REPUBLIC OF MAURITIUS
DEPARTMENT OF CIVIL AVIATION
Sir Seewoosagur Ramgoolam International Airport, Plaine Magnien

MAURITIUS CIVIL AVIATION REQUIREMENTS

MCAR IFPD

Instrument Flight Procedure Design

ISSUE 2 | REV 0

04 November 2024

FOREWORD

Under article 37 (Adoption of International Standards and Procedures) of the Convention, Mauritius undertakes to collaborate in securing the highest practicable degree of uniformity in Requirements, Standards, Procedures and Organisation in relation to aircraft, personnel, airways and auxiliary services in all matters in which such uniformity will facilitate and improve air navigation.

The instrument flight procedure (IFP) is an essential component of the aviation system. Every day, thousands of aircraft around the world are flying instrument departure, arrival or approach procedures to airports in every country. It is the responsibility of the Air Navigation Service Provider to provide an Instrument Flight Procedure Design Service (IFPDS) so the operators are able to fly safe and effective IFPs.

The purpose of MCAR IFPD "Instrument Flight Procedure Design", is to provide the national standards and requirements to be met by the instrument flight procedures design organisation and instrument flight procedures designer for the design and maintenance of instrument flight procedures within the Mauritius Flight Information Region.

This MCAR IFPD is issued under the authority conferred upon the Director of Civil Aviation under Regulation 135 of the Civil Aviation Regulations.

This MCAR IFPD "Instrument Flight Procedure Design" Issue 2, Rev 0 replaces the requirements prescribed in MCAR Instrument Flight Procedure Design Requirements, Issue 1-Rev 0, dated 15 March 2015.

This MCAR IFPD - Issue 2 Rev 0 is based mainly on the provisions of ICAO Annex 11 "Air Traffic Services", Chapter 2, 2.34 and Appendix 7; Document 8168, Vol. II "Procedures for Air Navigation Services – Aircraft Operations (PANS OPS), 7th edition 2020; ICAO Doc. 9906 "Quality Assurance Manual for Flight Procedure Design" and other relevant ICAO documents PANS OPS related.

This MCAR IFPD Issue 2 Rev 0 will be effective as from 04 November 2024.

T POKHUN
Director of Civil Aviation

ISSUE AND REVISION SYSTEM

THE REVISIONS TO THIS REQUIREMENT WILL BE INDICATED BY A VERTICAL BAR ON THE LEFT SIDE, IN FRONT OF THE LINE, SECTION OR FIGURE THAT HAS BEEN AFFECTED. AN ISSUE WILL BE THE REPLACEMENT OF THE COMPLETE DOCUMENT.

THESE REVISIONS MUST BE RECORDED ON THE RECORD OF REVISIONS TABLE OF THIS DOCUMENT, INDICATING THE RESPECTIVE NUMBER, DATE IT WAS ENTERED AND SIGNED BY THE PERSON ENTERING THE REVISION.

RECORD OF REVISIONS

REV NO.	DATE	INSERTED BY
Original issue	04 March 2015	R.K.Sewraj
Issue 2, Rev. 0	04 November 2024	ANS Inspector

NOTE

The content of this document is arranged as follows:

The main requirements appear first, followed by the related acceptable means of compliance (AMC), even though this MCAR does not have any, and guidance material (GM) paragraph(s).

All elements (i.e. Requirement, AMC and GM) are colour-coded and can be identified according to the illustration below:

Requirements

Acceptable means of compliance

Guidance Material

TABLE OF CONTENT

Front page 1
FOREWORD 2
ISSUE AND REVISION SYSTEM 3
RECORD OF REVISIONS 4
NOTE 5
TABLE OF CONTENT 6
GENERAL REQUIREMENTS 8
IFPD.001 Applicability 8
SECTION A 9
TECHNICAL REQUIREMENTS 9
CHAPTER 1 9
Introduction 9
IFPD.005 Applicability 9
IFPD.010 Approval requirements 9
GM IFPD.010 Approval requirements 11
IFPD.015 Use of English 11
IFPD.020 Compliances with laws, regulations, requirements and procedures 11
CHAPTER 2 14
Instrument Flight Procedure Design Organisation (IFPDO) Approval 14
IFPD.025 Applicability 14
IFPD.030 Application for Approval 14
IFPD.035 Issue of Approval 14
IFPD.040 Privileges of Approval 15
IFPD.045 Flight Procedure Design Organisation Approval 15
IFPD.050 Operations Manual 15
IFPD.055 Duration of Approval 16
IFPD.060 Quality Management 17
IFPD.065 IFPD Personnel Training and Qualifications 17
IFPD.070 IFP Design Tools Verification/Validation 18
IFPD.075 Resource Requirements 19
IFPD.080 Use of Third Parties 20

