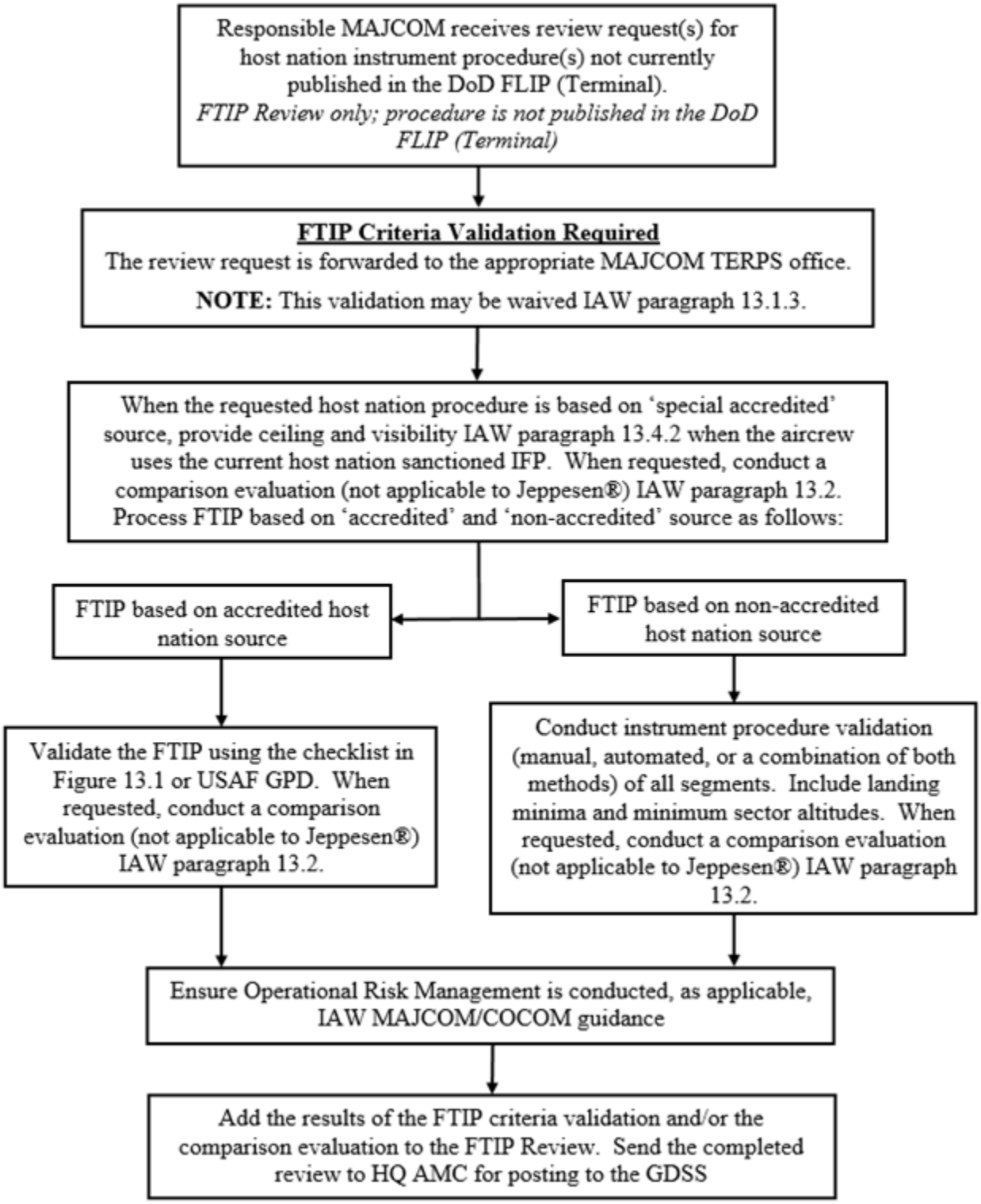
Name of HN IFP: _____

Date Checklist Completed: _____

Procedure Specialist's Printed Name: _____

Procedure Specialist's Signature: _____

Figure 13.2. Basic Process for Validating FTIP.



13.3.4.2. When the host publishes a straight-in procedure with circling minima and it is determined that the host procedure does not meet straight-in criteria, do not publish straight-in minima without an approved waiver; the circling minima may be published.

13.3.4.3. When the host publishes "circling only" minima and does not comply with FAA Order 8260.3D, paragraph 1-6-3, Circling Approach Procedures, build a circling only procedure and apply **paragraph 13.20.13** of this AFMAN.

