NOTICE

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

N 8260.66

National Policy

Effective Date:
08/22/08

Cancellation Date:
08/22/09

SUBJ: Flight Validation (FV) of Satellite-Based Performance-Based Navigation (PBN) and Special Wide Area Augmentation System (WAAS) Instrument Flight Procedures (IFP)

1. Purpose of This Notice. This notice establishes policy and guidance for conducting Flight Validation (FV) of Satellite-Based Performance-Based Navigation (PBN) and Special Wide Area Augmentation System (WAAS) Instrument Flight Procedures (IFP). This document supplements and does not change the requirements of FAA Order 8200.1, United States Flight Inspection Manual. It also describes the requirement for simulator evaluations and obstacle assessments to be conducted prior to FV. For background information and definitions, refer to appendix C.

2. Audience. The primary audience for this notice is Flight Standards Service (AFS) Aviation Safety Inspectors (ASI) [Operations and Avionics] and Air Traffic Organization (ATO), Technical Operations, Aviation System Standards (AJW) personnel within the Federal Aviation Administration (FAA) who are directly associated with the FAA FV process and/or charged with the responsibility to qualify and provide oversight of non-governmental FV service providers.

3. Where Can You Find This Notice. You can find this notice on the Flight Standards Information Management System (*FSIMS*) at http://fsims.avs.faa.gov. Industry, applicants, and other non-FAA persons can access this notice through FSIMS at http://fsims.faa.gov.

Original Signed By
John M. Allen

James J. Ballough
Director
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Appendix A. Process Overview

1. Validation Overview. Validation is the final quality assurance step in the procedure design process for performance-based navigation (PBN) instrument flight procedures (IFP). The purpose of validation is the verification of all obstacle and navigation data, and assessment of flyability of the procedure. Validation normally consists of ground validation and flight validation.

a. Ground Validation (GV). GV is a review of the entire instrument flight procedure package by a person(s) trained in procedure design and with appropriate knowledge of flight validation issues. It is meant to identify deviations from criteria and documentation; and evaluate on the ground to the extent possible, those elements that will be evaluated in the flight validation phase (see paragraph 1b). Issues identified during the ground validation phase must be addressed prior to the flight validation phase. GV may include both a simulator evaluation and obstacle assessment.

b. Flight Validation (FV). FV of instrument flight procedures must be carried out as part of the initial certification. It must be accomplished by a qualified and experienced flight validation pilot/evaluator approved in accordance with this notice. The objectives of FV are to:

(1) Conduct an assessment of flyability to determine that the procedure can be safely flown;

(2) Provide the final assurance that adequate obstacle clearance has been provided;

(3) Verify that the navigation data to be published is correct;

