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LEGAL SUPPLEMENT — B

GUYANA No. 31 of 2024

GUYANA CIVIL AVIATION AUTHORITY

# REQUIREMENTS FOR VISUAL AND INSTRUMENT FLIGHT PROCEDURE DESIGN 2024

Made under

THE CIVIL AVIATION ACT 2018

(Act No. 21 of 2018)

In exercise of the powers conferred upon the Guyana Civil Aviation Authority by section 142 of the Civil Aviation Act 2018, the Guyana Civil Aviation Authority prescribes the following Requirements which may be cited as the Civil Aviation Requirements for Visual and Instrument Flight Procedure Design 2024.

These Requirements are prescribed in respect of the Civil Aviation (Air Navigation Services) Regulations 2024 and contain:

(a) applicable standards;

(b) rules and recommended practices of international aviation organisations; and

(c) other requirements of the Authority.

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**ABBREVIATIONS AND ACRONYMS**

| | |
|---|---|
| AIP | – Aeronautical Information Publication |
| AIS | – aeronautical information services |
| ATS | – air traffic services |
| FIR | – flight information region |
| FPD | – flight procedure design |
| FPDS | – flight procedure design service |
| FVP | – flight validation pilot |
| MANSOPs | – Manual of Air Navigation Services Operations |
| OJT | – on-the-job training |
| PBN | – performance-based navigation |
| SIDs | – standard instrument departure |
| STARs | – standard instrument arrival |

**DEFINITIONS**

When the following terms are used in these Requirements, they have the following meanings:

***Aeronautical data.*** A representation of aeronautical facts, concepts or instructions in a formalized manner suitable for communication, interpretation or processing.

***AIP.*** A publication issued by or with the authority of a State and containing aeronautical information of a lasting character essential to air navigation.

***AIS.*** A service established within the defined area of coverage responsible for the provision of aeronautical data and aeronautical information necessary for the safety, regularity and efficiency of air navigation.

***ATS.*** A generic term meaning variously, flight information service, alerting service, air traffic advisory service, air traffic control service (area control service, approach control service or aerodrome control service).

***Flight information region.*** An airspace of defined dimensions within which flight information service and alerting service are provided.

***FPDS Provider.*** An air navigation service provider designated or approved under Regulation 5 of the Civil Aviation (Air Navigation Services) Regulations 2024 to provide visual and instrument flight procedure design.

***Instrument flight procedure.*** A description of a series of predetermined flight manoeuvres by reference to flight instruments, published by electronic and/or printed means.

***MANSOPs.*** A Manual of Air Navigation Services Operations, detailing the procedures, processes and practices to be followed by the personnel of an Air Navigation Services Provider (ANSP) in

the provision of the ANS being provided, and prepared in accordance with the Requirements of the Authority.

***Obstacle.*** All fixed (whether temporary or permanent) and mobile objects, or parts thereof, that:
a) are located on an area intended for the surface movement of aircraft; or
b) extend above a defined surface intended to protect aircraft in flight; or
c) stand outside those defined surfaces and that have been assessed as being a hazard to air navigation.

***PBN.*** Area navigation based on performance requirements for aircraft operating along an ATS route, on an instrument approach procedure or in a designated airspace.

*Note.— Performance requirements are expressed in navigation specifications (RNAV specification, RNP specification) in terms of accuracy, integrity, continuity, availability and functionality needed for the proposed operation in the context of a particular airspace concept.*

***SID.*** A designated instrument flight rule (IFR) departure route linking the aerodrome or a specified runway of the aerodrome with a specified significant point, normally on a designated ATS route, at which the en-route phase of a flight commences.

***STAR.*** A designated instrument flight rule (IFR) arrival route linking a significant point, normally on an ATS route, with a point from which a published instrument approach procedure can be commenced.

# CHAPTER 1 – GENERAL SPECIFICATIONS

## 1.1 FPDS PROVIDER

1.1.1 The FPDS Provider shall ensure that the quality and safety of the flight procedure are assured through review, verification, coordination and validation of the procedure at appropriate points in the process.

1.1.2 The FPDS Provider shall maintain appropriate flight procedure design facilities to enable compliance with these and other applicable Civil Aviation Requirements.