13.3.4.4. Manually evaluate all segment(s) not supported by GPD for special use airspace and obstacle clearance violations via map study. Indicate in the FTIP review when deviating from map scale requirements established in **Table 2.2**; include the map scale required and the map scale used.

13.3.4.4.1. When the appropriate scale paper map products outlined in **Table 2.2** do not exist or are not available for the map study, and when digital terrain data is not available, ensure the procedure is restricted to "**DAY VMC**" and obtain a flyability check prior to the FTIP being used under IMC.

13.3.4.4.2. Ensure all segments that have not been evaluated using the appropriate scale paper product or with digital terrain data are assessed during the flyability check. Conversely, when a 1:500,000-scale map (or a scale with better resolution) was used to evaluate the holding pattern, it would not be necessary to have the holding pattern evaluated via flyability check.

13.3.4.5. Retain the completed FTIP review in an instrument procedure package with the GPD build report until the review expires.

13.4. Validating FTIP Approach Minimums.

13.4.1. 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 the DoD FLIP (Terminal) product or in the FTIP review. **Note**: Changes made to FTIP minima due to rounding do not require coordination with the host nation.

13.4.2. Validate FTIP with the criteria used by the host. When unable, compute minimum altitude data (that is, DA/DH/HAT/HAA/radar altimeter/circling minimum descent altitude) for FTIP IAW FAA Order 8260.3D, paragraph 3-2-1.

13.4.3. Compute FTIP visibility minima IAW applicable examples provided in ICAO Doc 9365, *Manual of All-Weather Operations*, or IAW AATCP-1. Compute FTIP ceiling values IAW FAA Order 8260.3D, paragraph 3-1-2, or IAW AATCP-1. **Note:** Use of the Minima Calculator within the GPD Utilities folder is also authorized.

13.4.4. Compare results with the host's published value(s) and publish the higher of the two values.

13.4.5. For FTIP based on accredited and special accredited host nation source, evaluation of the visual portion of the final approach segment is at the discretion of the MAJCOM. When this evaluation is accomplished, apply **paragraph 6.27** of this AFMAN.

13.4.6. Apply **paragraph 13.4.2** and reproduce accredited and special accredited host nation radar minima data in the published FTIP or in the FTIP review. Neither GPD nor the FTIP Criteria Validation Checklist is required when validating radar minima from an accredited or special accredited host nation source. **Note**: Publication of host nation radar minima is at the discretion of the MAJCOM.

13.4.7. 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), manual evaluation of the circling minimum descent altitude is authorized.

13.5. Validating Host Nation DPs. When host nation obstacle avoidance DPs have been established or when the host has published one or more SIDs, evaluate the host product(s) IAW 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.

13.5.1. When unable to verify or validate host nation DP practices (SIDs, omni-directional departures, diverse departure information, etc.) and an AF validated (or developed) method of departure is required to support the mission, apply the following:

13.5.1.1. Regardless of a location's accreditation category, develop an appropriate workspace and accomplish a diverse departure obstacle assessment or an omni-directional obstacle assessment (ICAO Doc 8168 OPS/611, Vol II, Part I, Section 3, **Chapter 4**);

13.5.1.2. When obstructions penetrate the 40:1 OCS, ensure the appropriate takeoff obstacle notes are added to the FTIP review or to the published FTIP. 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**;

13.5.1.3. Add the following note to the review of the departure: **Rwy XX, Use** (name of host DP/SID) **for obstacle avoidance/noise abatement** (as applicable); and

13.5.1.4. Apply **paragraph 6.37** of this AFMAN and establish a DP package.

13.5.2. When the departure obstacle assessment identifies any obstacle that requires a climb gradient to an altitude greater than 200 feet above the departure end of runway elevation, comply with **paragraph 13.5.1.4** *and* either:

13.5.2.1. Specify 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

13.5.2.2. When an ODP routing permits an unrestricted climb within a sector, define 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**.

13.5.3. Combining the options described in **paragraph 13.5.2.1** and **paragraph 13.5.2.2** 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**.

13.6. Metric Minima, Rounding, and Associated Conversions.

13.6.1. 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.

13.6.1.1. When the host nation published climb gradient exceeds 3.3%, convert the climb gradient percentage to a foot per NM value by multiplying the host published percentage by 6076.11548.

13.6.1.2. Example. Convert 5.4% into a climb gradient expressed in a foot per NM value as follows: .054 × 6076.11548 = 328.1102359.

13.6.2. Descent Gradients. Convert host nation final approach descent gradients expressed as a percentage to a descent angle expressed in degrees. Round appropriately and publish the descent angle to the nearest 1/100th of a degree.