CHAPTER 3 21
Instrument Flight Procedure Approval 21
IFPD.085 Instrument Flight Procedure Approval 21
IFPD.090 Approval submission 21
IFPD.095 Design Safety Requirements 22
IFPD.100 IFP Design Procedures 23
IFPD.105 IFP Review Period 23
IFPD.110 IFP Source Data 23
IFPD.115 IFP Validation Requirements 25
GM IFPD.115 IFP Validation Requirements 25
IFPD.120 Aircraft Requirements 25
IFPD.125 Aircrew Requirements 26
IFPD.130 IFP Dissemination 26
IFPD.135 Human Factors 26
IFPD.140 Safety Assessments 27
GM IFPD.140 Safety Assessments 27

GENERAL REQUIREMENTS

IFPD.001 Applicability

This MCAR IFPD establishes the Standards to be met by the instrument flight procedures design organisation and instrument flight procedures designer for the design and maintenance of instrument flight procedures within the Mauritius Flight Information Region.

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SECTION A

TECHNICAL REQUIREMENTS

CHAPTER 1

Introduction

IFPD.005 Applicability

(1) In accordance with ICAO Annex 11, Appendix 7, the DCA shall ensure that:

(a) An instrument flight procedure design service is provided by an ANSP; and/or

(b) Agree with one or more Contracting State(s) to provide a joint service; and/or

(c) Delegate the provision of the service to external agency(ies).

(2) These requirements apply to the following:

(a) The granting of IFPD Approval to a person or organisation, termed the Flight Procedure Design organisation (FPDO), for the design of Instrument Flight Procedures (IFP);

(b) The approval of IFPs for publication in Mauritius AIP and applicable charts; and

(c) Approval requirements for Flight Validation Organisations.

(3) These requirements do not apply to the design of aircraft performance operating limitations or flight paths for critical engine inoperative emergency procedures.

IFPD.010 Approval requirements

(1) The DCA shall approve and remain responsible for all instrument flight procedures for aerodromes and airspace under their authority.

(2) Any organisation or person responsible for the production of Instrument Flight Procedures shall be approved by the DCA.

(3) The instrument procedure design service provider intending to design an instrument flight procedure for aerodromes or airspace under their authority, shall meet the requirements established by the regulatory framework of Mauritius.

(4) The instrument flight procedure design service provider shall utilise a quality management system at each stage of the instrument flight procedure design process.

(5) The instrument flight procedure design service provider shall conduct maintenance and periodic review of instrument flight procedures for aerodromes and airspace every 3 years, not exceeding five years.

(6) The requirements of MCAR IFPD apply to all organisations or persons (including sub-contractors) providing, or intending to provide Instrument Flight Procedure Design (IFPD) and/or Flight Validation Services within mauritius sovereign airspace.

(7) The design, verification, maintenance, and promulgation of instrument flight procedures intended for use by aircraft operating under instrument flight rules (IFR) within Mauritius Airspace shall meet or exceed criteria contained in the ICAO Doc. 8168 “Procedures for Air Navigation Services-Operations” (PANS- OPS) Vol. II as well as any additional criteria stipulated by the DCA.

(8) Whilst the function of producing an IFPD may be delegated to any organisation or person, the DCA retains the responsibility for all procedures used in Mauritius airspace.

(9) No person/organisation shall publish or submit for publishing an instrument procedure unless the procedure has been developed in accordance with the standards and criteria that are provided and has been approved by the DCA.

(10) The IFPD shall be produced only by persons that are suitably qualified and experienced in the application of PANS-OPS criteria, for the development of such procedures and have been authorised by the DCA for this task.

(11) For the purposes of this MCAR, an IFPDS provider may be either:

(a) An organisation employing one or more suitably qualified individuals; or

(b) A suitably qualified individual.

(12) Where applicants for an IFPDS approval engage the services of a third party, the applicant shall ensure compliance with these requirements, subject to acceptance by the DCA.

(13) The issuance of IFPDO Approval or Flight Validation Organisation Approval, indicates only that the organisation is considered competent to design an IFP or conduct flight validation in accordance with the conditions prescribed by the DCA.