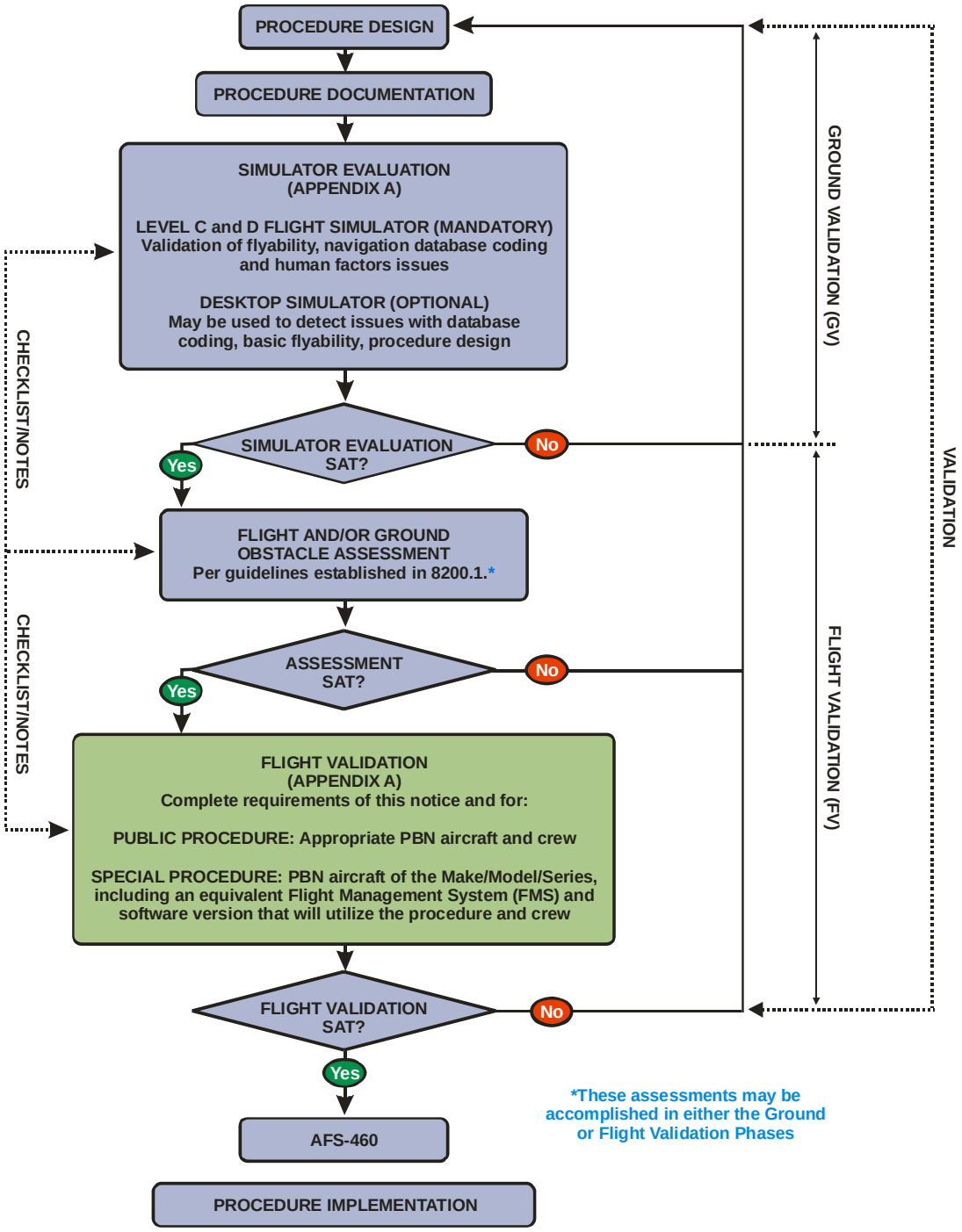
(4) Verify that all required infrastructure, such as runway markings, lighting, and communications and navigation sources, are in place and operative;

(5) Evaluate other operational factors, such as charting, required infrastructure, visibility, etc.

> **Note:** Flight validation should not be confused with flight inspection. Flight inspection of instrument flight procedures is required to assure that the appropriate radio navigation aids adequately support the procedure. Flight Inspection is carried out as part of the program detailed in FAA Order 8200.1, United States Standard Flight Inspection Manual, and is performed by a qualified flight inspector using an appropriately equipped aircraft.

c. Validation Process Flow Chart (see figure A-1). The flow chart identifies that FV is the final step in the PBN IFP development process. Flight Validation's primary objectives are to ensure that the defined lateral and vertical path achieves the design objective, and that the database functions in flight as intended. The FV flight crew will note any anomalies with regard to the flight procedure, flight management system (FMS) operation, obstructions, communications, surveillance, airport infrastructure, etc. Obstacle assessments, as outlined in Order 8200.1 may be completed prior to or after the simulator evaluation. This appendix outlines the FV process, as well as those events, which must occur prior to FV.

Figure A-1. Validation Process Flow



2. Ground Validation (GV).

a. GV must include the following:

(1) Review PBN IFP Package (per paragraph 1);

(2) Review operational issues such as temperature and wind limitations, air speeds, bank angles, climb/descent gradients, etc.;

(3) Verify the PBN or WAAS IFP design, coding, and relevant charting information against the FMS Navigation Database;

(4) Review any special operational and training requirements;

(5) Discuss the procedure package with the procedure designer, as necessary. Consider including the procedure designer in the simulator evaluation, especially where there are special or unique design considerations;

(6) Conduct desktop simulator evaluation (recommended) to provide an initial evaluation of database coding, flyability, and to provide feedback to the procedure designers;

(7) Plan the simulator evaluation (if required);

b. Simulator Evaluation (if required). All Required Navigation Performance (RNP) Special Aircraft and Aircrew Authorization Required (SAAAR) IFP must have a simulator evaluation prior to FV unless waived by the Flight Procedure Implementation and Oversight Branch (AFS-460). Simulator evaluations of other IFP should be conducted where evaluation of special design or operational conditions are desired.

(1) Simulator Requirements.