13.6.3. Vertical Descent Angle. Calculate the VDA IAW FAA Order 8260.3D, paragraph 2-6-2.

13.6.4. 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.

13.6.4.1. Round minimum altitudes UP to the NEXT, maximum altitudes DOWN to the NEXT, and mandatory altitudes to the NEAREST:

13.6.4.1.1. 1-foot increment for the DA/DH;

13.6.4.1.2. 20-foot increment for the FAF/PFAF, stepdown fix, and MDA. **Note:** A 10-foot increment is authorized for the MDA/minimum descent height when applying ICAO or NATO criteria;

13.6.4.1.3. 100-foot increment for DPs, Feeder, Initial, Intermediate, and Missed Approach segments; and

13.6.4.1.4. 1000-foot increment for en-route altitudes and flight levels.

13.6.4.2. 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, use of 50-foot, 20-foot, or 10-foot increments is authorized. **Note**: These smaller increments are not programmed into GPD for missed approaches; use of these smaller increments require manual missed approach evaluation or construction methods.

13.6.4.3. In all instances of rounding, ensure the rounded result does not violate the obstacle clearance requirement of any segment or chart.

13.6.5. Depict host nation published QFE (AGL elevation) heights in parentheses below the associated QNH (MSL elevation) altitudes on the published FTIP. **Note**: Refer to AFMAN 11-217, Volume 1, **Chapter 15**, for additional information.

13.6.5.1. The reference datum associated with the 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.

13.6.5.2. When the applicable threshold elevation is more than 2 meters (7 feet) lower than the field elevation, the difference between the QNH value and the QFE value should equal the threshold elevation.

13.7. Departure End of Runway Crossing Restrictions (screen height). The standard ICAO 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:

13.7.1. 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;

13.7.2. 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;

13.7.3. 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

13.7.4. Include a request to chart host nation screen heights other than 16 feet in the tasking letter to the NGA. Incorporate all departure end of runway crossing restriction instructions in the IFR takeoff minimums or in the departure route description, as applicable, describing the AGL and MSL restriction in the following format: **Cross departure end of runway at or above 20′ AGL/187′ MSL**.

13.8. Maximum Holding Altitude Determination.

13.8.1. 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:

13.8.1.1. An altitude equal to an ESA;

13.8.1.2. 10,000 feet above the host nation published minimum holding altitude; or

13.8.1.3. The published initial approach fix altitude.

13.8.2. When this evaluation indicates a required change to the holding pattern as depicted on the FTIP, either lower the selected maximum holding altitude or select a smaller holding pattern (lower airspeed) and re-evaluate.

13.8.3. Continue this process until the selected altitude, the lower airspeed, or a combination of both allows use of the holding pattern as depicted on the FTIP. Publish the validated maximum holding altitude (and airspeed when required) on the DoD FLIP (Terminal). **Note**: Only publish the maximum holding altitude when required to ensure clearance from obstacles.

13.8.4. A maximum holding altitude determination is not required for FTIP holding patterns based on accredited or special accredited host nation source.

13.9. Foreign Facilities Approved for Category II and Category III Operations. Host nation Category II/III ILS procedures approved by the FAA are posted on the FAA Flight Technologies and Procedures Division, Flight Procedures and Airspace Group web site (**paragraph 12.2.1.3.2**). **Note:** These FTIP are evaluated individually therefore the FAA approval does not apply to any other procedures or to the ILS equipment associated with that runway.

13.9.1. At MAJCOM discretion, Category II/III ILS FTIP that have been approved by the FAA and listed on the excel spreadsheet link "Foreign Facilities Reviewed for Category II/III Operations" on the FAA web site may be reviewed or published under the guidelines established in this AFMAN for instrument procedures based on special accredited host nation source regardless of the accredited category of the host nation instrument procedure authority.

13.9.2. Category II/III ILS FTIP *not* listed on the excel spreadsheet link are subject to the review or publication requirements associated with FTIP based on the accredited category of the host nation instrument procedure authority, as applicable.

13.9.3. Do not combine host nation Category I ILS procedures with host nation Category II/III ILS or any other instrument procedure. When the host nation combines Category I/II/III ILS procedures on a single plate, de-combine the Category I ILS procedure from the Category II/III ILS procedures and publish the host nation Category I ILS separately in the DoD FLIP (Terminal).

13.10. Procedure Turns. Chart procedure turns exactly as shown on the FTIP. Include the fix when the turn starts at a fix, rather than at a time or distance determined by the pilot. Determine and publish the outbound and inbound tracks on the 45° offset of the 45°/180° procedure turn when they are not shown on the FTIP.