(14) The failure of an IFPDO, or flight validation organisation, to comply with any of the requirements of these requirements, or the provisions of any applicable operations manual issued as part of an approval may:

(a) Constitute a breach of these requirements; and

(b) Result in proceedings for any such breaches; and/or

(c) Result in the refusal of an application for a renewal of IFPD Approval or Flight validation Organisation Approval; or

(d) Result in action to suspend, revoke or impose conditions in respect of the provider's Acceptance or Approval.

(15) The issue of an approval does not relieve any applicant or the pilot-in-command of a flight - check aircraft from the responsibility of compliance with these requirements and any other associated legislation in force.

GM IFPD.010 Approval requirements

(4) This requirement can be met by means of a quality assurance methodology, such as that described in PANS-OPS (Doc 8168), Volume II. Guidance for implementing such a methodology is contained in the Quality Assurance Manual for Flight Procedure Design (Doc 9906, Vol. I).

IFPD.015 Use of English

All IFPD related documentation, written communications and data (electronic or otherwise) for submission to the DCA or used in the development or for the publishing of procedures, shall be provided in English.

IFPD.020 Compliances with laws, regulations, requirements and procedures

(1) An IFPDS provider or flight validation organisation shall ensure that all persons employed, engaged, or contracted to perform procedure design, validation, publication or maintenance activities, as may be applicable under their approval, are familiar with the appropriate sections of these requirement, including any applicable conditions of the provider's approval and the procedures specified in the approval holder's safety assurance documentation and/or plan.

(2) This MCAR shall be read in conjunction with the following documents when needed:

(a) ICAO Doc. 8168 - Volumes I and II - Procedures for Air Navigation Services – Aircraft Operations (PANS-OPS)

(b) ICAO Doc. 9906 - Quality Assurance Manual for Flight Procedure Design

(c) ICAO Doc. 9368 – IFP Construction Manual

(d) ICAO Doc. 9371 – Template Manual

(e) ICAO Doc. 9724 – CRM Manual

(f) ICAO Doc. 9365 – All Weather Operations Manual

(g) ICAO Doc. 9613 Manual of Required Navigation Performance (RNP)

(h) ICAO Doc. 9573 – RNAV Operations

(i) ICAO Doc. 9674 – World Geodetic System 1984 (WGS 84) Manual

(j) ICAO Doc. 8697 – Aeronautical Chart Manual

(k) ICAO Annex 4 – Aeronautical Charts

(l) ICAO Annex 5 –Units of Measurement

(m) ICAO Annex 6 – Aircraft Operations

(n) ICAO Annex 14 Vol I – Aerodromes

(o) ICAO Annex 14 Vol II – Heliports

(p) ICAO Annex 15 – Aeronautical Information Services

(3) Where there is a difference between a standard in this MCAR and that of the above-mentioned ICAO documents, the standard in this Manual shall prevail.

(4) When the IFP design organisation is not able to comply with any standards specified or referenced in this MCAR, the IFP design organisation shall apply to DCA for exemption or deviation from the relevant standards. Applications shall be supported in writing with the reasons for such exemption or deviation including any safety assessment or other studies undertaken and where appropriate, an indication of when compliance with the current standards can be expected.

(5) Any exemption or deviation granted to the IFP design organisation shall also be recorded in the operations manual. The operations manual shall also contain the details of the exemption or deviation, such as the reason that the exemption or deviation was requested and any resultant limitations or conditions imposed.

(6) Deviations from PANS-OPS, Volume II criteria shall be published in Mauritius AIP in accordance with ICAO Annex 15 “Aeronautical Information Services” and MCAR AIS “Aeronautical Information Services”.

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CHAPTER 2

Instrument Flight Procedure Design Organisation (IFPDO) Approval

IFPD.025 Applicability

(1) This Chapter applies to all IFPDO that currently provide or have submitted a request to the DCA to provide IFPD services in respect of the sovereign airspace of Mauritius.

(2) A person shall not provide an IFPD service for procedures used within Mauritius' airspace except under the authority of an instrument flight procedure service provision Approval, issued by the DCA.

IFPD.030 Application for Approval

(1) An applicant for an IFPD approval, or a flight validation organisation approval, shall apply to the DCA, supplying:

(a) The applicant's name and address;

(2) The applicant shall also provide to the DCA the following:

(a) An Operations Manual (see IFPD.050); and

(b) An IFP design report for each IFPD for approval by the DCA.