(a) For Public PBN IFP, conduct the simulator evaluation using an FAA-qualified Level "C" or Level "D" flight simulator capable of flying the procedure under normal operations.

(b) For Special PBN IFP, conduct the simulator evaluation using an FAA-qualified Level "C" or Level "D" flight simulator (same make/model/series, equivalent FMS and software part number, software version and revision) for flying the procedure during normal operations.

(2) Simulator evaluations must be accomplished by appropriately trained flight crews and evaluators per paragraph 6. For Public PBN IFP, simulator evaluation flight crews are not required to be qualified (i.e., "type-rated") in any given simulator, but must possess the experience and training per paragraphs 6, 7, and 8. For Special PBN IFP, designed for a specific make/model/series PBN aircraft, the pilot-in-command must be rated in that make/model/series.

(3) Evaluate all items listed on FAA Form 8260-30A, Simulator Evaluation Checklist, see appendix B.

(4) Simulator evaluation records must be maintained. Organizations performing simulator evaluations will retain the original FAA Form 8260-30A and forward a copy to AFS-460.

c. Obstacle Assessments. For obstacle assessments conducted during the GV phase, refer paragraph 3a. If applicable, document ground obstacle assessments per Order 8260.19, Flight Procedures and Airspace and appropriate FAA standards for surveys.

3. Flight Validation. Flight Validation includes two elements: (1) an obstacle and infrastructure assessment, which if conducted in-flight, may be conducted in any aircraft and (2) at least one on-course/on-path flight evaluation of the proposed procedure in an appropriate PBN aircraft. These two elements may be performed separately, and in different aircraft; however, the obstacle assessment will always be accomplished prior to the on-course/on-path evaluation. FV must be accomplished by qualified and trained flight crews (for specific requirements, see paragraphs 6, 7, and 8). FV must be conducted on-course/on-path during Day/Visual Meteorological Conditions (VMC) except as noted in paragraphs 3b(2). FV is limited to essential crewmembers (minimum of two) and must not be conducted during revenue operations.

> **Note:** Obstacle and Infrastructure assessments are per guidelines established in Order 8200.1 and may be accomplished in the Ground Validation phase.

a. Obstacle Assessments. Obstacle assessments will be conducted per guidelines established in Order 8200.1.

(1) Obstacle assessment activities must comply with the Flight Rules contained in Title 14, Code of Federal Regulations (14 CFR), part 97 subpart B;

(2) Any deviation from a rule during an obstacle assessment (e.g., 91.119 Minimum Safe Altitudes - General) must be authorized by the geographically respective Flight Standards District Office (FSDO);

(3) Must be recorded using an Autonomous Global Positioning System Recording System (AGRS) or another suitable system approved by AFS-460. For example, Air Traffic Organization, Technical Operations, Aviation System Standards (AJW) may continue use of the Automatic Flight Inspection Systems (AFIS). This system electronically captures all the required items above.

> **Note:** Aviation System Standards will continue to record and store the flight inspection records for Instrument Flight Procedures that they produce or evaluate and will be exempt from the record keeping requirements listed in paragraph 4c.

(4) Evaluate and complete FAA Form 8260-30B, Obstacle Assessment Checklist, see appendix B.

b. Flight Validation prepa**r**ation and procedure must include the following:

(1) Pre-flight preparation:

(a) Reviewing the results of the simulator and obstacle evaluations;

(b) Loading the PBN or WAAS IFP into an AGRS. Data must match the information contained in the procedure development package and procedural charts;

(c) Reviewing the PBN IFP package per guidelines established in Order 8200.1;

(d) Verifying PBN IFP documentation against the aircraft navigation database;

(e) Familiarization with any specific training, operational or equipment requirements.

(2) For approval of night minimums - Procedures developed for airports with no prior Instrument Flight Rules (IFR) service and procedures to newly constructed runways, and procedures to runways lengthened or shortened require a night evaluation to determine the adequacy of airport lighting systems prior to authorizing night minimums. Conduct night evaluations during VMC and after meeting the requirements of paragraph 3.

(3) Portions of the on-course/on-path flight validation of IFP that are above a published minimum IFR altitude may be flown under night and/or instrument meteorological conditions (IMC) [e.g., high level portions of Standard Instrument Departure (SIDs) or Standard Terminal Arrival Route (STARs)].

(4) Recorded using an AGRS as defined by this document (see appendix C).