13.10.1. 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 the 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.

13.10.2. When applying US TERPS criteria while performing FTIP criteria validation with the intent of publishing in the 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 the 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.

13.11. FTIP MOC Requirements. Search for applicable obstacle data to support MOC development in the host nation AIP and include this data in the GPD obstacle database. Perform a map study of the host nation location and add any additional obstacle data (trees, buildings, towers, smokestacks, etc.) to the database. See the note in **paragraph 3.3** of this AFMAN.

13.12. 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 the DoD FLIP (Terminal) and prior to being reviewed for posting to the GDSS in the Airfield Suitability and Restrictions Report.

13.12.1. The only approved sources for translating information and instrument procedures obtained from a foreign AIP are the NGA, a qualified translator on the MAJCOM TERPS staff, or the US Defense Attaché Office located in the country where the instrument procedure is located.

13.12.2. Send requests for copies or translation of host nation source documentation to the NGA at **AeroHelp@nga.mil**. The subject line of the email should include the country name, airfield name, due (D) date, mission (M) date and the priority (P) code (**paragraph 13.12.2.1**) to ensure proper distribution at the NGA and a timely response. Also include the purpose for the translation.

13.12.2.1. Priority Codes. P1 = 1-3 Business Days. P2 = 3-6 Business Days. P3 = 7-14 Calendar Days. P4 = 15-30 Calendar Days.

13.12.2.2. Example 1: Kyrgyzstan, Bishkek, D6/12/17, M6/28/17, P2. Example 2: Columbia, Multiple Airfields, D6/15/17, M6/30/17, P1.

13.13. FTIP Reviews and Restricted FTIP Reviews. The instrument procedure specialist shall document FTIP reviews and restricted FTIP reviews IAW the formats outlined in the 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 the FTIP does not meet recognized obstacle clearance or when flight inspection abnormalities are known to exist. In conjunction with the appropriate 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 the FTIP criteria validation results with supporting documentation, as applicable, in a procedure package.

13.13.1. FTIP reviews and restricted FTIP reviews are posted to the GDSS as received from the reviewing MAJCOM, verbatim, by HQ 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 the GDSS without approval from the reviewing MAJCOM. HQ 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.

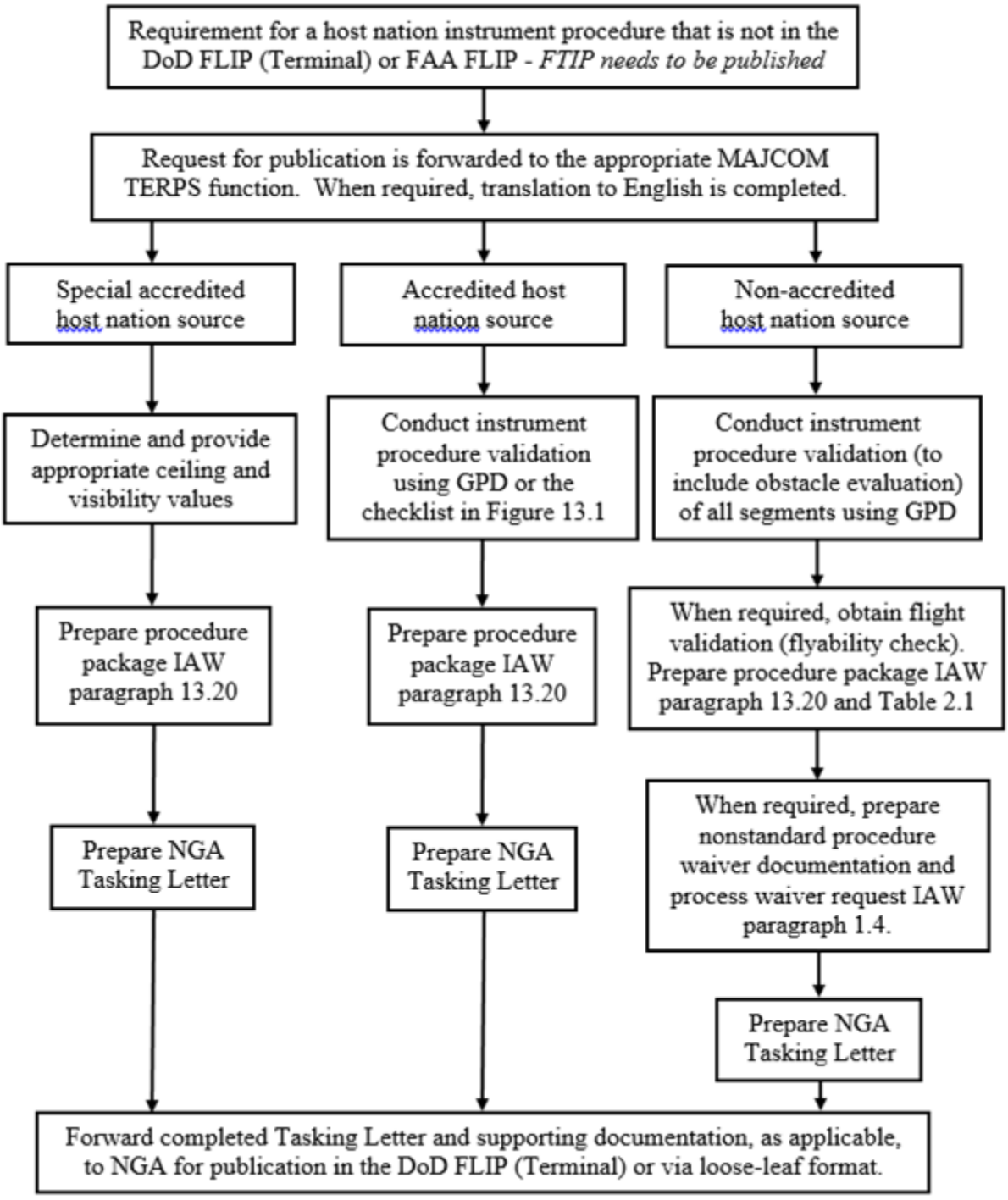
13.13.2. The reviewing MAJCOM is responsible for informing the requesting agency when changes to a review are required. Send revisions to HQ AMC/A3AT at **amc.terps@us.af.mil** for posting to the GDSS. Ensure an expiration date is clearly indicated in each review posted to the GDSS. Perform continuous maintenance on the FTIP review IAW **paragraph 2.6** while the review remains effective.