IFPD.035 Issue of Approval

(1) IFPD approval will be granted when the IFPD organisation's operations manual provides sufficient evidence to satisfy the DCA that:

(a) The IFPDO has an appropriate and adequate management structure with detailed accountabilities and competencies for the safe design of IFPs;

(b) The IFPDO has an appropriate and adequate quality management system or a quality assurance system in operation to preserve the integrity of designed IFPs;

(c) The IFPDO has appropriate and adequate SMS training and uses SMS best practices;

(d) Any third-party use by the IFPD organisation is sufficiently controlled according to the quality management systems as specified above in (b); and

(e) The granting of the Approval is not contrary to the interests of aviation safety.

(2) An IFPDO shall be granted an IFPD approval if the DCA is satisfied that:

(a) IFPs are designed by a IFPDO that has complied with the specifications of Chapter 2; and

(b) the IFPDO sufficiently demonstrates in the IFP design report that:

(i) if applicable, IFPs are designed by a third-party acceptable to the DCA;

(ii) IFPs are appropriately flight validated (when applicable); and

(iii) IFP charts and description are appropriately disseminated.

IFPD.040 Privileges of Approval

(1) An IFPD Approval authorises a person or organisation to:

(a) Design, verify, validate, certify, and maintain instrument flight procedures; and

(b) Produce aeronautical information, including aeronautical data relating to instrument flight procedures that have been certified by the applicant and notified in the Mauritius' AIP available for publication and operational use by an aircraft;

(2) An IFPD approval shall specify the instrument procedure design services that the approval holder is authorised to provide.

IFPD.045 Flight Procedure Design Organisation Approval

(1) An IFPD organisation for the grant of an IFPDS approval shall provide evidence of at least the following:

(a) Specialist procedure design training in accordance with a competency-based approach. (e.g.in accordance with ICAO Document 9906, Volume II, Flight Procedure Designer Training);

(b) Evidence of successful completion of a PANS-OPS training course based on ICAO PANS OPS Document 8168, given by an organisation or qualified individual acceptable to the DCA;

(c) Evidence of recent (within last 24 months) IFP design work which shall include evidence of specific designs which have been approved for use;

(d) Appropriate references if experienced outside Mauritius.

IFPD.050 Operations Manual

(1) An IFPD organisation shall provide the DCA with an operations manual containing as a minimum the following:

(a) A statement signed by the manager of the IFPDS on behalf of the applicant's organization confirming that the manual defines the organisation and demonstrates its means and methods for ensuring ongoing compliance with this part;

(b) The titles and names of:

(i) a person identified as the Accountable Manager, who has the authority within the applicant's organisation to ensure that the service can be financed and is provided in accordance with the requirements of this MCAR;

(ii) a "Chief Designer" who is responsible for ensuring that the organisation complies with the design criteria requirements of this part, who authorises IFPs for promulgation and use;

(iii) a Head of Training responsible for ensuring that the organisation complies with the training requirements of this Chapter;

(iv) a quality management/assurance manager responsible for the provision of a quality management system or Quality Assurance;

(v) a senior person responsible for compliance with all aspects of the IFPDS manual or manuals and/or other international or national requirements as may be specified by the DCA; and

(vi) Sufficient personnel to manage, supervise, and support the approved procedure designers.

(c) The duties and responsibilities of those listed above and all IFPD staff, including matters for which they have responsibility to deal directly with the DCA on behalf of the organisation;

(d) An organisational chart showing lines of responsibility between the persons specified above;

(e) Details of the organisation's staffing structure including job descriptions and safety responsibilities of all IFPD staff;

(f) Policy, procedures, evidence or references supporting:

(i) the integrity of the organisation;

(ii) the implementation of Quality Management Systems or Quality Assurance;

(iii) the implementation of any in house training mechanisms to maintain quality; and

(iv) if applicable, the subcontracting of third parties.

(g) A description of the entire operation.

IFPD.055 Duration of Approval

(1) IFPD Approval shall be valid for a period of 2 years, unless it is previously suspended or revoked, and will be subject to such conditions as the DCA sees fit.

(2) An IFPD approval, remains in force until it expires, or is suspended or revoked.

(3) The holder of IFPD approval that have been suspended or revoked shall immediately surrender any certificate and associated approval to the DCA.

IFPD.060 Quality Management

The IFPD organisation shall establish a documented Quality Management System or Quality Assurance System which shall be compliant with ICAO Doc. 9906 (Quality Assurance Manual for Flight Procedure Design), Volume 1 (Flight Procedure Design Quality Assurance System).

