



SIERRA LEONE CIVIL AVIATION AUTHORITY

ADVISORY CIRCULAR

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GUIDANCE ON THE DESIGN, VALIDATION, APPROVAL AND PROMULGATION OF INSTRUMENT FLIGHT PROCEDURES (IFP)


Director General

Sierra Leone Civil Aviation Authority



TABLE OF CONTENTS

1.	GENERAL	3
1.1	Purpose.....	3
1.2	Applicability	3
1.3	Description of Changes.....	3
1.4	References	3
1.5	Cancelled Documents	4
1.6	Definitions.....	4
2.	IFP Roles and Responsibilities	8
2.1	IFP Inspector.....	8
2.2	Sponsor	8
2.3	Approved Procedure Design Organisation	9
2.4	Aeronautical Information Management (AIM)	9
3.	APPLICATION AND APPROVAL PROCESS for APDO and apd	10
3.1	Step 1: Application Submission.....	10
3.2	Step 2: Desktop Audit/Document Review	11
3.3	Step 3: Initial Audit.....	11
3.4	Step 4: Decision	11
4.	IFP DESIGN PROCESS.....	13
5.	VALIDATION OF INSTRUMENT FLIGHT PROCEDURES.....	14
5.1	Validation.....	14
5.2	Flight Validation Plan	14
5.3	Ground Validation	15
5.4	Flight Simulator Evaluation.....	16
5.5	Flight Validation	17
5.6	Simulator/Aircraft Requirements.....	19
5.7	Meteorological Conditions.....	19
5.8	Navigation Database Validation	19
5.9	Reports	20
6.	APPROVAL OF INSTRUMENT FLIGHT PROCEDURES	22
6.1	IFP Submission Package Requirements.....	22
6.2	IFP Approval.....	23
7.	PUBLICATION OF IFP	24
8.	CONTINUOUS MAINTENANCE AND PERIODIC REVIEW OF IFPS	25
8.1	Responsibility	25
8.2	Continuous Maintenance	25

8.3	Periodic Review	25
9.	SAFETY RISK ASSESSMENT	27
10.	ERRORS, INCONSISTENCIES & ANOMALIES	28
11.	EXTERNAL QUERIES.....	28
12.	AERONAUTICAL DATA QUALITY REQUIREMENTS	29
12.1	Aerodrome Operator	29
12.2	Approved Procedure Design Organisation	29
APPENDIX 1	APPLICATION FOR APPROVAL OF AN INDIVIDUAL AS AN INSTRUMENT FLIGHT PROCEDURE DESIGNER.....	30
APPENDIX 2	APPLICATION FOR APPROVAL OF A COMPANY AS AN IFP DESIGN SERVICES PROVIDER (IFP DSP).....	32
APPENDIX 3	FLIGHT PROCEDURE DESIGN PROCESS FLOW DIAGRAM	34
APPENDIX 4	NOTIFICATION OF INTENDED AIRSPACE CHANGE PROPOSAL OR PROCEDURE DESIGN ACTIVITY	41
APPENDIX 5	SIMULATOR EVALUATION— FIXED WING.....	43
APPENDIX 6	FLIGHT VALIDATION — FIXED WING.....	51
APPENDIX 7	APPLICATION FOR INSTRUMENT FLIGHT PROCEDURE DESIGN APPROVAL - NEW DESIGN/CHANGE.....	59
APPENDIX 8	AN OVERVIEW OF THE NECESSARY STEPS IN THE IFP DESIGN APPROVAL AND PUBLICATION	61
APPENDIX 9	IFP SAFETY RISK EVALUATION & COMPLIANCE CHECK	62
APPENDIX 10	COMMON RESPONSE DOCUMENT	67

1. GENERAL

The Sierra Leone Civil Aviation Authority's Advisory Circulars contains information about standards, practices and procedures that the Authority has found to be an Acceptable Means of Compliance (AMC) with the associated Regulations.

An AMC is not intended to be the only means of compliance with a Regulation, and consideration will be given to other methods of compliance that may be presented to the Authority.

1.1 Purpose

- 1.1.1 The purpose of this AC is to guide all personnel and entities involved in the design, review, validation, and publication process of Instrument Flight Procedures for used in Sierra Leone.
- 1.1.2 This elaborates on the functions and responsibilities of individuals and entities, providing guidance to meet standards/criteria and ensure that constructions of Instrument Flight Procedures (IFPs) are produced under standardized processes that ensure safety and quality.
- 1.1.3 Further, it describes the procedures to obtain regulatory approval for IFP designs, IFP design service providers and IFP designers and overall safety oversight activities on the procedure design function.

1.2 Applicability

- 1.2.1 This AC applies to the IFP Design service provider who is responsible for the IFP design service for use in Sierra Leone.
- 1.2.2 The guidance contained herein apply to Instrument Flight Procedure Designers and other personnel involved in review, validation, promulgation and maintenance of Instrument Flight Procedures for use in Sierra Leone.
- 1.2.3 It is also applicable for Flight Procedure Inspector of the Authority who are tasked with safety oversight of all Instrument Flight Procedures in Sierra Leone.

1.3 Description of Changes

This is the second AC to be issued on this subject

1.4 References

- (a) SLCAR Part 15- Aeronautical Information Services
- (b) SLCAR Part 11- Air Traffic Services
- (c)
- (d) SLCAR Part 4- Aeronautical Charts

- (e) SLCAR Part 5- Units of Measurement for Air and Ground Operations
- (f) SLCAR Part 19- Safety Management
- (g) SLCAR Part 24- Instrument Flight Procedures
- (h) ICAO Doc 8168 - Procedure for Air Navigation Service - Aircraft Operations Volumes I and II
- (i) ICAO Doc 9613 - Performance based Navigation Manual - Volume I: Concept and Implementation Guidance and Volume II: Implementing RNAV and RNP
- (j) ICAO Doc 9274 - Manual on the Use of the Collision Risk Model (CRM) for ILS operations
- (k) ICAO Doc 9368 - Instrument Flight Procedure Construction Manual
- (l) ICAO Doc 9674 - World Geodetic System 1984 (WGS-84) Manual
- (m) ICAO Doc 9906 - Quality Assurance Manual for Flight Procedure Design
- (n) ICAO Doc 9881 - Guidelines for Electronic Terrain, Obstacle and Aerodrome Mapping Information
- (o) ICAO Doc 10068- Manual on the Development of a Regulatory Framework for Instrument Flight Procedure Design Service.

1.5 Cancelled Documents

This document repeals and replaces the previous guidance prescribed in SLCAA-AC-ANS017 Rev00.

1.6 Definitions

When the following terms are used in this document they have the following meanings:

- (a) Aeronautical Information Publication (AIP)** – A publication issued by or with the authority of a State and containing aeronautical information of a lasting character essential to air navigation.
- (b) Approved IFP designer (APD)** – An Instrument Flight Procedure (IFP) Designer who has met the Authority competency requirements and holds an authorisation for the design of instrument flight procedures (IFPs) for aerodromes, heliports, and airspace within Sierra Leone Airspace.
- (c) Approved Procedure Design Organisation (APDO)** – An IFP Design Service Provider approved by the Authority for the provision of IFP Design Service in Sierra Leone.
- (d) Authority.** Sierra Leone Civil Aviation Authority

- (e) Flight procedure design.** The complete package that includes all the considerations that went into the development of an instrument flight procedure.
- (f) Flight procedure design process.** The process which is specific to the design of instrument flight procedures leading to the creation or modification of an instrument flight procedure.
- (g) Independent Approved IFP Designer (IAPD)** – An Approved IFP Designer who is involved in any IFP design validation activities, operating within the same QMS as the designing APD.
- (h) Instrument Flight Procedure Quality Management System (IFP QMS)** - A set of processes and procedures, mainly described in a manual, required for the planning and execution of Instrument Flight Procedure activities to ensure that quality assured procedures are provided in support of ATM operations.
- (i) Instrument Flight Procedure Design Service (IFP DS)** - A service established for the design, documentation, validation, maintenance, safeguarding, and periodic review of IFPs necessary for the safety, regulatory, and efficiency of air navigation.
- (j) Instrument Flight Procedure Design Service Provider (IFP DSP)** – An IFP DSP is a body that provides an IFP Design Service.
- (k) Instrument Flight Procedure (IFP)** – A description of a series of predetermined flight manoeuvres by reference to flight instruments, published by electronic and/or printed means. These are:
 - (i) Standard Instrument Departure (SID)** – A designated 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.
 - (ii) Standard Instrument Arrival (STAR)** – A designated Instrument Flight Rules (IFR) arrival route linking a significant point, normally on an ATS route, with a point from which a published IAP can be commenced. (ICAO – Annex 11 ‘Air Traffic Services’)
 - (iii) Instrument Approach Procedures (IAP)** – series of predetermined manoeuvres by reference to flight instruments with specified protection from obstacles from the initial approach fix, or where applicable, from the beginning of a defined arrival route to a point

from which a landing can be completed and thereafter, if a landing is not completed, a missed approach to a position at which holding and/or an altitude which ensures en-route obstacle clearance criteria is met

(iv) **Holding** – a predetermined manoeuvre which keeps an aircraft within a specified volume of airspace while awaiting further clearance.

(l) Instrument flight procedure process. The overarching process from data origination to the publication of an instrument flight procedure.

(m) Integrity (aeronautical data). A degree of assurance that an aeronautical data and its value has not been lost or altered since the data origination or authorized amendment.

(n) Obstacle. All fixed (whether temporary or permanent) and mobile objects, or parts thereof, that:

(i) are located on an area intended for the surface movement of aircraft; or

(ii) extend above a defined surface intended to protect aircraft in flight; or

(iii) stand outside those defined surfaces and that have been assessed as being a hazard to air navigation.

(o) Procedure. A specified way to carry out an activity or a process (see ISO 9000:2000 Quality management systems — Fundamentals and vocabulary, section 3.4.5).

(p) Process. A set of interrelated or interacting activities which transforms inputs into outputs (see ISO 9000:2000 Quality management systems — Fundamentals and vocabulary, section 3.4.1); hence “flight procedure design (FPD) process” or “instrument flight procedure process”.

(q) Quality record. Objective evidence which shows how well a quality requirement is being met or how well a quality process is performing. Quality records normally are audited in the quality evaluation process.

(r) Review. An activity undertaken to determine the suitability, adequacy and effectiveness of the subject matter to achieve established objectives (see ISO 9000:2000 Quality management systems — Fundamentals and vocabulary, section 3.8.7).

(s) Validation. Confirmation, through the provision of objective evidence, that the requirements for a specific intended use or application have been fulfilled. The activity whereby a data element is checked as having a value that is fully applicable to the identity given to the data element, or a set of data elements that is checked as being acceptable for their purpose.

- (t) Verification.** Confirmation, through the provision of objective evidence, that specified requirements have been fulfilled. The activity whereby the current value of a data element is checked against the value originally supplied.
- (u) Authorised Source** – Person ultimately accountable for aeronautical information published in the Sierra Leone AIP.
- (v) Data originator** – Person or persons authorised to originate aeronautical information and data on behalf of the ‘Authorised Source’.
- (w) Flyability of an IFP** – Determined by an assessment completed in a full flight simulator (ground validation) or an aircraft (flight validation) to check that the IFP is flyable by the anticipated range of aircraft types in various weight, speed and centre of gravity configurations, and in various weather conditions (temperature, wind effects and visibility). It is also designed to assess that the required aircraft manoeuvring is consistent with safe operating practices, and that flight crew workload is acceptable
- (x) Sponsor** – An aerodrome operator or representative from an aerodrome acting on the operator’s behalf, or an ANSP, who proposes a new IFP design, changes to, or withdrawal of an existing IFP.