13.13.2.1. When maintenance of the FTIP review has been stopped for any reason, and a new request for validation of the FTIP is received, re-accomplish the validation and establish a new expiration date.

13.13.2.2. When subsequent requests for validation are made and maintenance has been continuous, the FTIP does not require additional evaluation. For example, when the 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.

13.13.2.3. The review expiration date should match the anticipated publication date in the DoD FLIP (Terminal). When publication of the FTIP review is desired, follow the basic process described in **Figure 13.3**. Limit the expiration date on restricted FTIP reviews to a maximum of seven days past the expected mission completion date.

Figure 13.3. Basic FTIP Publication Process.



13.14. 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:

13.14.1. 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 the 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 AF flying organization, etc.). This agreement shall include assurances that the MAJCOM is informed of changes or revisions made by the host nation as they occur;

13.14.2. An aeronautical information service (that is, NOTAMs, etc.) is available for the host nation location when publishing in the DoD FLIP (Terminal). **Note**: For FTIP review, an alternate method of alerting aircrews to infrastructure or IFP changes may need to be established when host nation NOTAM services do not exist; and

13.14.3. Other DoD instrument procedure authorities are notified IAW the DoD FTIP MOA when requesting FTIP publication responsibility at a new location.

13.15. Coordinating with the Host Nation. Establish host nation coordination requirements and MAJCOM documentation and approving authority signature requirements when publishing FTIP in the 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 AFI 51-403, *International Agreements*.

13.15.1. 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.

13.15.2. 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.

13.15.3. 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 ceiling and visibility minima; higher emergency safe altitudes; higher minimum safe altitudes; and when converting metric altitudes to US equivalent altitudes.

13.16. Publishing High Performance Military Aircraft (HPMA) Minima.

13.16.1. Do not use Category E approach minima as a substitute for host nation HPMA minima.

13.16.2. 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.

13.17. Publishing Foreign RNAV Procedures. Do not try to interpret the intent of the host nation or establish a path terminator for any RNAV segment. The NGA does not require coding to be provided with the FTIP RNAV procedure for publication; they are authorized to code the host nation procedure according to the DAFIF specification.

13.18. Publishing FTIP Missed Approach Procedures.

13.18.1. When a host nation publishes more than one missed approach, publish all of them on the DoD FLIP (Terminal). Depict only one missed approach track graphically; publish all others via a complete textual description.

13.18.2. 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 the DoD FLIP (Terminal).

13.18.3. 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' IAW **paragraph 2.11** of this AFMAN.

13.19. DoD NOTAMs on FTIP Published in the DoD FLIP (Terminal). NOTAMs issued by the host nation do not apply to FTIP published in the 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 the DoD FLIP (Terminal). **Note:** Ensure the requirements in **paragraph 2.4** of this AFMAN are applied.