(5) Evaluate and complete FAA Form 8260-30C, Flight Validation Checklist (see appendix B).

4. Flight Validation Records. Organizations will retain the original FAA Form 8260-30C (see appendix B) and forward a copy to AFS-460. Records must include:

a. Signed and completed original FAA Form 8260-30B (see appendix B);

b. Signed and completed original FAA Form 8260-30C (see appendix B);

c. Furnish the AGRS electronic file (compatible with FAA computer systems) from both the obstacle assessment and the FV to AFS-460. Submit the report, in conjunction with the procedure package. The report must contain, at a minimum, the following elements:

(1) Processing date and time;

(2) Maximum number of satellites;

(3) Minimum number of satellites;

(4) Average Position Dilution of Precision (PDOP);

(5) Vertical Protection Level (VPL) [WAAS Procedures only];

(6) Maximum Observed Horizontal DOP (HDOP) [WAAS Procedures only];

(7) Horizontal Protection Level (HPL) [WAAS Procedures only];

(8) Maximum Observed Vertical DOP (VDOP) [WAAS Procedures only];

(9) For each segment, the maximum and minimum altitude, ground speed, climb rate, and climb gradient;

(10) A printed graphic of sufficient detail that depicts the flight track flown referenced to the desired track of the approach procedure, including procedure fixes.

5. FV PBN aircraft requirements.

a. FV of Public PBN IFP (14 CFR Part 97). The aircraft must be capable of flying the intended IFP path in normal operations.

b. Special IFP (non-public procedures developed for specific users and not processed under 14 CFR Part 97). The initial FV will be flown in an aircraft (same make/model/series and equivalent FMS, software part number, software version, and revision) used by the operator in daily operations.

6. Crew Qualifications. Flight Crew and Evaluators, for PBN and Special WAAS IFP validation activities, must be authorized by AFS-460 and meet the following requirements:

a. Pilot. The pilot in command is qualified in the appropriate aircraft and completes the specific training outlined in paragraphs 7 and 8.

b. Co-pilot. The second in command is qualified in the appropriate aircraft and completes the specific training outlined in paragraphs 7 and 8.

c. Evaluator. The evaluator is a qualified FAA Aviation Safety Inspector (ASI) [Operations/Avionics], Airspace System Inspection Pilot (ASIP), or an individual with equivalent pilot qualifications and experience, authorized by AFS-460. All Evaluators must complete the specific training outlined in paragraphs 7 and 8.

d. Initial flight validation qualification (AFS-460 oversight).

7. Flight Validation Service Provider Training. FV Service provider**,** which do not have an AFS-460 approved training program, are required to complete an AFS-approved flight validation training program that includes the following:

a. Familiarity with the PBN IFP design process and requirements for PBN operations. The requirements for PBN operations are outlined in the following FAA documents:

- AC 90-94, Guidelines for using Global Positioning System Equipment for IFR En Route and Terminal Operations and for Nonprecision Instrument Approaches in the U. S. National Airspace System
- AC 90-100, U. S. Terminal and En Route Area Navigation (RNAV) Operations
- AC 90-101, Approval Guidance for RNP Procedures with SAAAR

- Order 7100.9, Standard Terminal Arrival Program and Procedures
- Order 8260.3, U. S. Standard for Terminal Instrument Procedures (TERPS)
- Order 8260.44, Civil Utilization of Area Navigation (RNAV) Departure Procedures
- Order 8260.52, U. S. Standard for Required Navigation Performance (RNP) Approach Procedures with Special Aircraft and Aircrew Authorization Required (SAAAR)
- Order 8260.54, The United States Standard for Area Navigation (RNAV);

b. Knowledge of the procedure design criteria relevant to the type of IFP for which the individual is authorized to conduct as either pilot-in-command or evaluator;

c. Training in the operation and post processing of data (only for FV crews);

d. Process of completing FAA Forms 8260-30A, 8260-30B, and 8260-30C; and the process for providing feedback to the procedure designer;

e. Flight Validation requirements;

f. Procedure packet review;

g. Requirements, techniques, and considerations for verifying that the navigation data to be published, as well as that used in the design of the procedure, is correct;

h. Techniques and considerations for validation of obstacle data;

i. Airport infrastructure assessment;

j. Communications coverage;

k. Flyability/human factors assessment;

l. Use of automation tools and simulators or ground validation;

m. Charting considerations;

n. Operational factors;

o. Supervised on-the-job training adequate to achieve the required level of competency in obstacle assessment techniques, simulator evaluation, and flight validation.