2. IFP ROLES AND RESPONSIBILITIES

2.1 IFP Inspector

- 2.1.1 The IFP Inspector. An Inspector for the State, within the Sierra Leone Civil Aviation Authority (SLCAA), whose responsibilities include but are not limited to:
- (a) acting as the regulatory point of contact to stakeholders and APDOs;
 - (b) approval of:
 - (i) IFP Design Service Provider
 - (ii) IFP Designers
 - (iii) Flight Validation Pilots
 - (iv) Flight procedure designs.
 - (v) Airspace structures and designs
 - (vi) Charting
 - (c) ensuring that maintenance and periodic review of IFPs for aerodromes and airspace are conducted by an APDO
 - (d) guiding IFP Design Service Providers and IFP Designers as appropriate in developing IFP Designs;
 - (e) ensuring regular inspections/ audits of the IFP design service provider are conducted; and
 - (f) to provide subject matter expertise to the Authority on all regulatory aspects of IFP design

2.2 Sponsor

- 2.2.1 The IFP sponsors are responsible for:
- (a) initiating any new design or changes to an IFP
 - (b) ensuring that the IFP Periodic Review and IFP safeguarding are completed in accordance with the requirements published in SLCAR Part-24 and all applicable IFP policies.
 - (c) ensuring that the validation activities, as required, are conducted as part of the development of IFP Process for any new or changed IFP.
 - (d) ensuring that IFP designs are undertaken with relevant safety assessment
 - (e) ensuring that the payment of IFP regulatory charges, as detailed in the SLCAA Scheme of Charges (Instrument Flight Procedures), is made using the form in Appendix 7 and submitted to the SLCAA alongside the IFP design submission. The SLCAA recommends that sponsors liaise with their APDO to confirm that the form in Appendix 7 accurately reflects the number of procedures included in the IFP design package submitted for SLCAA approval.

- (f) ensuring that the Aeronautical Information Publication Change Request is submitted to AIS following approval by the Authority or after a periodic review and approval.
- (g) ensuring that the contracted APDO is carrying out IFP design activities in compliance with the design privileges identified in the approval certificate.
- (h) ensuring that the aeronautical dataset published in the relevant sections of the Sierra Leone AIP is correct, valid, and reflects the current aerodrome information (survey and other information).
- (i) ensuring compliance with this document during coordination and consultations with an APD and stakeholders;

2.3 Approved Procedure Design Organisation

2.3.1 They are responsible for ensuring the following as a minimum:

- (a) acting as the focal point of contact for the IFP design service
- (b) the provision of all IFP design activities (IFP Design, periodic reviews and safeguarding) are in accordance with their IFP Quality Management System and the privileges for their designers as detailed in their APDO approval document.
- (c) the delivery of IFP design service is provided in accordance with the requirements set up in SLCAR Part-24.
- (d) engaging with the IFP Inspector if they seek clarification concerning IFP design activities.
- (e) ensuring that the aeronautical dataset as published in the relevant Sierra Leone AIP sections is correct, valid and reflects the current aerodrome information (particularly the survey) as part of their contractual arrangement with sponsors.
- (f) ensuring that the aeronautical data and datasets comply with the aeronautical data requirements detailed in SLCAR Part 15.

2.4 Aeronautical Information Management (AIM)

- 2.4.1 The AIS provider has the responsibility, on behalf of the State, to ensure that the provision of AIS is conducted in accordance with SLCAR Part 15.
- 2.4.2 AIS exercise this responsibility through the publication of the State Aeronautical Information Products
- 2.4.3 The State source of aeronautical data is the Aeronautical Information Publication. Required updates shall be in line with SLCAA-AC-ANS040 - Guidance on AIP Change Request.

3. APPLICATION AND APPROVAL PROCESS FOR APDO AND APD

3.1 Step 1: Application Submission

- (a) Applicants should note that a fee is applicable and payable to the Authority. Details of the approval fees can be found in the SLCAA Scheme of Charges (Instrument Flight Procedures).
- (b) Submissions shall be in electronic format and sent to info@slcaa.gov.sl
- (c) If an organisation wishes to use a file transfer service (e.g. SharePoint Online, Dropbox, etc...), they should first submit the relevant forms by email and inform the Authority who will then contact the organisation to ascertain whether this can be accommodated.
- (d) The submission is acknowledged within 10 working days, and the Authority will then contact the applicant to discuss and agree on an indicative timeline for a decision. The Authority requests that the payment be completed before proceeding to the desktop audit/document review conducted in Step 2.
- (e) All submissions, including the supporting documentation and relevant evidence, shall be in English and include the following as a minimum:
 - (i) Application Form for Organisation Approval in Appendix 2, including details of the organisation and all individuals wishing to be included in the approval document.
 - (ii) Application Form for Individual Approval in Appendix 1, including the necessary evidence as required in SLCAR Part-24, 3, and a letter from the accountable manager recommending the IFP designer for approval, demonstrating how the applicant meets the Authority requirements.
 - (iii) Contents of the organisation's IFP QMS.
 - (iv) An exposition of the organisation containing references to the IFP QMS detailing how the requirements are met.
- (f) The Authority at this stage assesses whether the submission contains all relevant information and decides whether stage 2 of the process can commence or if additional information is required.

3.2 Step 2: Desktop Audit/Document Review

- (a) At this stage, the Authority evaluate the organisation's IFP QMS with the objective to ascertain whether the system and processes established are sufficient for the delivery of qualitative IFP design activities.
- (b) The Authority also reviews the information provided to determine if the organisation has sufficiently demonstrated that the designers are suitably trained and competent in IFP design, particularly within the organisation's processes/systems and determine whether the organisation is ready to proceed to step 3 - Initial Audit. If required, the Authority contact the applicant to obtain further information.

3.3 Step 3: Initial Audit

- (a) The Authority conducts an initial audit to analyse how individuals operate the organisation's IFP QMS. Further, the audit is also the opportunity to interview the designer and accountable manager, or Lead Designer, to allow the review of the IFP designer's competency, experience, and ability to operate within the IFP DSP's QMS, applying for approval.
- (b) During this audit, the Authority looks for evidence that demonstrates the organisation's compliance to IFP QMS or the IFP designer's competency and experience.
- (c) After completion of the audit/interview, a report is produced, and the application proceeds to Stage 4: Approval Decision.
- (d) if the Authority believes that corrective actions should be developed to facilitate a positive outcome, the Authority will send an audit report to the organisation within 15 working days following the audit. Upon receipt of the report, the organisation produces an action plan to address the issues raised and submits the report within an agreed timeline. This action plan and supporting evidence will then be assessed to determine whether the issues have been satisfactorily addressed to inform a decision at Step 4.

3.4 Step 4: Decision

- (a) If the Authority is satisfied that the service provider/IFP designer meets the approval requirements, an approval is granted, and an approval document is issued shortly thereafter. The service provider becomes an "Approved Procedure Design Organisation or Approved IFP designer".

- (b) If the Authority believes that the service provider/IFP designer does not meet the requirements defined in SLCAR Part-24 for the delivery of IFP design service in Sierra Leone, the application is rejected with a decision documented in a report.
- (c) Where necessary an approval may be issued with a restriction either placed on a designer's privileges and/or on the organisation. These restrictions may impact the IFP design activities permitted, and the service provision offered by the organisation.

Summarised Application Process

Steps	Purpose	Outcome
Step 1 Submission	IFP DSPs/IFP designers submit their application to the Authority with the aim at gaining an approval for the provision of Instrument Flight Procedure design services in Sierra Leone.	The Authority ensures that the application is effectively received and meets the requirements set up in this document.
Step 2 Desktop Audit/Document Review	The Authority uses an internal methodology to assess the documentation provided at step 1 to identify if the IFP process is clearly developed and documented within an IFP Quality Management System or the IFP designer meets the requirements to design IFP in Sierra Leone. It is also an opportunity to assess the training document.	The Authority is confident that the applicant has implemented a robust and documented process for the delivery of IFP service and that training is managed in a comprehensive way to ensure that the IFP designers are competent for the role they are employed for.
Step 3 Initial Audit	The Authority performs an audit, assess the robustness of the process and how it is used by individuals. This represents the practical part of the assessment	The Authority is confident that individuals are knowledgeable and skilled to use their internal IFP process for the delivery of IFP services.
Step 4 Decision	The Authority analyses the outcomes of the previous stages.	The SLCAA makes an informed decision to approve or reject the application and informs the IFP DSP.

Table 1 - IFP DSP/IFP designer application process

4. IFP DESIGN PROCESS

- 4.1 A new IFP or amendment to an existing IFP may result due to the following:
- (a) request or feedback from stakeholder/s, or
 - (b) installation/upgradation of navigation aid/final approach aid, or
 - (c) change in airport infrastructure, e.g. revision of declared distances, or
 - (d) change in the airspace structure, or
 - (e) as a part of continuous maintenance or periodic review
- 4.2 Once a decision has been taken to design/modify the IFP based on 4.1, the IFP design process must follow the steps outlined in Appendix 3, starting from data origination through the survey to the final publication of the procedure and the subsequent coding for use in an airborne navigation database.

Design process notification

- 4.3 The sponsor shall notify the Authority of the intention to develop new or change existing flight procedures, using Form in Appendix 4, available on the Authority website at: www.slcaa.gov.sl
- 4.4 The justification for the new IFP or modification to the existing IFP must be clearly stated in the Form and in accordance with the airspace concept and the State air navigation strategy.
- 4.5 Following receipt of the Form, the Director General shall notify the Sponsor with any comments to be considered during design within the required period, depending on the volume of changes for the design. Acknowledgement will be sent within 10 working days.
- 4.6 The sponsor applying for new flight procedures shall consider the design process involved, as required in 4.2 above, when establishing realistic implementation dates.

5. VALIDATION OF INSTRUMENT FLIGHT PROCEDURES

5.1 Validation

- 5.1.1 The validation of IFPs is the final step in the procedure design process, before approval for publication in the AIP. The purpose of validation is to confirm the accuracy and completeness of all relevant obstacles and navigation data, reveal any errors in the application of IFP design criteria, and assess the flyability of the IFP. It includes a ground validation element, a compliance check to be completed by an APD, and a flyability check typically conducted using a simulator. Additionally, it may also include a flight validation component. It is to be noted that if sponsors wish to implement PBN procedures, a database validation is also required.
- 5.1.2 As part of the ground/flight validation flyability assessment, the validation pilot will provide a detailed assessment of the human factors element of each procedure e.g., crew workload and charting issues. These activities (proposed ground (simulator) and/or flight validation) shall be detailed in a plan submitted for agreement with the IFP Inspector. The Authority considers that these activities should be conducted objectively by the validation pilots and that the IFP sponsor shall not take part in the validation activities.

5.2 Flight Validation Plan

- 5.2.1 The purpose of the validation plan is to ensure that the proposed timings, scope, service provider/equipment, and objectives of the validation activities are identified and agreed upon between the sponsor, the APDO, the Flight validation pilot(s), and the Authority before the activities are carried out.
- 5.2.2 A validation plan shall be submitted to the Authority for all simulator/flight validation activities. Agreement from the Authority is required prior to any validation activities being carried out. The validation plan will form the basis of the validation activities conducted by the validation pilots.
- 5.2.3 As a minimum the flight validation plan shall include the following items:
- (a) Information relating to the Flight Validation Pilots including qualifications.
 - (b) Aircraft/simulator to be used including avionics.
 - (c) Name of the navigation database provider (DAT provider).
 - (d) Planned date and time of the validation activities
 - (e) Where applicable the plan shall include the detail for the validation of VM(C) area and night validation, making sure to specify if there are no existing IFPs or if the use of night operations is new at the aerodrome.

- (f) The documentation containing each sequence of the validation runs i.e. which procedure, wind velocity, weight, low/high temperature.
- (g) The details of any IFP/elements of the procedure/segments that require the assessment of the IFP flyability under varying wind conditions.
- (h) The details of any IFPs with minimum segment lengths which will need to be flown at maximum speeds in varying wind conditions identified as appropriate to the aerodrome, e.g., this will include average wind and extreme wind conditions experienced at the aerodrome in the previous 5 years;
- (i) The IFP APDO draft charts, coding tables, and FAS DBs as applicable in order to facilitate the validation.
- (j) Provide a clear explanation of the expected output from the validation activities.
- (k) For validation at aerodromes with no existing IFPs:
 - (i) A plan view of the final approach obstacle evaluation template, drawn on an appropriate topographical map of scale 1:50,000 or an appropriate aeronautical chart to demonstrate safe use for navigation, the elevated terrain analysis, and the obstacles and obstructions evaluation.
 - (ii) All completed documents identifying the associated terrain, obstacles, and obstructions as applicable to the procedure. The controlling terrain/obstacle should be identified and highlighted on the appropriate chart.