IFPD.065 IFPD Personnel Training and Qualifications

(1) The IFPD organisation shall ensure and provide evidence that:

(a) Appropriate technical qualifications and experience requirements have been established and met by all PANS-OPS procedure designers responsible for designing and amending instrument flight procedures;

(b) An appropriate training programme (manual) and plan has been developed and implemented for its PANS-OPS technical staff, that as a minimum includes initial, advanced, OJT and recurrent training, which will ensure that:

(i) IFP designers maintain competence through formal training courses and on the job training, training shall be compliant with the guidance and formats contained in ICAO Doc 9906 (Quality Assurance Manual for Flight Procedure Design), Volume II (Flight Procedure Designer Training).

(ii) IFP designers have successfully completed formal training and OJT, prior to commencing any IFP design related activity on behalf of Mauritius.

(iii) Specialist courses related to PBN operations as defined by ICAO Doc. 9613 (Performance Based Navigation (PBN) Manual) shall be completed prior to commencing the design of any RNAV or RNP instrument flight procedure, if such training is not already part of the formal PANS-OPS course.

(iv) A training records system has been established, showing that training records are accurately and appropriately maintained for the PANS-OPS technical staff, and,

(v) Records and procedures are established to:

(1) assess the level of competence of the authorised procedure designers;

(2) maintain the level of competence of the authorised procedure designers;

(3) provide their procedure designers with signed evidence of the scope of

their authorisation; and

(4) define job descriptions for the authorised procedure designers, containing safety responsibilities.

(2) IFP designers shall, unless otherwise approved by the DCA, attend appropriate recurrent training courses suitable to the services being provided at least every 36 months.

IFPD.070 IFP Design Tools Verification/Validation

(1) Automation in IFP design shall be introduced with the objective of improving the quality, efficiency and cost-effectiveness of service provision.

(2) RNAV and RNP instrument flight procedures shall only be developed using expert procedure design tools or dedicated software packages with levels of automation that is acceptable to the DCA and validated in accordance with the requirements of sub-paragraph (e). The expert procedure design tools required under this sub - paragraph shall feature but is not limited to the following attributes:

(a) Interoperability with Aerodrome Mapping and Aeronautical Information Service databases.

(b) A Cyclic Redundancy Check (CRC) tool;

(c) Datum transformation and map projections;

(d) Geodetic computations to include distance and azimuth direct and inverse calculations, long line intersections between geodesics and geodetic and small circles, and slant ranges;

(e) Collinearity checks;

(f) Location checks within a geographic area;

(g) A convenient method of storing, tracking and retrieving data files; and

(h) User manual, data integrity guidance material, user training and software programme updates.

(3) All software that is used in the calculation of waypoints, coordinates and obstacle surfaces as part of an IFP shall be validated prior to use. According to the extent of the concerned procedure design tool's functions the following steps required for validation shall be included within the Design organisation's Quality Management/Assurance System:

(a) The test procedures required to validate and check correct calculations from the software; and

(b) The maintenance procedures for patching or updating the software.

(4) The software tool shall not be considered validated following the software update, until revalidated as stated above.

(5) Test and validation procedures for software tools shall comply with ICAO Doc. 9906 (Quality Assurance Manual for Flight Procedure Design), Volume 3 (Flight Procedure Design Software Validation) or equivalent.

IFPD.075 Resource Requirements

(1) An IFPD organisation requesting an approval as an instrument flight procedure design service provider shall:

(a) Have available equipment appropriate for the design, design verification, certification, validation, and maintenance of the types of instrument flight procedure that are specified in the applicant's Operations Manual;

(b) Have access to relevant and current data including, but not limited to, aeronautical data, any land contour data, and obstacle data for the design, design verification, validation, and maintenance of the instrument flight procedures certified by, and maintained by, the applicant's organisation; and

(c) Hold or have 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, certification, flight validation, and maintenance of the types of instrument flight procedure that are specified in the applicant's Operations Manual.

(2) An IFPD organisation requesting an approval as an instrument flight procedure design service provider, shall establish a procedure for ensuring that:

(a) Personnel have access to the data referred to in paragraph (1)(b) for the types of instrument flight procedure specified in the applicant's Operations Manual; and

(b) The data referred to in paragraph (1)(b) is current, traceable, and meets the required level of verifiable accuracy for the design, design verification, flight validation, and maintenance of instrument flight procedures specified in applicant's Operations Manual.