13.19.1. 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 the DoD publication, correct the DoD procedure by issuing a NOTAM reflecting the changes made by the host.

13.19.1.1. 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.

13.19.1.2. 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 the NGA via a tasking letter of the required changes and maintain the "**NOT AUTHORIZED**" NOTAM until the corrected depiction is published in the DoD FLIP (Terminal).

13.19.2. 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 the NGA.

13.20. FTIP Package Content and Associated Documentation.

13.20.1. Ensure all requests for publication conform to requirements in this AFMAN, **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**.

13.20.2. Complete a tasking letter for each publication request. Do not combine a request for an ODP in the IFR Take-Off Minimums and Departure Procedures section of the 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 Take-Off Minimums and Departure Procedures section.

13.20.3. Publish all FTIP warning and caution notes. Coordinate with local standardization and evaluation personnel for assistance when clarifying host nation notes when they are confusing. When publishing translated host nation notes, use good judgment and ensure these notes are clear and make sense prior to publishing in DoD FLIP (Terminal). **Note:** Refer to **paragraph 13.12** for guidance on translating host nation data.

13.20.4. 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 the FTIP). Research host nation AIP and other host documentation to ensure the DoD published FTIP is complete and accurate.

13.20.5. Publish minimum safe altitudes, minimum sector altitudes, and emergency safe altitudes no lower than altitudes specified by the host nation.

13.20.6. 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 the DoD FLIP (Terminal).

13.20.7. When the host publishes alternate minimums, publish all applicable alternate minima. **Exception**: When the DoD published version of the FTIP includes the note "**NOT FOR CIVIL USE**" (for any reason), *do not publish* alternate minimums.

13.20.8. 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.

13.20.9. Publish all FTIP circling restrictions.

13.20.10. Ensure NAVAIDs and holding patterns not part of the instrument procedure but depicted on the FTIP are charted on the DoD procedure. Identify these NAVAIDs and holding patterns in the tasking letter to the NGA for charting on the DoD procedure as an ATC requirement.

13.20.11. When the host nation publishes a time/distance table, depict a time/distance table on the 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 the MAP. When the FTIP does not depict a time/distance table and there is no indication on the FTIP or in supporting host nation source (AIP, NOTAMs, etc.) that timing may not be used, develop and publish an appropriate time/distance table IAW the following:

13.20.11.1. 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;

13.20.11.2. Develop and publish the flying time in minutes and seconds from FAF/PFAF to MAP or from stepdown fix to MAP, as applicable; and

13.20.11.3. When the FTIP is published with a time/distance table from the FAF/PFAF or from a stepdown fix to the threshold, determine where the MAP is located. When the host has published multiple stepdown fixes, publish the time/distance table from the stepdown fix nearest the MAP.

13.20.12. When validating data on the 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.

13.20.13. When de-combining FTIP to meet DoD publication specifications or other publication requirements outlined in this AFMAN, altering the FTIP identification is authorized and waiver consideration is not required. When the identification differs from FAA Order 8260.3D, paragraph 1-6-2 or paragraph 1-6-3 criteria, document the host nation intent of the procedure.

13.20.13.1. 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.

13.20.13.2. 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.

13.20.14. Document and maintain instrument procedure packages for FTIP based on special accredited host nation source by including, at a minimum, the following:

13.20.14.1. A copy of the correspondence requesting publication of the procedure (when applicable);

13.20.14.2. A copy of the tasking letter with instructions for publication;

13.20.14.3. A copy of the host published source document;

13.20.14.4. 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. Nonprecision computations may be documented on the reverse side of AF Form 3640, *Nonprecision Computations*. **Note**: Do not send computation sheets to the NGA;

13.20.14.5. A procedure log. Track procedural changes, reviews, AutoEval completion, and all other actions taken to keep the instrument procedure current; and

13.20.14.6. One copy each of the current and most recent previous NGA produced procedure plate. **Note**: After the FTIP is published, the planview and profile from the DoD FLIP (Terminal) may be used to illustrate changes being submitted to the NGA.

13.20.15. In addition to the documentation requirements in **paragraph 13.20.14**, document and maintain instrument procedure packages for FTIP based on accredited host nation source by including a completed FTIP Criteria Validation Checklist (**Figure 13.1**).

13.20.16. Ensure all FTIP validated with GPD include approval and coordination signatures on the Approach/Departure Signature Page. Document and maintain FTIP based on non-accredited host nation source IAW **Table 2.1**.

13.20.17. Except for FTIP based on special accredited host nation source, FTIP reviews, published FTIP, and restricted FTIP reviews must be reviewed and approved by MAJCOM standardization and evaluation personnel prior to aircrew use.