5.3 Ground Validation

5.3.1 Ground validation shall always be undertaken.

5.3.2 The independent IFP design review is to reveal any errors in the application of the IFP design criteria, the production of the associated design documentation and to assess the flyability of the IFP. An independent and approved IFP designer (APD) performs the compliance check to ensure the IFP designs are developed in accordance with the APDO IFP QMS and in compliance with the ICAO PANS-OPS criteria, and ensures that the IFP designs are fit for purpose and meet the IFP Sponsor's requirements.

- 5.3.3 Preflight validation must be conducted by persons trained in flight procedure design and with appropriate knowledge of flight validation issues. This may be a joint activity by flight procedure designers and pilots. Preflight validation should identify the impact of a flight procedure on flight operations, and any issues identified should be addressed prior to flight validation. Preflight validation determines the subsequent steps in the validation process.
- 5.3.4 Operators who receive the draft IFP from sponsor will forward their comments to sponsor and the Authority on the flyability of the procedure and any other observation as appropriate
- 5.3.5 Ground validation will aid in evaluating, to the extent possible, those elements of the IFP that will be evaluated in a flight validation. Issues identified during Ground validation should be addressed prior to undertaking Flight validation
- 5.3.6 In case of new IFP, while conducting ground validation, if, the accuracy and completeness of obstacle and navigation data considered in the procedure design, and any other factors normally considered in the flight validation, can be verified, then the flight validation requirement for the new IFP based on ground-based navigation aids may be dispensed with.
- 5.3.7 The ground validation in case of modifications/amendments to existing IFP will determine if flight validation is required. It will also determine if such modifications/amendments can be promulgated without any requirement of either simulator or flight validation.
- 5.3.8 If required, for clarifications and better understanding of the procedure, the Authority may convene IFP Review Committee Meeting. The meeting will comprise the designated officials from the Authority, representatives from airlines, airport operator, sponsor & APDO. APD may be required to make a presentation on the proposed procedure packages under discussion.

5.4 Flight Simulator Evaluation

- 5.4.1 To provide an initial evaluation of database coding, flyability and feedback to the procedure designers, a Simulator Evaluation might be necessary based on the recommendation of Ground validation.
- 5.4.2 Simulator Evaluation must be accomplished by a qualified and experienced Flight Validation Pilot (FVP) approved by the Authority.
- 5.4.3 Simulator evaluation must not be used for obstacle assessment. Preparation for the simulator evaluation should include a comprehensive plan with description of the conditions to be evaluated, profiles to be flown and objectives to be achieved. Flight simulator evaluation will be accomplished by completing the Simulator evaluation checklist in Appendix 7.

- 5.4.4 Where a flyability assessment is conducted using a full flight training simulator, the following elements should be evaluated as a minimum:
- (a) All segments of the IFPs should be assessed, except in exceptional cases if justified.
 - (b) SIDs - all segments of the procedure from the departure end of the runway (DER) to the en-route structure or termination point should be assessed.
 - (c) STARs – all segments of the procedures should be assessed including the entry and exit of any holds to the next IFP (this may be an existing IFP).
 - (d) IAPs - all segments of the procedure from the arrival/initial fix through to the missed approach should be assessed at least once. The final approach and missed approach segments for each line of minima will be required to be assessed. The assessment should include an approach to a successful landing at least once.
- 5.4.5 In the case of PBN IFPs, a navigation database for testing purposes in the full flight training simulator produced by an appropriate navigation data provider for use in the flight management system/computer (FMS/C) shall be used.
- 5.4.6 IFPs with complex turning missed approach procedure, RNP-APCH (LNAV, LNAV/VNAV, LPV), and Required Navigation Performance Authorization Required (RNP AR) should undergo simulator evaluation.

5.5 Flight Validation

5.5.1 The objectives are to:

- (a) Obstacle verification.
 - (i) Verify the obstacle that is identified as the controlling obstacle for each segment and check that no new obstacles have been erected since the design was undertaken, or that no existing obstacles have been charted with grossly incorrect heights along the designated track.
 - (ii) The Obstacle verification is carried out in daylight hours in Visual Meteorological Conditions (VMC) and is flown at the minimum published altitude.
- (b) Flyability Assessment.

The following elements should be evaluated as a minimum:

 - (i) All segments of the IFPs should be assessed, except in exceptional cases if justified
 - (ii) SIDs - all segments of the procedure from the departure end of the runway (DER) to the en-route structure or termination point should be assessed.

- (iii) STARS – all segments of the procedures should be assessed including the entry and exit of any holds to the next IFP (this may be an existing IFP).
 - (iv) IAPs - all segments of the procedure from the arrival/ initial fix through to the missed approach should be assessed at least once. The final approach and missed approach segments for each line of minima will be required to be assessed. The assessment should include an approach to a successful landing at least once.
 - (v) Visual Manoeuvring (Circling) area should also be assessed at an aerodrome where IFPs are introduced for the first time.
- (c) In the case of PBN IFPs, a navigation database for testing purposes produced by an appropriate DAT provider for use in the navigation system should be used.
- (i) However, for LNAV ONLY IAPs which are standard T/Y Bar designs (i.e. no reduced segment length, no turns at the Missed Approach Point (MAPt), or fly over waypoints after the MAPt with Track to Fix (TF) and Fly-By waypoints (not including the MAPt), manual entry of the procedure into the onboard navigation system in use may be acceptable and will be considered by the Authority on a case by case basis. In this scenario, the validating pilot will need to manually activate the Course Deviation Indicator (CDI), scaling changes during the different phases of the flight. Note: This option is not applicable for Simulator Validation or procedures involving a turn at the MAPt waypoint or where a Course to Fix path terminator has been used within the design.

5.5.2 Flight Validation shall be performed in the following cases:

- (a) Deviations from ICAO PANS-OPS Doc 8168 Volume II IFP design criteria.
- (b) The introduction of new procedures at an aerodrome, such as PinS or Required Navigation Performance (RNP) approaches or RNP AR or IFPs for use at an aerodrome with a non-instrument runway with or without approach control.
- (c) modified/amended IFP differs significantly from existing procedures
- (d) Procedures designed for use in complex airspace where close coordination between ANSPs is required to mitigate risks, mountainous terrain area, and/or a dense obstacle environment
- (e) If the accuracy and/or integrity of obstacle and terrain data cannot be determined by other means
- (f) As recommended by the validation pilot and/or the approved IFP designer (APD).
- (g) Special crew procedures and/or operational techniques that are likely to be necessary to fly the procedures.

5.6 Simulator/Aircraft Requirements

- 5.6.1 The simulator/aircraft to be used for ground/flight validation of an IFP should have the appropriate performance capabilities to meet the categories for which the IFP has been designed. E.g. a SEP cannot be used to validate a procedure up to CAT D aircraft.

5.7 Meteorological Conditions

- 5.7.1 All IFP validation flights should be conducted during daylight hours in visual meteorological conditions (VMC), which allow the flight to be carried out with a flight visibility of not less than 8KM, and in sight of the surface throughout the flight validation of the procedure. When required, validation flights conducted at night should also be carried out in VMC, which allows the flight to be carried out with a flight visibility of not less than 8KM, and in sight of the surface throughout the flight validation of the procedure.

5.8 Navigation Database Validation

- 5.8.1 The validation of the database, which is developed using ARINC 424, is only required for PBN IFPs and is intended to define the specific nominal tracks which are defined by waypoint location, waypoint type, path terminator, and, where appropriate, speed constraint, altitude constraint, and course.
- 5.8.2 This step is a gross error check to ensure that an IFP approved and published in the AIP can be correctly coded in an aircraft navigation database (which will be effective on the applicable AIRAC date). The key element of this validation is to ensure that the coding of the procedure in the Flight Management System/Computer (FMS/C) navigation system does not compromise the flyability of the IFP.
- 5.8.3 Once an IFP is approved, the procedure enters the AIS promulgation process and distributed to the navigation database providers. When the database is available with the IFP included (normally available 7-10 days before the effective date of the IFP), the navigation database can be validated in the aircraft FMS/C or an appropriate desktop trainer with the navigation database containing the IFP for the applicable AIRAC. The IFP does not need to be flown for the purposes of this validation step.
- 5.8.4 This validation shall be conducted using the charts and coding tables approved by the Authority and published in Sierra Leone AIP.

- 5.8.5 This activity should be carried out by a validator who has the appropriate competency to operate the validation tool i.e. FMS/C in a simulator/aircraft or appropriate desktop trainer.
- 5.8.6 If issues are raised or the validation is unable to be completed until after the effective IFP implementation (AIRAC), an appropriate NOTAM action shall be required to resolve the issues or delay the effective date (AIRAC) until the issues are addressed.

5.9 Reports

- 5.9.1 The result(s) of ground validation shall be documented in the following reports with supporting evidence:
 - (a) APDO validation report (Document/form within APDO QMS)
 - (i) A report to capture the ground validation (commonly known as compliance check) completed by both the approved IFP designer and the independent IFP designer in accordance with the organisation's IFP QMS.
- 5.9.2 The result(s) of Flight Simulator Evaluation shall be documented in the following reports with supporting evidence:
 - (a) Flight Simulator Evaluation Checklist (Appendix 5) and the supporting evidence:
 - (i) Video of the Navigation Display (ND)/Primary Flight Display (PFD) within the simulator whilst the procedure is being flown.
 - (ii) A snapshot of the navigation database being used within the aircraft FMS/C
 - (iii) The validation plan parameters, chart coding tables, and Final Approach Segment Data Block (FAS DB as applicable) used during the validation.
 - (iv) Any additional items assessed to be documented in the report.
 - (v) Any issues encountered relating to the IFPs shall be documented in the report.
- 5.9.3 The result of the Flight Validation shall be documented in the following reports with supporting evidence:
 - (a) Flight Validation Checklist (Appendix 6) and supporting evidence:
 - (i) A Track Log of the IFPs flown provided in .gpx or .kml format.
 - (ii) A snapshot of the navigation database being used within the aircraft (FMS/C)
 - (iii) Validation plan parameters, charts, coding tables, and Final Approach Segment Data Block (FAS DB as applicable) used during the validation
 - (iv) Any additional items assessed to be documented in the report.

- (v) Any issues encountered relating to the IFPs shall be documented within the report.
 - (vi) METARs and TAFs applicable for the duration of the validation activities.
 - (vii) In the case of PBN procedures, a snapshot of the Receiver Autonomous Integrity Monitoring (RAIM) check ahead of the validation activities.
- (b) All completed validation forms and supporting evidence should be submitted to the Authority prior to the final approval of the IFPs and before the implementation in Sierra Leone AIP.

6. APPROVAL OF INSTRUMENT FLIGHT PROCEDURES

6.1 IFP Submission Package Requirements

- 6.1.1 The IFP submission package to the Authority, compliant with the IFP QMS, shall include but not be limited to the following:
- (a) All data used in the design process must be submitted in source format, as well as any modified formats created during the design process, e.g., obstacle data, charts, maps.
 - (b) A record of Quality Assurance and Quality Control
 - (c) All source documentation
 - (d) All source geographical charts/data;
 - (e) List of relevant obstacles, identification and description of controlling obstacles for each segment, and obstacles otherwise influencing the design of the procedure.
 - (f) Waypoint ID or fix name, waypoint latitude and longitude (if applicable), procedural tracks or course, distances, and altitudes.
 - (g) Any specific environmental requirements related to IFP (e.g., noise abatement, non-standard traffic patterns, etc.)
 - (h) Any discrepancies with the data used during the IFP design process between the AIP and the latest survey data to be detailed in the IFP Design report.
 - (i) A record of all calculations, including formulae to be provided to prove compliance with, or variation from the criteria and IFP QMS
 - (j) The context and the operational requirements of the IFP proposal and a comprehensive IFP Design report (including design rationale).
 - (k) Any deviation from the ICAO PANS-OPS Doc 8168 IFP Design criteria if appropriate ICAO DOC 9613 and DOC 9905.
 - (l) Identification any specific training, operational or equipment requirements due to deviation/s
 - (m) A chart (in accordance with SLCAR Part 4) and PBN coding table/FAS DB (for PBN IFPs) and a separate table showing all track degrees true to 1/100th degree for conventional IFPs.
 - (n) Annotated AIP Published Charts. PBN Coding tables may be accepted for periodic review however, a new FAS DB will be required.
 - (o) Evidence of Stakeholder Consultation
 - (p) IFP Safety Risk Assessment report with checklist

- (q) Validation plan to address all validation activities (as applicable).
- (r) A completed and signed Form in Appendix 7
- (s) Appropriate validation checklist and report forms
- (t) Relevant signed validation reports.