(3) An IFPD organisation requesting an approval as an instrument flight procedure design service provider shall establish a procedure for controlling all documentation required by paragraph (1)(c) to ensure that:

(a) The documentation is reviewed and authorised by an appropriate person before issue and use;

(b) Current issues of relevant documentation are available to personnel at every location if access to the documentation is required;

(c) Every obsolete document is promptly removed from every point of issue and use;

(d) A change to documentation is reviewed and authorised by an appropriate person

before issue and use;

(e) The current version of every item of documentation can be identified to prevent the use of superseded material.

IFPD.080 Use of Third Parties

(1) Where third parties are used the IFPDO shall:

(a) Identify the third party;

(b) Detail those requirements that will be satisfied by the third party;

(c) Remain responsible for ensuring third party compliance with these MCAR; and

(d) Notify the DCA of any change to the third party.

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CHAPTER 3

Instrument Flight Procedure Approval

IFPD.085 Instrument Flight Procedure Approval

(1) A Design Organisation approved to publish an IFP shall comply with these MCAR at all times.

(2) A Design organisation shall ensure the compliance of any third parties used while satisfying these requirement.

(3) On Approval of the IFP design report:

(a) Instrument Flight Procedures shall be published in Mauritius AIP in accordance with the Instrument Flight Procedures Review Period and any conditions that the DCA may prescribe;

(b) Applicants shall assume continuous ownership and responsibility for IFPs, including data management; and

(c) Applicants shall be responsible for safeguarding procedures and the assessment of new obstacles that requires a revalidation of IFPs.

IFPD.090 Approval submission

(1) An IFP design report shall be provided to the DCA containing the evidence that any IFP has been constructed, designed, and will be maintained, in accordance with these requirement.

(2) An IFP design report as a minimum shall contain the following documentary evidence:

(a) Details of the design criteria used in the construction of the instrument flight procedure, including;

(i) a statement of the procedure's compliance with respect to the use of third parties and;

(ii) a comprehensive design rationale in text format; and

(iii) references to those parts of Doc. 8168 "Procedures for Air Navigation Services Aircraft Operations", Volume 2 where from the standard criteria or policy has been employed.

(b) A description of the procedure, including:

(i) signatures of the procedure designer and nominated checker as respectively; and designated waypoint names, type and coordinates;

(ii) obstacles assessed in the construction of the procedure including height and position coordinates;

(iii) a description of the source of obstacle, terrain and aerodrome data used as applicable in the design of the IFP;

(iv) a diagram detailing the obstacle surfaces used in plan and profile view;

(v) procedure chart; and

(vi) textual narrative that describes, in an unambiguous manner, the flight procedure.

(c) A description of the flight validation procedure, including:

(i) evidence of aircraft used;

(ii) flight crew and certification Approvals; and

(iii) the flight test report.

IFPD.095 Design Safety Requirements

(1) The IFPDO shall ensure that the IFP design construction is:

(a) Completed by a Design Organisation in possession of IFPD Approval and is compliant with the requirements of Chapter 2;

(b) Undertaken with sufficient documented coordination between ATC, the Aerodrome Operator/Certificate holder, Airways Facility Services and the Design Organisation where applicable, and shall include:

(i) a review of the obstacles applicable to the procedure with the aerodrome Operator/certificate holder prior to any design work; and

(ii) development of a flight check plan, taking into account the requirement for operational ground navigation;

(iii) validation of both the operational and certification status of all applicable navigation aids.

(2) The IFPDO shall establish formal records and procedures to ensure that:

(a) There are sufficient cross checks to detect erroneous calculations;

(b) Required separations in the proximity of adjacent air traffic routings are maintained;

(c) Potential navigation database limitations are addressed before the procedure is coded and approved; and

(d) The DCA is informed and a reassessment of the IFP minimum altitudes undertaken when:

(i) there is a potential obstacle infringement of the IFP protected surfaces; or

(ii) there is a potential breach of aerodrome protected surfaces stipulated through aerodrome safeguarding.

(3) A NOTAM to suspend the IFP is promulgated when a potential infringement or breach as specified by sub- paragraph (2)(d) above, is confirmed.

(4) All documentation used in the production of the IFPD, shall be kept securely and retained for traceability, from the commencement of the development of the design as to allow any data anomalies or errors found during the production, maintenance or operational use of the procedure to be corrected, and shall be made available to the designated ANS Inspector, within a specified period of time, upon request.

IFPD.100 IFP Design Procedures

(1) All IFPs shall be designed adhering to the methodology and design criteria specified in ICAO Doc. 8168 (Procedures for Air Navigation Services – Aircraft Operations) Volume 2 ensuring, in particular, that required obstacle clearances are achieved.