13.21. 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 AFMAN have been met.

MARK D. KELLY, Lt Gen, USAF
Deputy Chief of Staff, Operations

Attachment 1

GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION

References

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

AFI 33-360, *Publications and Forms Management*, 1 December 2015

AFMAN 33-363, *Management of Records,* 1 March 2008

AFMAN 13-215, Volume 2, *Airfield Operations Charts and Instrument Procedures Support*, 6 February 2014

FAA Order 8260.3D, *United States Standard for Terminal Instrument Procedures (TERPS),* 16 February 2018

FAA Order 8260.19H, *Flight Procedures and Airspace,* 20 July 2017

FAA Order 8260.32F, *U.S. Air Force Terminal Instrument Procedures Service*, 14 December 2018

FAA Order 8260.46G, *Departure Procedure (DP) Program*, 9 November 2018

FAA Order 8260.58A, *United States Standard for Performance Based Navigation (PBN) Instrument Procedure Design*, 14 March 2016

NATO STANAG 3759, Edition 10, North Atlantic Treaty Organization Supplement to ICAO Doc 8168-OPS/611 *Volume II, for the Preparation of Instrument Approach and Departure Procedures* - AATCP-1 Edition E

ICAO Doc 8168-OPS/611 – *Procedures for Air Navigation Services – Air Operations (PANS-OPS); Volume II, – Construction of Visual and Instrument Flight Procedures*

National Geospatial-Intelligence Agency Airfield Survey Specification Document for the Terminal Aeronautical GNSS Geodetic Survey Program, August 2010

AFI 13-204, Volume 3, *Airfield Operations Procedures and Programs*, 1 September 2010

FAA Order 7900.2D, *Submitting Aeronautical Data to Aeronautical Information Services in Support of the National Airspace System (NAS),* 12 February 2018

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Mission Compatibility Evaluation Process, 32 C.F.R. § 211

AFI 90-2001, *Encroachment Management*, 3 September 2014

FAA Advisory Circular 70/7460-1L, *Obstruction Marking and Lighting,* 17 August 2018

FAA Order JO 7400.2L, *Procedures for Handling Airspace Matters,* 7 April 2017

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

DoD Flight Information Publication, *General Planning (GP)*

AFI Interservice Publication 11-208, *Department of Defense Notice to Airmen System,* 13 February 2018

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,* 15 May 2018

AFI 11-202, Volume 3, *General Flight Rules*, 10 August 2016

AFMAN 11-217, Volume 2, *Visual Flight Procedures*, 22 October 2010

AFMAN 11-217, Volume 1, *Instrument Flight Procedures*, 22 October 2010

FAA Order 8200.1D, *United States Standard Flight Inspection Manual,* 6 November 2016

AFTTP 3-2.23, *JATC, Multi-Service Tactics, Techniques, and Procedures for Joint Air Traffic Control*, 18 April 2014

FAA Order JO 8200.44B, *Flight Inspection Services Instrument Flight Procedure Coordination,* 2019

Operating Requirements: Domestic, Flag, and Supplemental Operations, 14 C.F.R. § 121

AFI 32-1042, *Standards for Marking Airfields*, 19 October 2016

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AFI 32-1044, *Visual Air Navigation Systems*, 24 December 2014

Unified Facilities Criteria 3-535-01, *Visual Air Navigation Facilities,* 7 March 2018

Environmental Impact Analysis Process, 32 C.F.R. § 989 (2001)

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FAA Order 6050.32B, *Spectrum Management Regulations and Procedures Manual,* 17 November 2005

FAA Order 8260.26F, *Establishing Submission Cutoff Dates for Civil Instrument Flight Procedures,* 31 March 2014

AFI 13-201, *Airspace Management*, 21 August 2012

FAA Order 7610.4U, *Special Operations,* 1 September 2017

ICAO International Standards and Recommended Practices, *Aeronautical Telecommunications,* Annex 10, Volume I, *Radio Navigation Aids,* Part I, *Equipment and Systems,* Seventh Edition, July 2018

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Department of Defense Directive 5530.3, *International Agreements,* 11 June 1987

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ICAO Doc 9365, *Manual of All-Weather Operations,* Fourth Edition, 2017

National Environmental Policy Act of 1969, 42 U.S.C. §§ 4321 et seq (1970)

FAA JO Order 7110.65X, *Air Traffic Control,* 12 September 2017

FAA Order 8260.59, *United States-Instrument Flight Procedures Panel,* 28 January 2013

Chairman of the Joint Chiefs of Staff Instruction 3901.01E, *Requirements for Geospatial Information and Services*, 28 November 2016 (limited release)

Note: When references are not dated, 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 AF TERPS functions performing FTIP criteria validation. North Atlantic Treaty Organization references only required at AF TERPS functions within NATO performing FTIP criteria validation.