6.1.2 The submission package will be acknowledged within 10 working days of receipt.

6.1.3 The Authority will acknowledge in writing with timescales for the evaluation.

6.2 IFP Approval

6.2.1 An application for approval of a new or change to an existing IFP shall be submitted to the Authority using the Form in Appendix 7 available at the Authority website: www.slcaa.gov.sl

6.2.2 The result of the evaluation will be documented in a Comment Response Document (CRD). See Appendix 10

6.2.3 The review process shall be rejected if any of the following conditions exist:

- (a) Insufficient submission.
- (b) Discrepancies noted.
- (c) Requirements not met
- (d) Not submitted in the required time.

6.2.4 A report will be sent to the APDO and the sponsors which could include all potential issues requiring corrective actions or items requiring further discussion.

6.2.5 Once the Sponsor and APDO have addressed all issues raised and closed by the Authority, the Authority will recommend the draft chart, conventional true tracks, coding tables and FAS DB (if applicable) to be submitted to AIS through the sponsor.

7. PUBLICATION OF IFP

- 7.1 Once the Authority assessment of the IFP submission has been completed, the sponsor should submit the approved draft chart, conventional true tracks, coding tables and FAS DB (if applicable) to the AIS provider, who, will prepare a Draft Publication Document (Draft AIP Supplement), based on SLCAR Parts 4 and 15 and the ICAO Doc 8126. All relevant requirements for the safe operation of the procedure, as brought out in ground validation/simulator evaluation/flight validation, should be included in the text and chart.
- 7.2 The AIS provider should forward the draft IFP AIP Supplement (the draft chart, conventional true tracks, coding tables, and FAS DB) to all stakeholders for comments.
- 7.3 The draft IFP AIP Supplement must be verified as complete and correct by the APD and the IFP Inspector (IFP) within 10 days from the date of receipt and forward their comments to the AIS.
- 7.4 When the verification of the Draft AIP Supplement is complete, APD and the IFP Inspector should send an acceptance email to the AIS provider.
- 7.5 It is the APD's responsibility to ensure that Draft AIP Supplement correctly reflects the IFP as designed and intended.
- 7.6 To allow sufficient time for the creation of the AIP Supplement, the above process shall be completed as early as possible (before the AIRAC submission deadline). Where sufficient time was not allowed for the creation of the AIP Supplement, the change will not be implemented until the next available AIRAC date.
- 7.7 The publication of the IFP, supporting data, and its accuracy is the AIS provider's responsibility.

8. CONTINUOUS MAINTENANCE AND PERIODIC REVIEW OF IFPS

8.1 Responsibility

- 8.1.1 The sponsor, through a formal arrangement, shall be responsible for the continuous maintenance, periodic review, and safeguarding of IFPs by the APDO.

8.2 Continuous Maintenance

- 8.2.1 The following tasks should be conducted as each change occurs by an approved APDO:
- (a) assess the impact of all changes to obstacle data.
 - (b) assess the impact of all changes to aerodrome, aeronautical and navaid data.
 - (c) assess the impact of all changes to the State Regulatory Framework.
 - (d) assess the impact of all changes to user requirements. Such changes include, but are not limited to:
 - (i) Fleet type (performance)
 - (ii) Scheduled service route.
 - (iii) ATM procedures
 - (iv) Airspace

(Note: If the user requirements are not a safety-related issue, IFP amendments and/or new IFPs may be needed to satisfy current user requirements.)

8.3 Periodic Review

- 8.3.1 Each IFP published in AIP Sierra Leone will remain valid for a maximum period of five (5) years from the AIRAC effective date associated with the approval of the last submission.
- 8.3.2 A periodic review shall be conducted, by an APDO if any of the following conditions are met:
- (a) Five-year validity period
 - (b) Significant change to the aeronautical data, topographical data, or obstacle environment requiring an amendment to OCA/H.
 - (c) Published bearing, track, or radial falls into error by 1 degree, consequent on a change to magnetic variation or station declination.
 - (d) A stakeholder identifies a requirement to improve safety or operational efficiency
 - (e) Change to aircraft category or characteristics
 - (f) Change to route connectivity or airspace organisation.
 - (g) Change to the supporting navigation facility environment.
 - (h) Amendments to applicable ICAO specifications or other international and national standards and recommended practices.

- (i) Where a change in procedural attitude is required
- (j) Errors or anomalies.
- (k) When a significant change occurs to aerodrome physical characteristics such as runways.

9. SAFETY RISK ASSESSMENT

9.1 IFP Safety Risk Assessment (One IFP Risk assessment per IFP):

(a) Identifies safety risks associated with a change to an existing or the development of a new IFP and mitigations prior to submission to the Authority. Factors determined to be safety-significant include but are not limited to:

- (i) types of aircraft and their performance characteristics, including navigation capabilities and navigation performance.
- (ii) traffic density and distribution
- (iii) airspace complexity, ATS route structure, and classification of the airspace.
- (iv) aerodrome layout.
- (v) type and capabilities of ground navigation systems.
- (vi) any significant local or regional data (e.g., obstacles, infrastructures, operational factors, etc.).
- (vii) post implementation monitoring to verify that the defined level of safety continues to be met.

9.2 Identifies compliances or differences with ICAO Doc 8168

9.3 The sponsor shall ensure that the IFP Safety Risk Assessment is completed

9.4 See Appendix 9 for the IFP Safety Risk Assessment Template.

9.5 ATM Safety Assessment. Where any element of an IFP affects the ATM functional system, a safety assessment should be carried out in accordance with the ATS provider's safety management system.

10. ERRORS, INCONSISTENCIES & ANOMALIES

- 10.1 It is the sponsor's responsibility, through a formal arrangement, to identify errors, inconsistencies, and anomalies through continuous maintenance and periodic review.
- 10.2 The sponsor should ensure that identified errors, inconsistencies or anomalies are resolved in a timely manner.
- 10.3 The sponsor must publish a NOTAM indicating the IFP is unavailable until identified errors, inconsistencies, or anomalies are resolved.
- 10.4 The IFP will remain unavailable until such time as the errors, inconsistencies or anomalies are resolved by the sponsor.

11. EXTERNAL QUERIES

- 11.1 Queries received by the Authority from external entities, concerning a specific published IFP, will be forwarded to the relevant sponsor. The sponsor shall submit a response to the Authority. The Authority shall reply to the original query.
- 11.2 A specific query may require the publication of a NOTAM. The sponsor should draft a NOTAM for the approval of the Authority.

12. AERONAUTICAL DATA QUALITY REQUIREMENTS

12.1 Aerodrome Operator

- 12.1.1 Aerodrome Operators are required to ensure that aerodrome surveys are carried out in accordance with the requirements detailed in SLCAR Part 15A.
- 12.1.2 Aerodrome Operators are required to ensure that the data published in Sierra Leone AIP (e.g. AD 2.10 aerodrome obstacles, AD 2.12 Runway Physical Characteristics, AD 2.13 Declared Distances, 2.17 ATS Airspace, 2.18 ATS Communication Facilities, 2.19 Radio Navigation and Landing Aids) is correct and reflects the latest aerodrome survey data.

12.2 Approved Procedure Design Organisation

- 12.2.1 APDOs shall implement a system to ensure that the integrity of data is controlled, managed and maintained as defined in SLCAR Part 24.
- 12.2.2 During the process of IFP design activities, if discrepancies are identified between the data found in the AIP and the latest survey data used for IFP design activities, APDs should inform the Aerodrome Operator, who will investigate and take the necessary steps to rectify the issue. These discrepancies will need to be included in the IFP design report.

APPENDIX 1. APPLICATION FOR APPROVAL OF AN INDIVIDUAL AS AN INSTRUMENT FLIGHT PROCEDURE DESIGNER

	APPLICATION FOR APPROVAL OF AN INDIVIDUAL AS AN INSTRUMENT FLIGHT PROCEDURE DESIGNER	Form: AC-ANS017A Rev01
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SECTION 1: APPLICANT(S)

Surname: First name

Passport Number:

Address:
..... Postcode:

Partnership Name (if applicable):
(For approvals connected with partnerships, application forms for each individual wishing to become an APD must be submitted.)

Trading Name of Business (if applicable):

Address of Business (if different from above):
..... Postcode:

Tel. Number:

E-mail:

Website address (if applicable):

SECTION 2: DECLARATION

I apply for the approval specified above and agree to pay fees as set out in the SLCAA Scheme of Charges (Instrument Flight Procedures) (www.slcaa.gov.sl).

Name:

Signed: Date:

SECTION 3: PROFESSIONAL DETAILS

Basic PANS-OPS Training Provider:

Date attended: Tutor:

Advanced PANS-OPS Training Provider:

Date attended: Tutor:

Other relevant training (continue on separate sheet if required)

1.

2.

3.

4.

5.

6.

7.

Aviation Experience (if any)

Qualification: Date obtained:

.....

.....

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.....

SECTION 4: ACCOMPANYING DOCUMENTATION

Proof of qualifications and experience in accordance with SLCAR Part 24, 3, including but not limited to:
(Certificates, CV, etc.): ☐

Copy of Quality Assurance document: ☐

Evidence of recent designs: ☐

List of references: ☐

SECTION 5: SUBMISSION INSTRUCTIONS

Please send the completed form along with the accompanying documentation indicated in Section 4 to info@slcaa.gov.sl.

You may also mail your submission by post to:

Sierra Leone Civil Aviation Authority
21/23 Siaka Stevens Street
Freetown, Sierra Leone

APPENDIX 2 APPLICATION FOR APPROVAL OF A COMPANY AS AN IFP DESIGN SERVICES PROVIDER (IFP DSP)



APPLICATION FOR APPROVAL OF A COMPANY AS AN IFP DESIGN SERVICES PROVIDER (IFP DSP)

Form: AC-ANS017B Rev01

SECTION 1: APPLICANT(S)

Surname: First name

Passport Number:

Address:
 Postcode:

Partnership Name (if applicable):
 (For approvals connected with partnerships, application forms for each individual wishing to become an APD must be submitted.)

Trading Name of Business (if applicable):

Address of Business (if different from above):
 Postcode:

Tel. Number:

E-mail:

Website address (if applicable):

SECTION 2: DECLARATION

I apply for the approval specified above and agree to pay fees as set out in the SLCAA Scheme of Charges (Instrument Flight Procedures) (www.slcaa.gov.sl).

Name:

Signed: Date:

SECTION 3: List of Employees who will be Directly Involved as APDs

1.	7.
2.	8.
3.	9.
4.	10.
5.	11.
6.	12.

SECTION 4: PROFESSIONAL DETAILS (Use a separate sheet for each APD)

Basic PANS-OPS Training Provider:

Date attended: Tutor:

Advanced PANS-OPS Training Provider:

Date attended: Tutor:

Other relevant training (continue on separate sheet if required)

1.

2.

3.

4.

5.

6.

7.

Aviation Experience (if any)

Qualification:

Date obtained:

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SECTION 5: ACCOMPANYING DOCUMENTATION

Proof of Qualifications (Certificates etc.): ☐

Copy of Quality Assurance document: ☐

Evidence of recent designs: ☐

List of references: ☐

SECTION 6: SUBMISSION INSTRUCTIONS

Please send the completed form and the accompanying documentation indicated in Section 5 to info@slcaa.gov.sl.