(2) When the IFP being developed is an RNAV or RNP based procedure, then the additional requirements from ICAO Doc. 9613 (Performance Based Navigation (PBN) Manual) Volume 1, shall also apply.

(3) As applicable, the provisions from ICAO Doc. 9906 (The Quality Assurance Manual for Flight Procedure Design) in the construction of flight procedures shall apply.

IFPD.105 IFP Review Period

(1) All IFPs published in Mauritius AIP, shall be reviewed at least every 3 years or whenever needed, but not exceeding 5 years, for change in criteria, obstacle clearance/OLS infringements, Navigational Aid functionality, user requirements or change to Aerodrome Physical Characteristics, which may affect published minima, procedure usability or charting information.

(2) Reviewed procedures shall follow the same process indicated for initial submission of an IFPD, to the DCA, for inspection.

IFPD.110 IFP Source Data

(1) Source data used in the development of IFP shall include, as applicable, all aerodrome navigation aids, obstacle and terrain data as specified in ICAO Annex 14, Vol. I and the Operations Manual– Aeronautical Information Services.

(2) All data used as the basis for IFP design shall be traceable to the origin and shall have as a minimum the following metadata available:

(a) the name of the source or entity originating the data;

(b) the function performed by the source or entity; and

(c) the date at which the function was performed.

(3) The requirements for survey frequency shall be as follows:

(a) A geodetic survey sufficient to meet the requirements of ICAO Annex 14, Vol. I and the Aeronautical Information Services Manual (Doc. 8126) shall be undertaken for all aerodromes with instrument procedures as follows:

(i) at the time of the initial aerodrome survey;

(ii) when a more accurate reference frame for WGS-84 becomes available.

(b) If a check survey is not carried out annually; and

(c) If any doubt exists as to the validity of the previous survey.

(d) A check survey shall be undertaken for all aerodromes on an annual basis following the initial survey to identify any changes, including significant tree growth or reduction, since the previous survey. Any change shall be surveyed to meet the requirements of ICAO Annex 14, Vol. I and the Aeronautical Information Services Manual (Doc. 8126).

(e) All source data shall only be considered valid for use when the data is traceable according to the requirements of sub-paragraph (2) above and the period of last survey complies with the requirements of sub-paragraph (3) above.

(f) All source data shall be in WGS-84 format as specified in ICAO Doc. 9674 (World Geodetic System – 1984 (WGS-84) Manual) and compliant with the requirements of ICAO Doc. 9613 (Performance Based Navigation (PBN) Manual) Volume I, Attachment 2. If source data is unavailable in WGS-84 format, then it shall be converted to WGS-84 prior to use. Source data and converted data shall also be made available.

(g) Source data shall be provided by the relevant Aerodrome Operator/certificate holder or Mauritius Air Navigation Services Provider, as applicable. Where valid source data is unavailable, the applicant shall conduct a survey to provide baseline data for the purposes of IFP design to meet these requirements.

(h) Where a third party is contracted for the purpose of the survey, the applicant shall ensure that the data is consistent with the requirements of ICAO Annex 14 Vol. 1, Appendix 5 and Volume 2, Appendix 1, and the Aeronautical Information Services Manual (Doc. 8126).

IFPD.115 IFP Validation Requirements

(1) All IFPs shall be subject to a full validation process (ground validation and flight validation) unless specifically permitted otherwise by the DCA.

(2) All IFPs shall be subject to periodic flight check only utilising suitably equipped and approved aircraft, and aircrew qualified to carry out instrument flight procedure checks.

(3) The ground and flight validation shall be in accordance with ICAO Doc. 9906 “Quality Assurance Manual Flight Procedure Design”, Volume 5, “Validation of Flight Procedures”.

(4) The Design Organisation shall prepare a Flight Validation plan prior to the Flight Validation to accompany the Flight Validation report, this shall comply with the guidance and recommendations given in ICAO Doc. 9906 “Quality Assurance Manual for Flight Procedure Design”, Volume 5, “Validation of Flight Procedures”.

(5) The Design Organisation shall ensure that a Flight Validation report is issued as soon as possible following the Flight Validation.

(6) The Flight Validation report shall be completed according to the templates stipulated in ICAO Doc. 9906 “Quality Assurance Manual Flight Procedure Design”, Volume 5, “Validation of Flight Procedures”.

GM IFPD.115 IFP Validation Requirements

The purpose of validation is to obtain a qualitative assessment of the procedure design including obstacle, terrain and navigation data, and provide an assessment of the flyability of the procedure.