8. Recurrent Training. For flightcrews, recurrent training will be conducted every *two* years and will include the following:

a. Updates on relevant changes to design criteria;

b. Knowledge and skills related to new developments in FV;

c. Review of required FV skills outlined in paragraph 7.

Appendix B. Checklists

FAA Forms 8260-30A, 8260-30B, and 8260-30C in this appendix will be used for Simulator Evaluation, Obstacle Assessment, and Flight Validation (FV). The appendix also contains a description of the information to be included in each block of the three forms.

The original signed and completed forms for Simulator Evaluation, Obstacle Assessment, and Flight Validation must be provided to AFS-460 and copies retained by the organization conducting the FV.

Table A-1. Checklist Legend

BLOCK 1. Date	**Enter the date of the flight.**
BLOCK 3. Organization	**Enter the organization or name of the operator (i.e., XXX Airlines, Joe Smith, etc).**
BLOCK 5. Aircraft Make, Model, Series	**Enter the type of aircraft used to conduct the validation.**
BLOCK 7. Procedure	**Enter the name of the procedure being checked (i.e., RNP/RNAV RWY 25).**
BLOCK 9. FMS / Software	**Enter the FMS (or GPS) and software used to validate the procedure.**
BLOCK 10. PIC Name/ Phone	**Enter the name and telephone number of the Pilot in Command of the validation flight.**
BLOCK 11. Evaluator Name/Phone	**Enter the name and telephone number of the evaluator.**
BLOCK 12. Review flight simulator notes	**Review the notes from previous checklists (obstacle assessment and flight simulator evaluations). Pay special attention to any procedure notes in section 49 and consider/verify them during the flight validation.**
BLOCK 13. Navigation database and source comparison	**Compare the source data contained on the FAA 8260-series forms, TARGETS distribution package, or any other official distribution package to the data loaded in the FMC. It is acceptable to complete this comparison prior to conducting the flight validation by comparing the electronic navigation database report file against the FAA or official source data. Ensure the effective dates and navigation database identifiers of the report file match the actual navigation database used to conduct the validation flight and enter navigation database identifiers used in this block.** **In this step, it is important to validate waypoint lat/long, segment lengths, segment headings, altitudes, speeds, and flight path angles. For legs that contain RF segments, ensure that the arc distances displayed match source data.**
BLOCK 14. Flight and ground equipment calibrated	**Prior to the flight validation, calibrate the aircraft and ground support equipment.**
BLOCK 15. Procedure Flown to 100' below DA	**Fly the procedure to 100 ft below the DA to assess flyability and obstacle clearance (obstacle check and simulator evaluation only).**
BLOCK 16. Simulation data file output	**Record and save any available simulation data (i.e., lat/long, altitude, and speed records) for post simulator analysis.**
BLOCK 17. Procedure flown faster/slower than charted	**Procedure flown both faster and slower than charted to check for any flyability issues or EGPWS alerts. Note the range of speeds flown in block 49.**
BLOCK 18. INITIAL/INTERMEDIATE flown at ½ ROC	**Fly all intermediate and initial approach segments at ½ the Required Obstacle Clearance (ROC) value for each segment to analyze terrain/obstacles (e.g., 500 ft low for Initial segment and 250 ft low for intermediate segment).**
BLOCK 19. INITIAL/INTERMEDIATE flown at alert limits	**Assess the procedure at the lateral limits per FAA Order 8200.1. Accomplish this for new procedures, as well as for procedures with questionable obstacles or in challenging terrain/airspace.**

Table A-1. Checklist Legend (Continued)