You may also mail your submission by post to:

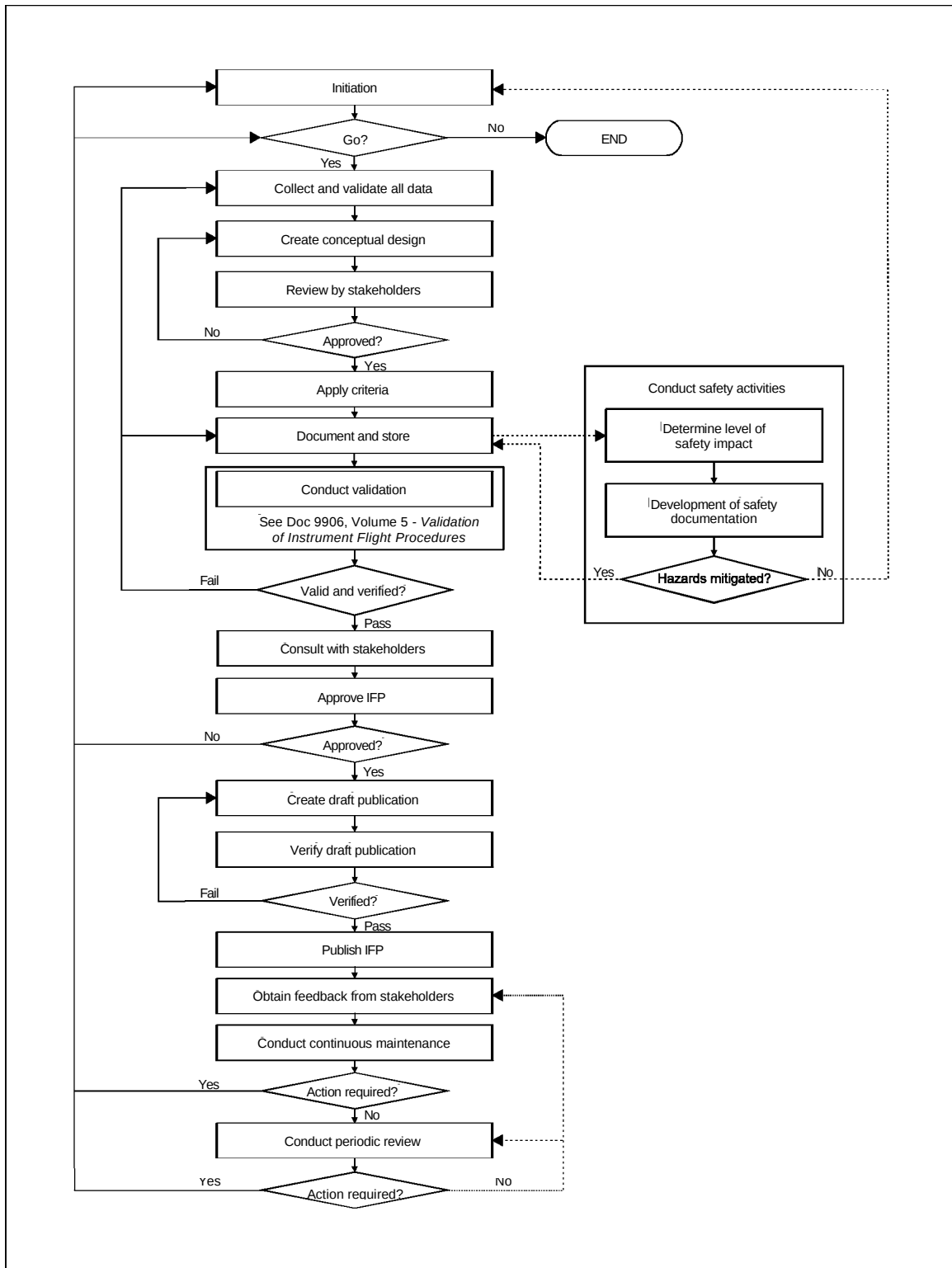
Sierra Leone Civil Aviation Authority

3rd Floor NDB Building,

21/23 Siaka Stevens Street

Freetown, Sierra Leone

APPENDIX 3 FLIGHT PROCEDURE DESIGN PROCESS FLOW DIAGRAM



Step	Description	Input	Output	Parties involved	Quality records	References
1	INITIATION At the starting point a “pre design” request is made for a new FPD or a change request to an existing FPD resulting from feedback, continuous maintenance or periodic review (see Steps 11 to 13).	- Request from a stakeholder for a new or a modified flight procedure. - Review of an existing procedure. - Navigation strategy consideration - Resource planning. - Feedback on existing procedure.	Managerial decision to set up the FPD process or to discontinue the activity.	Stakeholders		ISO 9001:2015: section 8.2.2 “Determination of requirements for products and services”; section 8.2.3 “Review of the requirements for products and services”; section 8.3.2 “Design and development planning”; and section 8.3.3 “Design and development inputs”
2	COLLECT AND VALIDATE ALL DATA - Specific ATS stakeholders’ requirements: local traffic patterns (altitude, direction, airspeed), feeder/transitions, arrival/departures, preferred routes, ATS routes, communication facilities, time, restrictions and any ATS needs, restrictions or problems. - The APD is to collect from recognized sources, validate for resolution, integrity, reference geodetic datum and effective dates, and incorporate the following data into a IFPD file: - Terrain data: electronic raster and/or vector data or paper cartographic maps. - Obstacle data: man-made and natural (tower/tree/vegetation height). - Aerodrome/heliport data: ARP/HRP, runway, lighting, magnetic variation and rate of change, weather statistics, altimetry source. - Aeronautical data: airspace structure, classifications (controlled, uncontrolled, Class	- All stakeholder requirements. - Previous designs. - Data from State-recognized sources. - All other data.	Preliminary work file containing summary of stakeholder requirements, summary of all data.	- APD - ATM. - AIS - Stakeholders - Data sources (e.g. surveyors, charting agencies, MET offices, etc.)		- ICAO Doc 9906 Quality Assurance Manual for Flight Procedure Design. - ISO 9001:2015. - SLCAR Part 11, 14 and 15 - ICAO Doc 9674 WGS-84 Manual. - ICAO Doc 9881 Guidelines for electronic terrain, obstacle and aerodrome mapping information. - ICAO Doc 9859

Visual and Instrument Flight Procedure

	A, B, C, D, E, F, G, name of controlling agency), airways/air routes, altimeter transition altitudes/flight levels, other instrument procedure assessed airspace, area of magnetic unreliability. – Navaid data: coordinates, elevation, service volume, frequency, identifier, magnetic variation. • Existent waypoints significant to the planned navigation					
3	CREATE CONCEPTUAL DESIGN A conceptual design is drafted with the key elements considering the overall strategy.	• Preliminary work file.	• Conceptual design.	• APD		• ICAO Doc 8168, Vol. II Aircraft Operations, Construction of Visual and Instrument Flight Procedures. • ICAO Doc 9905 RNP AR Procedure Design Manual. • ISO 9001:2015: section 8.3.2 “Design and development planning”.
4	REVIEW BY STAKEHOLDERS Formal agreement and approval of the conceptual design is sought at this stage. If agreement and approval are not possible then either the AFPD must redesign the conceptual design or the stakeholders must reconsider their requirements.	• Work programme to serve as basis for decision, including the scope of the activity to be performed. • Conceptual design	• Formally approved conceptual design or formal decision to discontinue, updated with any consequential changes, if applicable. • Planned implementation AIRAC date, based on available resources and any other	• All concerned stakeholders. • Designer and management	• Formally approved conceptual design or formal decision to discontinue, updated with any consequential changes, if applicable.	• ISO 9001:2000: section 7.3.1 “Design and development planning”; and section 7.3.4 “Design and development review”.

Visual and Instrument Flight Procedure

			technical/ operational/ training constraints.			
5	APPLY CRITERIA Using the stakeholder-approved conceptual design, apply criteria.	• Preliminary work file. • Formally approved conceptual design. • Planned implementation AIRAC date. • Resource allocation for the design and planning for publication.	• APD. • Draft procedure layout. • Report. • Calculation outputs • Coordinates. • Textual description of the procedure	• APD		• Doc 8168 (or applicable criteria). • Doc 9905 (or applicable criteria). • ISO 9001:2015: section 8.3 “Design and development”.
6	DOCUMENT AND STORE • For traceability, complete necessary submission / calculation forms in paper and / or electronic formats. • Create a draft flight procedure graphical depiction. • Provide a summary of the logic and decisions used in the step by- step design of the flight procedure. • Gather all information used and created in the design of the flight procedure and assemble into a submission package. • Obtain traceability of consensus from stakeholders via signatures. • Store submission package in a secure format and area, easily accessible for future considerations.	• FPD. • Draft flight procedure layout. • Report. • Calculation outputs. • Coordinates. • Textual description of the flight procedure.	• Data store FPD containing: all calculations; all forms and reports, including consensus from stakeholders; all charts/maps - AIRAC textual description; path terminators (if applicable); and flight procedure plate (draft graphical depiction).	• APD.		• ICAO Doc 8168. • ICAO Doc 9905. • SLCAR Parts 4 and 15. • ICAO Doc 9906. • Authority forms.
7	CONDUCT SAFETY ACTIVITIES Determine Level Of Safety Impact Perform an assessment of the magnitude of change to determine the amplitude needed for the safety case.	• FPD containing draft procedure layout, report, calculation outputs,	• Formal statement on the significance of change, allowing to determine the	• Quality and safety officer • Affected stakeholders		• SLCAR Part 19 • Stakeholder SMS documentation • ICAO Doc 9859. • ISO 9001:2000

Visual and Instrument Flight Procedure

	Develop Safety Documentation Safety documentation to be provided for the implementation of a new flight procedure should be agreed at this stage. Normally the SMS to be used is defined for the stakeholder affected by the change or by the regulator responsible for the area where the flight procedure will be implemented.	coordinates, textual description of the flight procedure.	amplitude of the safety case that needs to be performed.	Supported by APD.		
8	CONDUCT VALIDATION AND CRITERIA VERIFICATION See ICAO Doc 9906, Volume V, “Validation of Instrument Flight Procedures” for detailed guidance.	- FPD package - Safety case.	- Ground validation report. - Flight Validation report.	- Designer(s) - airspace designers, - FVP, - coders, - Airport authorities, - ATC - Flight inspectors etc.	Results of validation.	- ICAO Doc 8168. - ICAO Doc 9905 - SLCAR Parts 4 and 15 - ICAO Doc 9905, Volume 5. - ICAO Doc 9613.
9	CONSULT WITH STAKEHOLDERS Submit all pertinent information to all relevant stakeholders for consultation.	Validated IFPD.	Stakeholder endorsement.	- APD - Relevant stakeholders	Stakeholder endorsement	- SLCAR Part 24 - SLCAA-AC-ANS017 - ISO 9001:2015 section 8.2.1 c).
10	APPROVE IFPD Provide IFPD documentation to the Authority for approval.	- Validated IFPD. - Stakeholder endorsement.	Approved IFPD.	- APD. - IFP Inspector - Director General, SLCAA	Formal approval of the IFPD for new procedures (or for relevant changes on existing flight procedures)	- SLCAR Part 24 - SLCAA-AC-ANS017
11	CREATE DRAFT PUBLICATION Provide FPD package, including a graphical depiction, to the AIS to create a draft publication.	Approved IFPD	Draft publication.	- APD - AIS.		- SLCAR Parts 4 and 15 - ISO 9001:2015 Section 8.3.5, “Design and

Visual and Instrument Flight Procedure

						development outputs”, section 8.3.4 Design and development controls, c) “Conduct of verification activities”.
12	VERIFY DRAFT PUBLICATION Verify the draft publication for completeness and consistency.	- Draft publication. - Validated FPD	- Cross-checked draft publication. - Decision for publication release.	- APD - AIS - IFP Inspector		- SLCAR Parts 4 and 15 - ICAO Doc 8168, Volumes I and II. - ICAO Docs 9905. - ICAO Doc 8697 Aeronautical Chart Manual. - ISO 9001:2000 section 7.3.5 “Design and development verification”; and section 7.3.6 “Design and development validation”
13	PUBLISH FLIGHT PROCEDURE AIS initiates the AIRAC process.	- Cross-checked draft publication. - Decision for publication release.	AIP chart, documentation	AIS		SLCAR Parts 4 and 15
14	OBTAIN FEEDBACK FROM STAKEHOLDERS - Request and analyse feedback from stakeholders on the acceptability of the work performed. - Cross-check the AIP chart, documentation.	- AIP chart, documentation - Reports from stakeholders.	Decision for ongoing activities.	- APDO. - AIS - Stakeholders		- SLCAR Parts 4 and 15 - ISO 9001:2015, section 9.1.2 “Customer satisfaction”.
15	CONDUCT CONTINUOUS MAINTENANCE - On a continuous basis ensure that: - significant changes to obstacles, aerodrome, aeronautical and navaid data are assessed. - significant changes to criteria and design specification that affect procedure design are	Significant changes in the FPD environment or design criteria changes that are safety related.	Revision as required.	- APD. - Sponsor. - Stakeholder. - Pilots (when applicable and possible).	If change is required, the reason(s) for the change.	- SLCAR Part 24 - SLCAR Parts 4 and 15 - ICAO Doc 8168 - Doc 9905. - ICAO Doc 9859. - ICAO Doc 9906