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

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

DH—decision height

DME—distance measuring equipment

DoD—Department of Defense

DoDD—Department of Defense Directive

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

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 airmen

OCS—obstacle clearance surface

ODP—obstacle departure procedure

OE/AAA—Obstruction Evaluation/Airport Airspace Analysis

OIS—obstacle identification surface

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

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

TAGGS—Terminal Aeronautical Global Navigation Satellite System Geodetic Survey

TCH—threshold crossing height

TERPS—terminal instrument procedures

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

Terms

AeroNav2—The FAA maintained aeronautical database used by flight inspection personnel to perform flight inspection on instrument procedures.

Air Force Flight Standards Agency—AF 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 the 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—For the purposes of AF TERPS and the guidance in this AFMAN, 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 where the appropriate vertical accuracy has been 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 8260.3D, NATO AATCP-1, this AFMAN, and other applicable directives. This authority also ensures the procedure package is complete.

Flight Inspection—An inspection conducted IAW 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 the 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, a FTIP review, or a restricted FTIP review.

FTIP Review—The documented results of FTIP criteria validation, limited to a specific mission requirement *or* to a specified length of time, and *is not published* in the 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 the DoD FLIP (Terminal). It

may be a GPD-produced flight information publication graphic, a locally-produced instrument flight procedure representation, or generated by the 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.

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—An in-depth review of each new or revised air traffic control chart, instrument or radar approach procedure, and each new or revised instrument departure/ODP performed by a qualified instrument procedure specialist assigned to a MAJCOM TERPS function. This review includes verification that the instrument procedure was designed IAW approved national or international criteria; ensures all aeronautical and airfield data is current; ensures an appropriate equivalent level of safety is provided and documented when deviations to criteria are necessary; ensures the instrument procedure meets 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; ensures any manual calculations were performed without error; and ensures all required documentation is complete and included in the procedure package (to include all required approval signatures). This review equates to the 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).

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 OPS/611, Vol II; NATO AATCP-1 or any approved supplement to these documents.

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. The AF 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 the AF TERPS function responsible for the instrument flight procedure and validates that the NGA has 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 the 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 in the planview of an instrument flight procedure signifies that aircraft using the procedure is provided ATC radar service as defined in FAA JO Order 7110.65X, *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.

Restricted FTIP Review—The documented results of FTIP criteria validation, limited to a specific mission requirement *and* for a specified length of time, and *is not published* in the DoD FLIP (Terminal).

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 the 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**: AF flying authority guidance for IMC use of self-contained approaches may be found in AFI 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 IAW regulatory guidance specified in this AFMAN. It may be published in the 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 OPS/611, 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.

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

HQ AFFSA TERPS DIVISION PANELS, WORKING GROUPS AND ASSEMBLIES

A2.1. The HQ AFFSA TERPS Division represents AF 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. The AF is a core panel voting member.

A2.1.2. ICAO-Instrument Flight Procedures Panel. When required, HQ AFFSA Instrument Procedures Division participates as the US military advisor to the US delegate (the FAA) and provides military technical and operational feasibility of ICAO provisions to the Air Navigation Commission.

A2.2. The HQ AFFSA TERPS Division represents AF 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 the FAA and between the 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. The HQ AFFSA TERPS Division represents AF and DoD interests at the following assemblies.

A2.3.1. Government/Industry Aeronautical Charting Meeting (ACM). HQ AFFSA TERPS Division 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. HQ AFFSA TERPS Division 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. HQ AFFSA TERPS Division participates as required.

A2.3.3. Implementation, Impact, and Coordination Meeting. This group of FAA and AF instrument procedure specialists meets to evaluate the resource impact on federal organizations of changes to TERPS design criteria. HQ AFFSA TERPS Division 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. HQ AFFSA TERPS Division participates as required.

A2.3.5. Military Instrument Procedure Standardization Team. The Military Instrument Procedure Standardization Team is authorized by the Air Operations Services Working Group and supports the NATO Aviation Committee (formerly the NATO Air Traffic Management Committee). This team is subordinate to the Airfield Services and Procedures Panel and is responsible for reviewing and analyzing the implications of changes to adopted ICAO criteria as well as the introduction of new ICAO criteria and, where necessary, developing additional military unique requirements in NATO STANAG 3759, AATCP-1.