BLOCK 20. Verify proper airport markings/features	**Evaluate the suitability of the airport to support the procedure. Pay special attention to confusing airport markings, non-standard or confusing lighting aids, or lack of communications. Ensure the VGSI angles appear as intended or charted.**
BLOCK 21. Air/Ground communications	**Communications with ATC must be satisfactory at the IAF minimum altitude and at the missed approach altitude and holding fix.**
BLOCK 22. Radar coverage	**Ensure radar coverage is available for all portions of the procedure, where required.**
BLOCK 23. Chart has sufficient detail	**Check to ensure the chart has sufficient detail to safely navigate and identify considerable terrain or obstacles.**
BLOCK 24. Missed approach RNP < 1.0	**If the missed approach requires less than RNP 1.0, ensure there is a remark in the notes section (e.g., "Missed approach requires RNP less than x.xx").**
BLOCK 25. RF Legs	**If the procedure requires RF legs at any point, indicate these requirements in the notes section of the approach chart (e.g., "RF required") or, for specific transitions, next to IAF in planview.**
BLOCK 26. Obstacles verified via	**Indicate if a supplemental ground observation was used to verify controlling obstacles by circling Y or N.**
BLOCK 27. Non-standard speeds or climb gradients	**Any exception to standard climb gradients (200 ft/NM) or speeds must be listed in the notes section of the approach chart (e.g., "Requires Missed Approach Climb Gradient of xxx ft/NM to xxxx").**
BLOCK 28. Flyability	**Document the overall flyability of the procedure. This should include any Human Factor issues which may be caused by the procedure design**
BLOCK 29. Temperature Limits	**Verify low and high temperature limits identified on the chart in the notes section. (e.g., "For uncompensated Baro-VNAV systems, Procedure NA below –5˚C (23˚F) or above 40˚C (104˚F)").**
BLOCK 30. Loss of RAIM/RNP/RFI	**This is to document if a Loss of RAIM, RNP, or if RFI was detected during the validation flight.**
BLOCK 31. Aircraft Size	**Ensure the approach chart is annotated with applicable aircraft size restrictions (e.g., "Procedure NA for aircraft with wingspan greater than 136 ft").**
BLOCK 33. Flight Track Matches Chart	**Ensure that the chart accurately portrays the procedure and is easily interpreted. Ensure flight track matches chart and takes aircraft to intended aiming point.**
BLOCK 35. Segment Heading	**Verify true and magnetic course to next waypoint indicated on the FMS or GPS accurately reflects the procedure design. Acceptable tolerance is ±1˚. Out-of-tolerance values must be resolved with the procedure designer.**
BLOCK 37. Segment Distance	**Verify segment distances indicated by the aircraft navigation system accurately reflect the procedure design. Acceptable tolerance is ±0.1 nm. Out-of-tolerance values must be resolved with the procedure designer. NOTE: Be sure not to confuse the distance to the next fix with the RF leg radius displayed by some systems. To obtain the exact distances between waypoints on an RF leg, the navigation database report file may need to be examined prior to the validation flight (see BLOCK 13).**
BLOCK 39. Flight Path Angle	**Verify the flight path angle (FPA) indicated on the FMS or GPS accurately reflects the procedure design.**

Table A-1. Checklist Legend (Continued)

BLOCK 41. Segment Length	**Check that waypoint spacing is sufficient to allow the aircraft to stabilize on each leg without bypassing waypoints/legs. Leg length must be sufficient to allow for aircraft deceleration or altitude change if required.**
BLOCK 43. EGPWS Warning/Alert	**Indicate any EGPWS warnings or alerts. Record details of the alert to include lat/long, aircraft configuration, speed, and altitude in the comments section.**
BLOCK 44. Controlling obstacle verified	**The controlling obstacle must be confirmed by in-flight or ground observation. If the obstacle is listed as terrain/trees or Adverse Assumption Obstacle (AAO), it is not necessary to verify which tree is controlling, only that no higher man-made obstacles are present in the protected airspace. If any obstacles are missing or any new obstacles are observed, record the lat/long or radial/bearing of the obstacle in the procedure notes section.**
BLOCK 45. Wind Component	**Record the wind component or actual wind for the segment flown. Use FAA Order 8260.52 for determining wind settings in the flight simulator.**
BLOCK 47. MAX RF Bank Angle	**Enter the maximum bank angle seen on the RF leg segment. Record any angle greater than 25 degrees in the notes section.**
BLOCK 49. Procedure Notes	**Use this section to list procedure recommendations as well as any concerns regarding RNP containment, crew workload, un-assessed obstacles, human factors, lateral or vertical deviations, flyability, database coding or crew operational procedures. Make special note if the flight is done during night hours.**
BLOCK 51. Procedure SAT/UNSAT	**Circle SAT if the procedure meets all requirements, circle UNSAT if the procedure is unsatisfactory and does not meet all requirements and/or identifies specific issues that need to be corrected. Note specific issues in Block 49.**
BLOCK 53. Evaluator Signature	**Signature of the evaluator.**

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION - FLIGHT STANDARDS SERVICE
SIMULATOR EVALUATION CHECKLIST

1. DATE		3. ORGANIZATION		5. AIRCRAFT TYPE	
7. PROCEDURE				9. FMS/SOFTWARE	
10. PIC NAME/PHONE				11. EVALUATOR NAME/PHONE	