Visual and Instrument Flight Procedure

	assessed to determine if action is required prior to the periodic review. • If action is required, return to Step 1 to reinitiate process.			• IFP Inspector		
16	CONDUCT PERIODIC REVIEW • On a periodic basis (periodicity determined by State, but no greater than five years) ensure: – that all changes to obstacles, aerodrome, aeronautical and navaid data are assessed; and – that all changes to criteria, user requirements and depiction standards are assessed. • If action is required, return to Step 1 to reinitiate process.	• All changes in the FPD environment, design criteria or depiction standards.	• Revisions as required.	• APD • AIS • IFP Inspector	• Results of the periodic review • If change is required, the reason(s) for the change.	• SLCAR Part 24 • SLCAR Parts 4 and 15 • ICAO Doc 8168 • ICAO Doc 9905. • ICAO Doc 9859. • ICAO Doc 9906

APPENDIX 4 NOTIFICATION OF INTENDED AIRSPACE CHANGE PROPOSAL OR PROCEDURE DESIGN ACTIVITY

	NOTIFICATION OF INTENDED AIRSPACE CHANGE PROPOSAL OR PROCEDURE DESIGN ACTIVITY	Form: AC-ANS017CRev01
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SECTION 1: CONTACT DETAILS

Aerodrome Name:

ICAO Designator:

Primary Point of Contact: Designation:

Telephone Number:

Email:

Secondary Point of Contact: Designation:

Telephone Number:

Email:

SECTION 2: NOMINATED APPROVED PROCEDURE DESIGNER (IFP proposals only)

Name:

Company:

SECTION 3: AIRSPACE AND/OR PROCEDURE CHANGE SUMMARY (use additional sheet if required)

	IAP	SID	STAR	ATS ROUTE	TERMINAL AIRSPACE
	☐	☐	☐	☐	☐
List of changes:					
1.					
2.					
3.					
4.					
5.					
6.					
7.					
Target date for AIRAC publication:					

SECTION 4: DESCRIPTION OF NEW DESIGN/CHANGE (include changes to existing aerodrome navigation facilities, if any)

SECTION 5: ADDITIONAL INFORMATION

	Yes	No
Form copied to APD listed in Section 2:	☐	☐
Development meeting planned:	☐	☐
Venue of development meeting:		
Proposed Date:		
Name: Date:		

Please send the completed form to info@slcaa.gov.sl.

You may also mail your submission by post to:

Sierra Leone Civil Aviation Authority
3rd Floor NDB Building,
21/23 Siaka Stevens Street
Freetown, Sierra Leone

APPENDIX 5 SIMULATOR EVALUATION— FIXED WING

		SIMULATOR EVALUATION— FIXED WING [one required per simulator session]		CL: AC-ANS017ARev01
REPORT HEADER				
1	Date of assessment:			
2	Validation type (new/amended procedure):			
3	Organization:			
4	Procedure title:			
5	Location:			
6	Name of Airport:			
7	Runway Designation:			
8	Validating Pilot (PF) Name / Licence Type and No / phone / email:			
9	Validating Pilot (PM) Name / Licence Type and No / phone / email:			
10	Aircraft Type Used/Registration:			
11	PBN navigation specification:			
12	Navigation sensor/Navaid:			
13	FMS/C Manufacturer			
14	Navigation Database Provider	Boeing (Jeppesen) ☐ NavBlue ☐ Lufthansa Systems ☐ Manual (LNAV Only) ☐ Other ☐		
15	Draft Chart and Coding Tables provided by IFP DSP	Yes ☐ No ☐		

Test Navigation Database Check for PBN IFPs [one required per procedure]

Status Code: Yes = Satisfactory (Requirements met); No = Unsatisfactory (Requirements not met – Finding); N/A = Not Applicable

	GUIDANCE	REQUIREMENT	STATUS		REMARKS
			YES	NO	
1		Are procedures loaded and activated from an official navigation database?	☐	☐	
2		Do the waypoint coordinates align with the charted information?	☐	☐	
3		Do tracks between waypoints agree with charted information?	☐	☐	
4		Do distances between waypoints agree with charted information?	☐	☐	
5	If the THR coordinates cannot be confirmed the validation should be discontinued.	Are runway threshold coordinates confirmed?	☐	☐	

6		Are assessed faster and/or slower than charted?	☐	☐	
7		Are assessed at allowed temperature limits?	☐	☐	
8		Are assessed with adverse wind components?	☐	☐	
9		RAIM check complete?	☐	☐	

SIDs [one required for each SID validated]

SID Designator					
	GUIDANCE	REQUIREMENT	STATUS		REMARKS
			YES	NO	
1	Consider whether the climb can be achieved without generating TCAS alerts and altitude attainment	Are the vertical profile/climb gradients achievable?	☐	☐	
2		Are altitude restrictions correctly coded?	☐	☐	
3	Conventional only	Lead radials give adequate warning of turns?	☐	☐	
4		Are turn anticipation for all waypoints satisfactory?	☐	☐	
6	Consider speed, turn radii and altitude requirements	Are all turns flyable/achievable?	☐	☐	
7		Are minimum distances between waypoints satisfactory?	☐	☐	
8	Applicable to procedures with CF path terminators.	Are course interceptions achievable?	☐	☐	
9		Are the speed restrictions achievable?	☐	☐	
10		Are speed Limits correctly coded?	☐	☐	
11	Please report any disconnects within the procedure	Are Sequencing of waypoints correct?	☐	☐	
12		Are the along-track and cross-track alignments satisfactory?	☐	☐	
13	Please indicate in the remarks if the workload is considered "HIGH"	Are Human Factors / Cockpit Workload satisfactory?	☐	☐	
14		Does the chart/coding table provided correctly reflect with the procedure flown?	☐	☐	
15	Please indicate	Wind component, Temperature Conditions and Maximum Bank Angle Achieved during any RF turn			

STAR [one required for each STAR validated]

STAR [one required for each STAR validated]					
STAR Designator					
	GUIDANCE	REQUIREMENT	STATUS		REMARKS
			YES	NO	
1	Consider whether the climb can be achieved without generating TCAS alerts and altitude attainment	Are descent rates acceptable?	☐	☐	
2		Are altitude restrictions correctly coded?	☐	☐	
3	Conventional only	Lead radials give adequate warning of turns?	☐	☐	
4		Are turn anticipation for all waypoints satisfactory?	☐	☐	
5		Are all turns flyable/achievable?	☐	☐	
6	Consider speed, turn radii and altitude requirements	Are minimum distances between waypoints satisfactory?	☐	☐	
7	Applicable to procedures with CF path terminators.	Are course interceptions achievable?	☐	☐	
8		Are the speed restrictions achievable?	☐	☐	
9		Are speed Limits correctly coded?	☐	☐	
10	Please report any disconnects within the procedure	Are sequencing of waypoints correct?	☐	☐	
11		Are the along-track and cross-track alignments satisfactory?	☐	☐	
12	Please indicate in the remarks if the workload is considered "HIGH"	Are Human Factors / Cockpit Workload satisfactory?	☐	☐	
13		Does the chart/coding table provided correctly reflect the procedure flown?	☐	☐	
14	Applicable to intermediate holds where it is not a direct entry and holds located at the clearance limit point.	Are the Entry and exit to the HOLD acceptable?	☐	☐	
17	Please indicate	Wind component, Temperature Conditions and Maximum Bank Angle Achieved during any RF turn			

INSTRUMENT APPROACH PROCEDURE (GENERAL) [one required for each IAP validated]					
Aerodrome (ICAO) and IAP Designator					
	GUIDANCE	REQUIREMENT	STATUS		REMARKS
			YES	NO	
1	If not please specify which segment	Are all segment lengths acceptable?	☐	☐	
2		Are the descent rates for all segments acceptable?	☐	☐	
3		Are there any discontinuities in the procedure?	☐	☐	
4	Conventional only	Are after turns, roll out close to the next intended track?	☐	☐	
5		Speed Limits correctly coded?	☐	☐	
6		Are altitude restrictions correctly coded?	☐	☐	
7		Sequencing of waypoints correct?	☐	☐	
8		Turn anticipation for all waypoints satisfactory?	☐	☐	
9	Please indicate in the remarks if the workload is considered "HIGH".	Are Human Factors / Cockpit workload satisfactory?	☐	☐	
10		Are along track and cross track alignment satisfactory?	☐	☐	
11		Where applicable, are there any loss of RNP.	☐	☐	
12		Does the chart/coding table provided correctly reflect with the procedure flown?	☐	☐	
13	Please indicate	Wind component, Temperature Conditions and Maximum Bank Angle Achieved during any RF turn			

FINAL APPROACH (NON-PRECISION)[one required for each IAP validated]					
Aerodrome (ICAO) and IAP Designator					
	GUIDANCE	REQUIREMENT	STATUS		REMARKS
			YES	NO	
1		Descent profiles provide a CDA to 50 ft above THR?	☐	☐	
2		Are all SDF Altitude restrictions on or below the recommended profile?	☐	☐	
3		Visual indicators coincide with the constant descent profile?	☐	☐	
4	Only applicable to manual entry into navigation database of LNAV ONLY procedure	CDI scale changes activated at the appropriate phase of the procedure? (See note 2 below)	☐	☐	
5	Only applicable to manual entry into navigation database of LNAV ONLY procedure	Terminal mode activated at the appropriate range? (See note 3 below)	☐	☐	
6	Please indicate in the remarks if the workload is considered "HIGH".	Are Human Factors / Cockpit workload satisfactory?	☐	☐	
7		Does the chart/coding table provided correctly reflect the procedure flown?	☐	☐	
8		Were any TAWS alerts encountered during the validation activities?	☐	☐	
9	Please indicate	Wind component, Temperature Conditions and Maximum Bank Angle Achieved during any RF turn			

FINAL APPROACH (PRECISION/APV) [one required for each IAP validated]					
Aerodrome (ICAO) and IAP Designator					
	GUIDANCE	REQUIREMENT	STATUS		REMARKS
			YES	NO	
1		Smooth interception onto the final approach track/localiser?	☐	☐	
2		Is there a smooth transition from the Intermediate segment at the FAP (Glide slope interception)?	☐	☐	
3	ILS only	Glide path angle and localizer stable?	☐	☐	
4		Do the Visual indicators coincide with the constant descent profile?	☐	☐	
5	Please indicate in the remarks if the workload is considered "HIGH".	Are Human Factors / Cockpit workload satisfactory?	☐	☐	
6		Does the chart/coding table provided correctly reflect with the procedure flown?	☐	☐	
7		Were any TAWS alerts encountered during the validation activities?	☐	☐	
8	Please indicate	Wind component, Temperature Conditions and Maximum Bank Angle Achieved during any RF turn			

MISSED APPROACH (MAP) [one required for each IAP validated]					
Aerodrome (ICAO) and IAP Designator					
	GUIDANCE	REQUIREMENT	STATUS		REMARKS
			YES	NO	
1	Applicable when MAPt is not located at the THR	Is the location of the MAPt acceptable?	☐	☐	
2		Is the turn at MAPt (if any) acceptable?	☐	☐	
3		Is the track interception (if any) after turn achievable?	☐	☐	
4		Is the correct turn direction provided?	☐	☐	
5		Minima reached at or before MAPt?	☐	☐	
6		Are the published missed approach gradients achievable?	☐	☐	
7		Missed approach turns (if any) acceptable?	☐	☐	
8		CDI scale changes activated at the appropriate phase of the procedure? (See note 2 below)	☐	☐	
9		Terminal mode activated at the appropriate range? (See note 3 below)	☐	☐	
10		Missed approach termination suitable for either further approach or diversion?	☐	☐	
11		Does the chart/coding table provided correctly reflect with the procedure flown?	☐	☐	
12	Please indicate in the remarks if the workload is considered "HIGH"	Are Human Factors / Cockpit workload satisfactory?	☐	☐	
13		Were any TAWS alerts encountered during the validation activities?	☐	☐	
14	Please indicate	Wind component, Temperature Conditions and Maximum Bank Angle Achieved during any RF turn			

Remarks (please use this space for any comments relating to the IFPs validated):	
Recorded simulator data, to be provided as an attachment to this form	
Simulator Validation Result	Pass ☐ Fail ☐
Simulator Validation Pilot Signature: Date:	

Note.