1.1.3 The FPDS Provider shall ensure FPD service is provided in accordance with:
(a) the applicable provisions prescribed in the ICAO Doc 8168 – PANS: Aircraft Operations; and
(b) these Requirements.

1.1.4 The FPDS Provider shall make provisions for person(s) trained in FPD to check and verify independently the plans of each flight procedure designer.

## 1.2 DESIGN FACILITIES AND RECORDS

1.2.1 The FPDS Provider shall ensure:
(a) the availability of equipment appropriate for the design, design verification, flight validation, and maintenance of flight procedures;
(b) ready access to relevant and current data including, but not limited to, aeronautical data, land contour data, and obstacle data for the design, design verification, flight verification, and maintenance of flight procedures;
(c) ready access to the FPDS Provider's MANSOPs as approved by the Authority; and
(d) ready access to copies of relevant documentation comprising technical standards, practices, and instructions, and any other documentation that may be necessary for the design, design verification, flight validation, and maintenance of flight procedures.

1.2.2 (1) The FPDS Provider shall establish and implement a system for controlling documents and records relating to FPD, including policies and procedures for making, coordinating, amending, preserving and disposing of such documents and records.

(2) The FPDS Provider shall ensure that all material captured in (1) above or copies thereof are made available to the Authority, upon request.

### 1.3 FPD DATA

1.3.1 (1) If an aeronautical database and aeronautical data are required for FPD, the FPDS Provider shall ensure the integrity of the database and the data.

(2) The data used shall be current, traceable, and meet the required level of verifiable accuracy for the design.

### 1.4 DESIGNER QUALIFICATIONS AND TRAINING

1.4.1 In addition to the provisions contained in the Civil Aviation Requirements for Air Navigation Service Provider Administration 2024, the FPDS Provider shall ensure that any person designing or amending a flight procedure:

(a) is able to demonstrate a basic level of competency through initial training that includes at least the following elements:

(i) knowledge of information contained in the ICAO Doc 8168 – PANS: Aircraft Operations and other related ICAO provisions relevant to Guyana;

(ii) knowledge of those parts of the Georgetown FIR for which flight procedures have been or will be designed;

(iii) skills in the design of flight procedures; and

(iv) demonstration of competency as outlined in the competency framework for flight procedures designed as outlined in ICAO Doc 9906, Volume 2 — Flight Procedure Designer Training, Table 2-1;

(b) acquires further competency through supervised OJT;

(c) is able to maintain competency through recurrent training that involves at least the following elements:

(i) knowledge of updates in ICAO provisions and other provisions pertinent to FPD; and

(ii) maintenance and enhancement of knowledge and skills in the design of procedures.

## CHAPTER 2 – DESIGN PROCESS

### 2.1 FPD INFORMATION ACQUISITION

2.1.1 The FPDS Provider shall ensure that the survey and subsequent flight procedure design activities are controlled and monitored by persons trained in FPD.

2.1.2 (1) In the obstacle survey for procedure design, the FPDS Provider shall ensure all obstacles are accounted for, including trees and heights of tall buildings, either by physical examination of the site, or by addition of a suitable margin above terrain contours.

(2) The accuracy of the vertical and horizontal data obtained may be adjusted by adding an amount equal to the specified survey error to the height of all measured obstructions and by making a corresponding adjustment for specified horizontal error.

### 2.2 COORDINATION

2.2.1 The FPDS Provider shall coordinate with the appropriate stakeholders to obtain input regarding, at a minimum, the following:

(i) aerodrome/s and their infrastructure such runway classification, lighting, communications, runway markings, and availability of local altimeter setting;

(ii) appropriate navigation aid/s;

(iii) obstacle, terrain coordinate and elevation data, based on verified surveys and in compliance with the applicable national regulations and requirements;

(iv) airspace requirements including the needs of the ATS Provider;

(v) the needs of the operators who will use the procedure, including aircraft operating parameters or other characteristics as necessary;

(vi) environmental considerations; and

(vii) contingency measures; and

(viii) any other potential issue associated with the procedure.