FLIGHT SIMULATOR EVALUATION TASKS	YES	NO
13. FMC NAV DATA AND SOURCE COMPARISON		
15. PROCEDURE ASSESSED TO 100' BELOW DA/MDA		
16. SIMULATION DATA FILE SAVED (IF APPLICABLE)		
17. PROCEDURE ASSESSED FASTER / SLOWER THAN CHARTED		
28. FLYABILITY		

CHARTING CHECKLIST	YES	NO
23. CHART HAS SUFFICIENT DETAIL		
24. RNP < 1.0 IN MISSED APPROACH		
25. RF LEGS NOTES		
27. NON-STANDARD SPEED / CLIMB		
29. TEMPERATURE LIMIT NOTES		
31. AIRCRAFT SIZE NOTES		
33. CHART MATCHES FLIGHT TRACK		

SEGMENT CHECKS

	FEEDER		INITIAL		INTERMEDIATE		FINAL		MISSED		HOLDING	
35. SEGMENT HEADING(S)	PASS	FAIL	PASS	FAIL	PASS	FAIL	PASS	FAIL	PASS	FAIL	PASS	FAIL
37. SEGMENT DISTANCE(S)	PASS	FAIL	PASS	FAIL	PASS	FAIL	PASS	FAIL	PASS	FAIL	PASS	FAIL
39. FLIGHT PATH ANGLE (FPA)							PASS	FAIL				
41. SEGMENT LENGTH	PASS	FAIL	PASS	FAIL	PASS	FAIL	PASS	FAIL	PASS	FAIL	PASS	FAIL
43. EGPWS WARNING/ALERT	YES	NO	YES	NO	YES	NO	YES	NO	YES	NO	YES	NO
45. WIND COMPONENT												
47. MAX RF BANK ANGLE												

49. PROCEDURE NOTES

51. PROCEDURE: **SAT** / **UNSAT**

53. EVALUATOR SIGNATURE:_____

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U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION - FLIGHT STANDARDS SERVICE
OBSTACLE ASSESSMENT CHECKLIST

1. DATE		3. ORGANIZATION		5. AIRCRAFT TYPE	
7. PROCEDURE				9. FMS/SOFTWARE	
10. PIC NAME/PHONE				11. EVALUATOR NAME/PHONE	

OBSTACLE ASSESSMENT TASKS	YES	NO
14. FLIGHT AND GROUND EQUIPMENT CALIBRATED		
15. PROCEDURE ASSESSED TO 100' BELOW DA/MDA		
18. INITIAL / INTERMEDIATE ASSESSED AT ½ ROC VALUE		
19. ISEGMENTS ASSESSED AT LATERAL LIMITS (IF NOT, LIST IN RMKS)		
20. VERIFY PROPER RUNWAY MARKINGS, LIGHTING AND VGSI		
21. AIR/GROUND COMMUNICATIONS SATISFACTORY		
22. RADAR COVERAGE ADEQUATE		
30. LOSS OF RAIM/RNP/RFI		

SEGMENT CHECKS

	FEEDER		INITIAL		INTERMEDIATE		FINAL		MISSED		HOLDING		VISUAL	
44. CONTROLLING OBSTACLE VERIFIED	YES	NO	YES	NO	YES	NO	YES	NO	YES	NO	YES	NO	YES	NO

49. PROCEDURE NOTES

51. PROCEDURE: **SAT** / **UNSAT**

53. EVALUATOR SIGNATURE:_____

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U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION - FLIGHT STANDARDS SERVICE
FLIGHT VALIDATION CHECKLIST

1. DATE	3. ORGANIZATION	5. AIRCRAFT TYPE	
7. PROCEDURE		9. FMS/SOFTWARE	
10. PIC NAME/PHONE		11. EVALUATOR NAME/PHONE	

FLIGHT VALIDATION TASKS	YES	NO
12. REVIEW SIMULATION AND OBSTACLE ASSESSMENT CHECKLIST NOTES		
13. FMC NAV DATA AND SOURCE COMPARISON		
14. FLIGHT AND GROUND EQUIPMENT CALIBRATED		
28. FLYABILITY		
30. LOSS OF RAIM/RNP/RFI		