1. Where a report item is not applicable for the procedure being validated, delete as required.
2. Where a procedure has been manually entered into the RNAV system in use, this process will not occur automatically. In this case the validating pilot will need to activate the CDI scaling changes during the different phases of the flight.

APPENDIX 6 FLIGHT VALIDATION — FIXED WING

		FLIGHT VALIDATION — FIXED WING [one required per simulator session]		CL: AC-ANS017BRev01	
REPORT HEADER					
1	Date of assessment:				
2	Validation type (new/amended procedure):				
3	Organization:				
4	Procedure title:				
5	Location:				
6	Name of Airport:				
7	Runway Designation:				
8	Validating Pilot (PF) Name / Licence Type and No / phone/email:				
9	Validating Pilot (PM) Name / Licence Type and No / phone/email:				
10	Aircraft Type Used/Registration:				
11	PBN navigation specification:				
12	Navigation sensor/Navaid:				
13	FMS/C Manufacturer				
14	Navigation Database Provider		Boeing (Jeppesen) ☐ NavBlue ☐ Lufthansa Systems ☐ Manual (LNAV Only) ☐ Other ☐		
15	Draft Chart and Coding Tables provided by IFP DSP		Yes ☐ No ☐		
Test Navigation Database Check for PBN IFPs[one required per procedure]					
1	GUIDANCE	REQUIREMENT	STATUS		REMARKS
2			YES	NO	
6		Are procedures loaded and activated from an official navigation database?	☐	☐	
7		Do waypoint coordinates agree with charted information?	☐	☐	
8		Do tracks between waypoints agree with charted information?	☐	☐	
9		Do distances between waypoints agree with charted information?	☐	☐	
10	If the THR coordinates cannot be confirmed the validation should be discontinued.	Are runway threshold coordinates confirmed?	☐	☐	
11		RAIM check complete?	☐	☐	

SIDs [one required for each SID validated]

SIDs [one required for each SID validated]					
SID Designator					
	GUIDANCE	REQUIREMENT	STATUS		REMARKS
			YES	NO	
1	Consider whether the climb can be achieved without generating TCAS alerts and altitude attainment	Are the vertical profile/climb gradients achievable?	☐	☐	
2		Are altitude restrictions correctly coded?	☐	☐	
3	Conventional only	Lead radials give adequate warning of turns?	☐	☐	
4		Are turn anticipation for all waypoints satisfactory?	☐	☐	
6	Consider speed, turn radii and altitude requirements	Are all turns flyable/achievable?	☐	☐	
7		Are the minimum distances between waypoints satisfactory?	☐	☐	
8	Applicable to procedures with CF path terminators.	Are course interceptions achievable?	☐	☐	
9		Are the speed restrictions achievable?	☐	☐	
10		Are speed Limits correctly coded?	☐	☐	
11	Please report any disconnects within the procedure	Sequencing of waypoints correct?	☐	☐	
12		Are the along-track and cross-track alignments satisfactory?	☐	☐	
13	Please indicate in the remarks if the workload is considered "HIGH"	Are Human Factors / Cockpit Workload satisfactory?	☐	☐	
14		Does the chart/coding table provided correctly reflect with the procedure flown?	☐	☐	
15		Were any TCAS alerts encountered during the validation activities?	☐	☐	
16	Please indicate	Wind component, Temperature Conditions and Maximum Bank Angle Achieved during any RF turn			

STAR [one required for each STAR validated]

STAR [one required for each STAR validated]					
STAR Designator					
	GUIDANCE	REQUIREMENT	STATUS		REMARKS
			YES	NO	
1	Consider whether the climb can be achieved without generating TCAS alerts and altitude attainment	Are descent rates acceptable?	☐	☐	
2		Are altitude restrictions correctly coded?	☐	☐	
3	Conventional only	Lead radials give adequate warning of turns?	☐	☐	
4		Are turn anticipation for all waypoints satisfactory?	☐	☐	
5		Are all turns flyable/achievable?	☐	☐	
6	Consider speed, turn radii and altitude requirements	Are minimum distances between waypoints satisfactory?	☐	☐	
7	Applicable to procedures with CF path terminators.	Are course interceptions achievable?	☐	☐	
8		Are the speed restrictions achievable?	☐	☐	
9		Are speed Limits correctly coded?	☐	☐	
10	Please report any disconnects within the procedure	Sequencing of waypoints correct?	☐	☐	
11		Are the along-track and cross-track alignment satisfactory?	☐	☐	
12	Please indicate in the remarks if the workload is considered "HIGH"	Are Human Factors / Cockpit Workload satisfactory?	☐	☐	
13		Does the chart/coding table provided correctly reflect the procedure flown?	☐	☐	
14	Applicable to intermediate holds where it is not a direct entry and holds located at clearance limit point.	The Entry and exit to the HOLD is acceptable.	☐	☐	
15	Please indicate in the remarks if the workload is considered "HIGH".	Are Human Factors / Cockpit workload satisfactory?	☐	☐	
16		Were any TCAS alerts encountered during the validation activities?	☐	☐	
17	Please indicate	Wind component, Temperature Conditions and Maximum Bank Angle Achieved during any RF turn			

INSTRUMENT APPROACH PROCEDURE (GENERAL) [one required for each IAP validated]					
Aerodrome (ICAO) and IAP Designator					
	GUIDANCE	REQUIREMENT	STATUS		REMARKS
			YES	NO	
1	If not, please specify which segment	Are all segment lengths acceptable?	☐	☐	
2		Are the descent rates for all segments acceptable?	☐	☐	
3		Are there any discontinuities in the procedure?	☐	☐	
4	Conventional only	After turns, roll out close to the next intended track?	☐	☐	
5		Speed Limits correctly coded?	☐	☐	
6		Altitude restrictions correctly coded?	☐	☐	
7		Sequencing of waypoints correct?	☐	☐	
8		Is the anticipation for all waypoints satisfactory?	☐	☐	
9	Please indicate in the remarks if the workload is considered "HIGH".	Are Human Factors / Cockpit workload satisfactory?	☐	☐	
10		Is the along-track and cross-track alignment satisfactory?	☐	☐	
11		Where applicable, are there any loss of RNP?	☐	☐	
12		Does the chart/coding table provided correctly reflect the procedure flown?	☐	☐	
13	Please indicate in the remarks if the workload is considered "HIGH".	Are Human Factors / Cockpit workload satisfactory?	☐	☐	
14		Were any TCAS alerts encountered during the validation activities?	☐	☐	
15	Please indicate	Wind component, Temperature Conditions, and Maximum Bank Angle Achieved during any RF turn			

FINAL APPROACH (NON-PRECISION) [one required for each IAP validated]					
Aerodrome (ICAO) and IAP Designator					
	GUIDANCE	REQUIREMENT	STATUS		REMARKS
			YES	NO	
1		Descent profiles provide a CDA to 50 ft above THR?	☐	☐	
2		Are all SDF Altitude restrictions on or below recommended profile?	☐	☐	
3		Visual indicators coincide with the constant decent profile?	☐	☐	
4	Only applicable to manual entry into navigation database of LNAV ONLY procedure	CDI scale changes activated at appropriate phase of procedure? (See note 2 below)	☐	☐	
5	Only applicable to manual entry into navigation database of LNAV ONLY procedure	Terminal mode activated at appropriate range? (See note 3 below)	☐	☐	
6	Please indicate in the remarks if the workload is considered "HIGH".	Are Human Factors / Cockpit workload satisfactory?	☐	☐	
7		Does the chart/coding table provided correctly reflect with the procedure flown?	☐	☐	
8		Were any TAWS alerts encountered during the validation activities?	☐	☐	
9	Please indicate	Wind component, Temperature Conditions and Maximum Bank Angle Achieved during any RF turn			

FINAL APPROACH (PRECISION/APV) [one required for each IAP validated]					
Aerodrome (ICAO) and IAP Designator					
	GUIDANCE	REQUIREMENT	STATUS		REMARKS
			YES	NO	
1		Smooth interception onto the final approach track/localiser?	☐	☐	
2		Is there a smooth transition from the Intermediate segment at the FAP (Glide slope interception)?	☐	☐	
3	ILS only	Glide path angle and localizer stable?	☐	☐	
4		Do the Visual indicators coincide with the constant descent profile?	☐	☐	
5	Please indicate in the remarks if the workload is considered "HIGH".	Are Human Factors / Cockpit workload satisfactory?	☐	☐	
6		Does the chart/coding table provided correctly reflect the procedure flown?	☐	☐	
7		Is the FAS data block, if applicable, satisfactory?	☐	☐	
8		Were any TAWS alerts encountered during the validation activities?	☐	☐	
9	Please indicate	Wind component, Temperature Conditions, and Maximum Bank Angle Achieved during any RF turn			

MISSED APPROACH (MAP) [one required for each IAP validated]					
Aerodrome (ICAO) and IAP Designator					
	GUIDANCE	REQUIREMENT	STATUS		REMARKS
			YES	NO	
1	Applicable when MAPt is not located at the THR	Is the location of the MAPt acceptable?	☐	☐	
2		Is the turn at MAPt (if any) acceptable?	☐	☐	
3		Is the track interception (if any) after turn achievable?	☐	☐	
4		Is the correct turn direction provided?	☐	☐	
5		Minima reached at or before MAPt?	☐	☐	
6		Are the published missed approach gradients achievable?	☐	☐	
7		Missed approach turns (if any) acceptable?	☐	☐	
8	Only applicable to manual entry into navigation database of LNAV ONLY procedure2	CDI scale changes activated at the appropriate phase of the procedure? (See note 2 below)	☐	☐	
9		Terminal mode activated at the appropriate range? (See note 3 below)	☐	☐	
10		Missed approach termination suitable for either further approach or diversion?	☐	☐	
11		Does the chart/coding table provided correctly reflect the procedure flown?	☐	☐	
12	Please indicate in the remarks if the workload is considered "HIGH"	Are Human Factors / Cockpit workload satisfactory?	☐	☐	
13		Were any TAWS alerts encountered during the validation activities?	☐	☐	
14	Please indicate	Wind component, Temperature Conditions, and Maximum Bank Angle Achieved during any RF turn			

Visual Aids					
	GUIDANCE	REQUIREMENT	STATUS		REMARKS
			YES	NO	
1		Performance of Visual Aids (PAPI/VASIS)	☐	☐	
2		Approach Light System	☐	☐	
3		Runway markings	☐	☐	

VM(C)					
	GUIDANCE	REQUIREMENT	STATUS		REMARKS
			YES	NO	
1		VM(C) areas safe for specified aircraft categories?	☐	☐	

Remarks (please use this space for any comments relating to the IFPs validated):	
Flight Validation Result	Pass ☐ Fail ☐
Flight Validation Pilot Signature: Date:	

Note.

1. Where a report item is not applicable for the procedure being validated, delete as required.
2. Where a procedure has been manually entered into the RNAV system in use, this process will not occur automatically. In this case the validating pilot will need to activate the CDI scaling changes during the different phases of the flight.

APPENDIX 7 APPLICATION FOR INSTRUMENT FLIGHT PROCEDURE DESIGN APPROVAL - NEW DESIGN/CHANGE

	APPLICATION FOR INSTRUMENT FLIGHT PROCEDURE DESIGN APPROVAL - NEW DESIGN/CHANGE	Form: AC-ANS017DRev01
--	--	------------------------------

SECTION 1: APPLICANT DETAILS (The Applicant is the person responsible for payment of SLCAA charges)
Project Sponsor

Registered Company Name (in full):.....

Registered Company Number:..... Country of Company Registration:.....

Registered Office Address:.....

Postcode:..... Telephone No: E-mail:

Approved Procedure Designer Organisation (APDO)

Name of APDO: (if applicable).....

Address (primary site):.....

Postcode:..... Telephone No:..... E-mail:.....

If you are not a Director or Company Secretary and have been authorised to sign the application form on behalf of the Company, proof of that authority must be provided with the completed application form.