IFPD.120 Aircraft Requirements

(1) The aircraft used to conduct a flight validation shall meet the following minimum requirements:

(a) The aircraft shall be multi-engine and capable of safe flight within the intended operational envelope with a single engine operative;

(b) The aircraft shall be fully instrument equipped according to requirements for night and instrument flight rules; and

(c) The aircraft shall be capable of being flown at speeds equivalent to categories of aircraft for which the IFP was designed.

(2) As applicable, the aircraft used shall comply with the requirements of ICAO Doc. 8071 (Manual on Testing of Radio Navigation Aids) Volume 1 (Testing of Ground Based Navigation Aids), Attachment 1 to Chapter 1.

(3) Evidence of the aircraft’s applicable certifications shall be presented to the DCA prior to carrying out any IFP checks.

IFPD.125 Aircrew Requirements

(1) Flight Validation aircrew:

(a) Shall have received suitable training in accordance with ICAO Doc. 9906 and relevant to the IFP for which the validation is being completed;

(b) Shall be sufficiently trained to be able to recognise anomalous output from aircraft instruments that would require more detailed inspection with a more fully equipped aircraft and crew;

(c) May be single pilot only when it can be demonstrated to the DCA that flight can be conducted safely, and that flight workload is acceptable; and

(d) Shall include, where appropriate for the flight validation, engineers or technicians able to demonstrate sound knowledge and experience in flight testing and flight inspection procedures and requirements.

IFPD.130 IFP Dissemination

(1) The applicant shall be responsible for dissemination of the IFP and associated documentation to the designated AIS provider for publication following approval of the procedure by the DCA.

(2) The applicant shall ensure that the design and format of the IFP charts are in a standardized format in accordance with the requirements of ICAO Annex 4, Annex 15, the Aeronautical Information Services Manual (Doc. 8126), ICAO Doc. 8697 (Aeronautical Chart Manual) and ICAO Doc. 8168 (Procedures for Air Navigation Services – Aircraft Operations) Volume 2;

(3) The applicable aerodrome operator shall be provided with charts detailing the obstacle surfaces used in plan and profile to aid safeguarding assessment;

(4) Where the IFP is a PBN procedure, it is described in a clear and unambiguous fashion as detailed in ICAO Doc. 8168 (Procedures for Air Navigation Services – Aircraft Operations) Volume 2 and ICAO Annex 15 (Aeronautical Information Services);

(5) Where the IFP is a PBN procedure, prior to publication, it is validated to ensure that the dataset is complete, coherent and correct; and

(6) The Design Organisation performs a final check of the published data in the AIP/chart amendment when issued to ensure that no errors have been introduced during the data transfer process.

IFPD.135 Human Factors

(1) The IFPD organisation shall ensure that Human Factors (HF) aspects are taken into

account as it pertains to air traffic services.

(2) Areas to be considered include organisational issues, safety management concepts and learning from incident data.

IFPD.140 Safety Assessments

(1) The IFP design organisation shall carry out a safety assessment in respect of proposals for new flight procedure designs or any significant changes in a revised procedure. Proposals shall be implemented only when the assessment has shown that an acceptable level of safety will be met.

(2) The safety assessment shall consider relevant factors determined to be safety-significant, including but not limited to:

(a) Types of aircraft and their performance; characteristics, including navigation capabilities and navigation performance;

(b) Traffic density and distribution;

(c) Airspace complexity;

(d) ATS route structure and classification of the airspace;

(e) Aerodrome layout;

(f) Type and capabilities of ground navigation systems;

(g) Any significant local or regional data (e.g. obstacles, infrastructures, operational factors, etc.).

(3) Safety risk control/mitigation process shall include hazard/consequence identification and safety risk assessment. Once hazards and consequences have been identified and safety risks assessed, the effectiveness and efficiency of existing aviation system defences relative to the hazards and consequences shall be evaluated. As a consequence of this evaluation, existing defences shall be reinforced, new ones introduced, or both.

(4) As part of the safety assurance, the risk control/ mitigation process shall include a system of feedback. This is to ensure integrity, efficiency and effectiveness of the defences under the new operational conditions.

(5) The IFP design organisation shall ensure that the results and conclusions of the safety assessment and mitigation process of a new or changed procedure are specifically documented, and that this documentation is maintained throughout the life of the instrument flight procedure.

GM IFPD.140 Safety Assessments

(1) The safety assessments can be conducted with the ATS provider.