2.2.2 The FPDS Provider shall continue to coordinate with the appropriate stakeholders throughout the flight procedure design and/or maintenance process to ensure that the needs of the user and the community are met.

## 2.3 PROCEDURE DESIGN

2.3.1 The FPDS Provider shall follow a flight procedure design process that includes acquisition of data, design and promulgation of procedures.

2.3.2 Flight procedures shall be designed according to the ICAO Doc 8168 – PANS: Aircraft Operations criteria.

2.3.3 Each new or revised procedure shall be verified by a qualified flight procedure designer other than the one who designed the procedure, to ensure compliance with the applicable criteria.

2.3.4 Published procedures shall be subject to periodic review to ensure that they continue to comply with changing criteria and continue to meet user requirements. The maximum interval for this review is five (5) years.

## 2.4 FPD DOCUMENTATION

2.4.1 The FPDS Provider shall furnish the Authority with the following:

(i) documentation required for publication in the Guyana AIP in accordance with the Civil Aviation Requirements for Aeronautical Information Services 2024 and the Civil Aviation Requirements for Aeronautical Charts 2024, as promulgated by the Authority;

(ii) documentation required to maintain transparency concerning the details and assumptions used by the flight procedures designer/s, which should include supporting information/data used in the design, such as:

(a) controlling obstacle for each segment of the procedure;

(b) effect of environmental considerations on the design of the procedure;

(c) infrastructure assessment;

(d) airspace constraints;

(e) for modifications or amendments to existing procedures, the reasons for any changes;

(f) for any deviation from existing standards, the reasons for such a deviation and details of the mitigations applied to assure continued safe operations; and

(g) the results of the final verification for accuracy and completeness (quality assurance checks) prior to validation and then prior to publication;

(iii) additional documentation required to facilitate ground and flight validation of the procedure.

2.4.2 (1) All calculations and results of calculations shall be presented in a manner that enables the reader to follow and trace the logic and resultant output.

(2) A record of all calculations shall be kept in order to prove compliance with, or variation from, the standard criteria.

2.4.3 (1) Formulae used during calculation shall be the standard formulae as stated in the ICAO Doc 8168 – PANS: Aircraft Operations.

(2) Units of measurement and conversion factors between such units shall be in accordance with Part V of the Civil Aviation (Air Navigation Services) Regulations 2024.

2.4.4 (1) Rounding of results shall follow the standard guidelines in the ICAO Doc 8168 – PANS: Aircraft Operations.

(2) Rounding shall only be made at the publication stage to facilitate usable figures on maps and charts. Where required at earlier stages, rounding shall be made to the pessimistic consideration.

2.4.5 All documentation shall undergo a final verification for accuracy and completeness prior to validation and publication.

2.4.6 (1) All documentation shall be retained to assist in recreating the procedure in the future in the case of incidents and for periodic review and maintenance.

(2) The period of retention shall not be less than the operational lifetime of the procedure.

## 2.5 VALIDATION OF FLIGHT PROCEDURES

2.5.1 (1) Validation shall consist of ground validation and flight validation.

(2) Ground validation shall always be undertaken.

2.5.2 When ground validation can verify the accuracy and completeness of all obstacle and navigation data considered in the procedure design, and any other factors normally considered in the flight validation, then the flight validation requirement may be dispensed with.

2.5.3 Ground validation shall review the entire flight procedure package by a person(s) trained in procedure design and with appropriate knowledge of flight validation issues.

2.5.4 The ground validation shall be conducted to determine if flight validation is needed for modifications and amendments to previously published procedures.

2.5.5 (1) Flight validation of flight procedures, when required, shall be carried out as part of the initial record and shall be included as part of the periodic quality assurance programme.

(2) Flight validation shall be accomplished by a qualified and experienced FVP.

2.5.6 The flight validation of flight procedures shall:

(i) provide assurance that adequate obstacle clearance has been provided;

(ii) verify that the navigation data to be published, as well as that used in the design of the procedure, is correct;

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

(iv) conduct an assessment of flyability to determine that the procedure can be safely flown; and

(v) evaluate the charting, required infrastructure, visibility and other operational factors.