SECTION 2: DESCRIPTION OF NEW DESIGN/CHANGE (including details of any Navigation facilities being repositioned, if any)
SECTION 3: BREAKDOWN OF DESIGNS AND COSTS (See guidance on Page 2)

Aerodrome:		Cost (\$)	Number submitted	Total
No.	Element			
1.	Precision Approach			
2.	APV/BaroVNAV			
3.	Non-Precision Approach			
4.	Holds			
5.	Omni-Directional Departures			
6.	A Standard Instrument Departure or Arrival (SID/STAR)			
	Approval Totals			

SECTION 4: ADDITIONAL INFORMATION

(Please provide details of factors which may affect procedure design e.g. noise sensitive areas, local restricted airspace, other airspace users etc)

SECTION 5: SUBMISSION DETAILS

Please complete the form and send it electronically to the following email address: info@slcaa.gov.sl.

You may also mail your submission to:

Director General
Sierra Leone Civil Aviation Authority
21/23 Siaka Steven Street, Freetown
Sierra Leone

Please ensure that the documents specified in 6.1.1 of SLCAA-AC-ANS017 are also submitted, as appropriate to the application

SECTION 6: DECLARATION

This application must be signed by either the accountable manager or an authorized representative of the Company.

I apply for the approvals mentioned above and agree to pay the associated charges outlined in the SLCAA Scheme of Charges (Instrument Flight Procedures). I confirm that the information provided is accurate and I will notify the SLCAA of any changes.

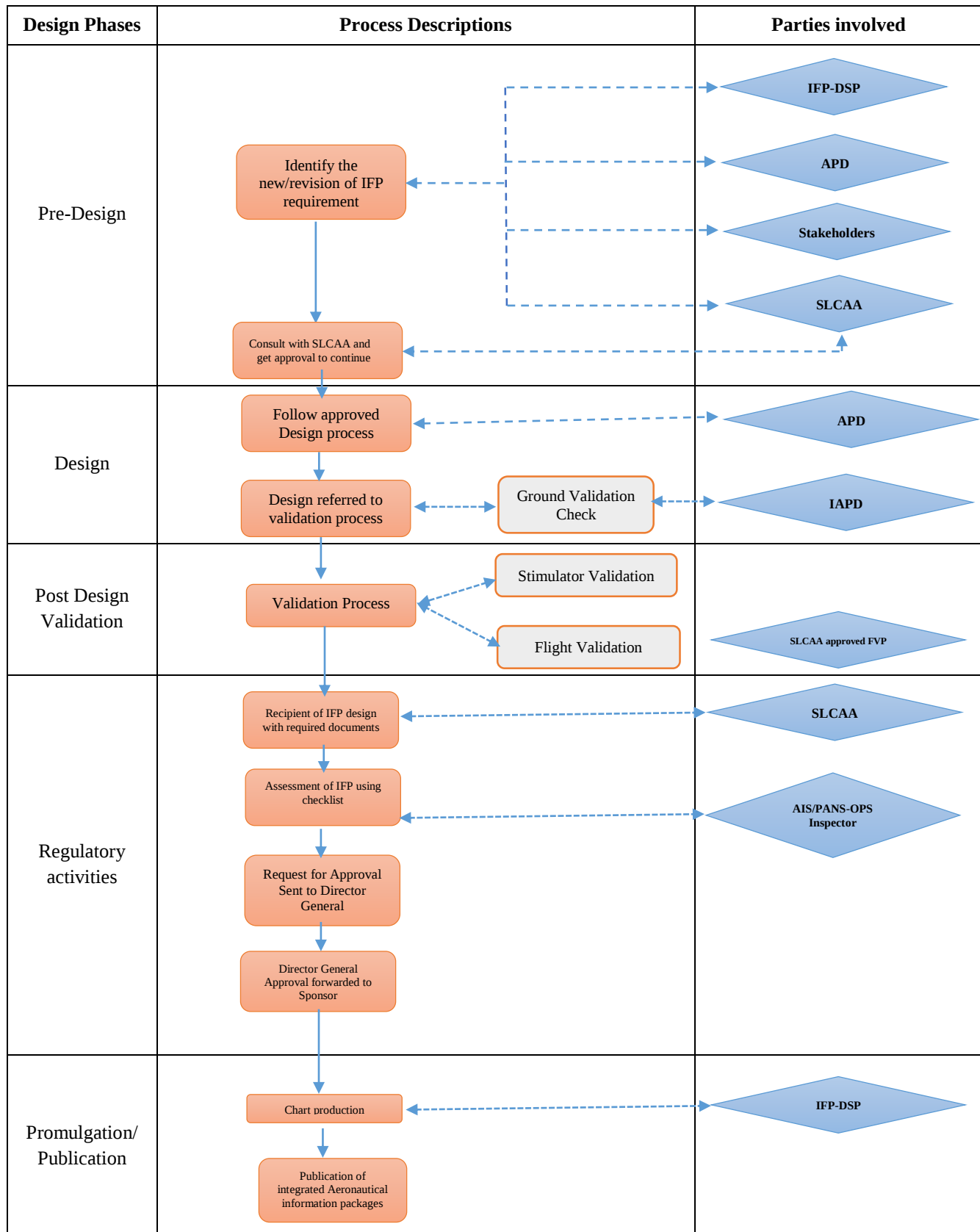
First Name:..... Surname:.....

Position in Company:.....

Telephone No:..... Email:.....

If you are not the accountable manager and have been authorised to sign the application form on behalf of the Company, proof of that authority must be provided with the completed application form.

APPENDIX 8 OVERVIEW OF THE NECESSARY STEPS IN THE IFP DESIGN APPROVAL AND PUBLICATION



APPENDIX 9 IFP SAFETY RISK EVALUATION & COMPLIANCE CHECK

IFP Safety Risk Assessment – [TITLE]

1. **Introduction**

(a) **Purpose.** The following is an IFP safety risk assessment for:

- (i) [Description];
- (ii) [Aerodrome/Location];
- (iii)[ANSP];
- (iv)[Effective Date];
- (v) [etc.].

(b) **AIP sections affected:**

- (i) [Relevant AIP Section];
- (ii) [Effective Date].

2. **Compliance Check.**

(a) **Compliant.** [The change is compliant with the State Regulatory framework. – Complete Annex I, paras 1 & 2].

(b) **Non-compliant.** [Deviation from the State Regulatory framework. – Complete Annex I, paras 1 - 5].

3. **Documentation.** Please see attached:

- (a) [e.g. Design file];
- (b) [e.g. Updated chart];
- (c) [e.g. Database Table];
- (d) [e.g. Stakeholder consultation];
- (e) [etc].

4. **IFPDSP.** The work was completed by [insert company], an approved IFPD service provider.

5. **Action Plan.** [Outline action plan to include post implementation monitoring to verify the defined levels of safety continues to be met].

IFP Safety Risk Assessment – [TITLE]

1. **IFP Safety Risk Value Explanation.** Below are a simplified IFP safety risk assessment values from the guidelines as laid out in ICAO Safety Management Manual (SMM), document 9859 Part 6. Included in the following ICAO table is how the simplified values correspond to the ICAO values

Table 6-1. ICAO Risk Assessment Matrix Principles & Simplified Values

SEVERITY OF CONSEQUENCES			LIKELIHOOD OF OCCURRENCE			Simplified IFP Safety Risk Assessment	
Aviation definition	Meaning	Value	Qualitative definition	Meaning	Value	Meaning	Value
Catastrophic	Equipment destroyed. Multiple deaths.	5	Frequent	Likely to occur many time	5	High risk	5
Hazardous	A large reduction in safety margins, physical distress or a workload such that the operators cannot be relied upon to perform their tasks accurately or completely. Serious injury or death to a number of people. Major equipment damage.	4	Occasional	Likely to occur sometimes	4	Medium risk	4
Major	A significant reduction in safety margins, a reduction in the ability of the operators to cope with adverse operating conditions as a result of an increase in workload, or as a result of conditions impairing their efficiency. Serious incident. Injury to persons.	3	Remote	Unlikely, but possible to occur	3		3
Minor	Nuisance. Operating limitations. Use of emergency procedures. Minor incident.	2	Improbable	Very unlikely to occur	2	Low risk	2
Negligible	Little consequence.	1	Extremely improbable	Almost inconceivable that the event will occur	1		1

ICAO Safety Management Manual (SMM), document 9859 Part 6 states: “6.4.2 When the acceptability of the risk has been found to be Undesirable or Unacceptable, control measures need to be introduced – the higher the risk, the greater the urgency. The level of risk can be lowered by reducing the severity of the potential consequences, by reducing the likelihood of occurrence or by reducing the exposure to that risk.”

2. Initial IFP Safety Risk Evaluation & Compliance Check.

Items	State Regulatory Framework Compliant	Low risk	Medium risk	High Risk	Notes
		1 to 2	3 to 4	5	
[Insert Item 1]	Y/N				Insert Explanation]
[Insert Item 2]	Y/N				Insert Explanation]
[Insert Item 3]	Y/N				Insert Explanation]
Total assessed IFP safety risk value					
IFP Safety Risk Assessment		[Risk Level]			

Note: A separate ATM risk assessment may be required.

3. Conclusion

(a) The proposal [is / is not] compliant with the State regulatory framework.

(b) The IFP Safety risk is [un]acceptable.

[N.B. When there is a deviation from the State regulatory framework and/or the risk is deemed greater than ‘low risk’, the proposal shall be withdrawn or a mitigation submitted (para 4) for consideration. An updated IFP Safety Risk Evaluation & Compliance Check shall be completed (para 5 & 6).]

4. **Mitigation.** [Proposed mitigation if required]

5. **Updated IFP Safety Risk Evaluation & Compliance Check** (following mitigation in 4 above).

Item	State Regulatory Framework Compliant	Low risk	Medium risk	High Risk	Notes
		1 to 2	3 to 4	5	
[Insert Item 1]	Y/N				Insert Explanation]
[Insert Item 2]	Y/N				Insert Explanation]
[Insert Item 3]	Y/N				Insert Explanation]
Total assessed IFP safety risk value					
IFP Safety Risk Assessment		[Risk Level]			

Note: A separate ATM risk assessment may be required.

6. **Updated Conclusion**

- (a) The proposal [is / is not] compliant with the State regulatory framework (following mitigation in 4 above).
- (b) The IFP safety risk is [un]acceptable (following mitigation in 4 above).

APPENDIX 10 COMMON RESPONSE DOCUMENT

	COMMON RESPONSE DOCUMENT (Instrument Flight Procedure & Chart Validation, Common Response Document)	Form: AC-ANS017ERev01
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Name of Change:

Contributors:

Consolidator:

COMMENT RESPONSE DOCUMENT HISTORY

Issue	Date	Description

REVIEWED DOCUMENTS

Acronym	Filename	Document Title	Version	Issue Date	Date Received

This document is intended, through the different issues, to report the remarks corresponding to the regulatory oversight review activities performed on the identified document(s) corresponding to an Instrument Flight Procedure (IFP) and/or Chart Change(s).

Remarks are classified according to the following 4 categories:

- Major: A comment on a critical issue ANSD considers significant enough to prevent regulatory approval of the proposed change(s) unless resolved by the service provider (e.g. a non-conformity to applicable regulatory requirements, or non-adherence to an organisation's own requirement, or an important problem that shall be resolved by the organisation).
- Minor: A comment on other issues indirectly affecting the compliance demonstration, which ANSD considers are necessary to address before proceeding. Whilst not solely preventing regulatory approval of the proposed change(s) the accumulation of these issues can lead to the prevention of regulatory approval of the proposed change(s).
- Question: The question may be associated to an issue that requires clarification. However, upon receipt of further information the CRD question classification will change to a Closed, Minor or Major classification.
- Editorial: Observations on missing information or editorials of a nature which are needed to provide clarity or ensure no ambiguity exists by the absence of that information.

Additionally, it is necessary to note that the review process shall be rejected if any of the following conditions exist:

- Insufficient submission;
- Discrepancies noted;
- Requirements not met;
- Not submitted in the required time period.

Re-submissions following a rejection will be regarded as a separate submission and the process will recommence.

Comments and questions may be reclassified following updated information from the service provider.

Comments may have the following status:

- Open: For a new comment, or when a response is not yet considered satisfactory by the review team.
- Dispositioned: When an action is agreed.
- Closed: When the service provider provides a satisfactory written response, or when evidences are provided that an agreed action has been performed

	COMMON RESPONSE DOCUMENT (Instrument Flight Procedure & Chart Validation, Common Response Document)	Form: AC-ANS017ERev01
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No.	Doc.	Section	Comment/Observation/Question	Regulatory Reference	Classification	ANSP Answer	Status
R1.							