CHARTING CHECKLIST	YES	NO
23. CHART HAS SUFFICIENT DETAIL		
24. RNP < 1.0 IN MISSED APPROACH		
25. RF LEGS NOTES		
27. NON-STANDARD SPEED / CLIMB		
29. TEMPERATURE LIMIT NOTES		
31. AIRCRAFT SIZE NOTES		
33. CHART MATCHES FLIGHT TRACK		

SEGMENT CHECKS

	FEEDER		INITIAL		INTERMEDIATE		FINAL		MISSED		HOLDING	
37. SEGMENT DISTANCE(S)	PASS	FAIL	PASS	FAIL	PASS	FAIL	PASS	FAIL	PASS	FAIL	PASS	FAIL
39. FLIGHT PATH ANGLE (FPA)							PASS	FAIL				
41. SEGMENT LENGTH	PASS	FAIL	PASS	FAIL	PASS	FAIL	PASS	FAIL	PASS	FAIL	PASS	FAIL
43. EGPWS WARNING/ALERT	YES	NO	YES	NO	YES	NO	YES	NO	YES	NO	YES	NO
47. MAX RF BANK ANGLE												

49. PROCEDURE NOTES

51. PROCEDURE: **SAT** / **UNSAT**

53. EVALUATOR SIGNATURE:_____

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Appendix C. Administrative Information

1. Distribution. We will distribute this notice to the branch level in Offices of Airport Safety and Standards and Communications, Navigation, and Surveillance Systems; Air Traffic Organization, Aircraft Certification, and Flight Standards Services in Washington Headquarters, including the National Flight Procedures Office and the Regulatory Standards Divisions at the Mike Monroney Aeronautical Center; to branch level in the regional Flight Standards and Airports Divisions; and to all Flight Standards District Offices (FSDOs).

2. Background. The implementation of satellite-based PBN into the National Airspace System (NAS) creates unique opportunities for both civilian proponent/operators (PO) and the FAA. Satellite-based PBN IFP are independent of traditional ground-based navigation aids. Given today's level of navigation technology, the FAA recognizes the need to amend the traditional flight inspection process to one that more closely reflects the safety assessments required to validate the PBN IFP prior to their implementation in the NAS. Thus, the more appropriate term of Flight Validation (FV), regarding the final obstacle assessment and flyability aspects of the overall IFP design, will be adopted and further defined by this notice.

Most of the safety evaluations required for PBN IFP development are adequately performed by obstacle assessment and simulator evaluation during the procedure development phases (ground validation). This notice also describes and reinforces the requirement for simulator evaluations and obstacle assessments to be conducted prior to FV.

> **Note:** This notice is supplemental and in no way changes the requirements of Order 8200.1, United States Flight Inspection Manual.

3. Definitions.

a. Autonomous Global Positioning System Recording System (AGRS). A positioning and recording system independent from an aircraft navigation system capable of the following: IFP storage, moving map display depicting the IFP course, FV records include time and three dimensional (3D) positions in space with a sampling rate of not less than 1 Hz, and ability to post process recorded data. The AGRS must also be compliant with reference to the applicable minimum operational performance specifications for the Global Navigation Satellite System (GNSS) equipment or system intended for route of flight or procedure.

b. Evaluator. The flight crewmember charged with the final approval authority for Flight Validation. This could be an additional crewmember or the pilot-in-command.

c. Flight Validation (FV). A final check of procedure track definition and flyability, flown in an appropriate PBN aircraft, to ensure that a procedure may be safely flown.

d. Flyability. A check or system of checks that ensures the procedure can be flown safely as designed. These checks include, but are not limited to; compliance with procedure design criteria, acceptability of any waivers to standards, bank angles, airspeeds, descent gradients, roll rates, track lengths, workload issues, procedure complexity, runway alignment, etc.

e. Obstacle assessment. A required assessment conducted following the guidelines established in Order 8200.1, United States Flight Inspection Manual, and documented as stated in FAA Order 8260.19, Flight Procedures and Airspace.

f. Procedure Designer. A representative of the organization responsible for the respective procedure design, who is knowledgeable of the relevant instrument flight procedure design criteria.

g. Required Navigation Performance (RNP). Required Navigation Performance is a statement of the navigation performance necessary for operation within a defined airspace.

h. Special Aircraft and Aircrew Authorization Required (SAAAR). Special authorization by the FAA is required to conduct RNP approaches as designated in Advisory Circular 90-101, Approval Guidance for RNP Procedures with SAAAR.