2.5.7 The FPDS Provider shall ensure that flight validation of instrument flight procedures is conducted in accordance with the requirements of the ICAO Doc 9906, Volume 5.

2.5.8 (1) The FPDS Provider shall ensure the qualifications for FVPs includes at least a commercial pilot licence with instrument rating. Alternatively, an equivalent authorisation from the appropriate authority designated by the Contracting State meeting the ICAO Annex 1 knowledge and skill requirements for issuing the commercial pilot license and instrument rating is acceptable.

(2) The FPDS Provider shall ensure that the licence held by the FVP shall be for the aircraft category (e.g. aeroplane or helicopter) appropriate for the procedure to be validated.

(3) The FPDS Provider shall ensure that FVPs meet all the experience requirements for the airline transport pilot licence in the relevant category of aircraft (e.g. aeroplane or helicopter) as defined in the ICAO Annex 1. The FVP does not have to be the pilot-in-command of the validation flight, nor is he/she required to have the type rating on the aircraft used for the validation flight.

2.5.9 The FPDS Provider shall ensure that training for FVPs includes the following:

(i) standards, procedures and guidance pertinent to AIS, including the Civil Aviation Requirements for Aeronautical Information Services 2024;

(ii) standards, procedures and guidance pertinent to flight inspection, including the ICAO Annex 10 and ICAO Doc 8071 — Manual on Testing of Radio Navigation Aids;

(iii) standards, procedures and guidance pertinent to aerodromes, including the applicable regulations and requirements governing aerodromes, ICAO Doc 9157 — Airport Services Manual and ICAO Doc 9157 — Aerodrome Design Manual;

(iv) standards, procedures and guidance pertinent to charting and aviation publications including the Civil Aviation Requirements for Aeronautical Charts 2024 and ICAO Doc 8697 — Aeronautical Chart Manual;

(v) PBN and conventional instrument procedure construction such as SIDs, STARs and holding/reversal procedures, including the PANS-OPS;

(vi) the PBN concept including the ICAO Doc 9613 — Performance-based Navigation (PBN) Manual;

(vii) the basic concept of and differences between flight validations and flight inspections;

(viii) ARINC 424 coding;

(ix) Human Factors principles;

(x) different types of aircraft operations and aircraft performance (i.e. limitations and equipment);

(xi) obstacle assessment methodology;

(xii) safety risk assessment process;

(xiii) geodesy, including ICAO Doc 9906, Volume 2, paragraph 3.3.3.8; and

(xiv) comprehensive understanding of ICAO Doc 9906, Volume 5.

2.5.10 The flight procedure designer shall be the originator of all data applicable to conduct a flight validation provided to the flight inspection operations activity.

## 2.6 DESIGN PUBLICATION

2.6.1 The FPDS Provider shall ensure that flight procedure designs/charts, are provided to the AIS Provider for publication in the Guyana AIP.

2.6.2 The flight procedure shall be accompanied by a narrative, which describes the procedure in textual format.

2.6.3 The intended effective date for operational use of the flight procedure shall be included in the document narrative.

2.6.4 The designs/charts published in the Guyana AIP shall be produced in accordance with the provisions contained in the documents listed below:

(i) Civil Aviation (Air Navigation Services) Regulations 2024 Part VII — Aeronautical Information Services;

(ii) Civil Aviation (Air Navigation Services) Regulations 2024 Part X — Aeronautical Charts;

(iii) ICAO Doc 8168 — Procedures for Air Navigation Services — Aircraft Operations, Volumes I and II (PANS-OPS); and

(iv) ICAO Doc 8697.

2.6.5 The aeronautical charts included in the AIP shall be kept up-to-date by means of replacement sheets where necessary. Significant amendments or revisions in the IFP shall be clearly indicated in the revised charts.

## 2.7 DESIGN AUTOMATION

2.7.1 The FPDS Provider shall ensure that software packages used in the design of procedures have been validated.

2.7.2 Validation of the software shall be in accordance with the requirements of the ICAO Doc 9906, Volume 3 — Flight Procedure Design Software Validation.

Made this 16th day of May 2024.

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**Director-General**

**For the Guyana Civil Aviation Authority**