



RWANDA

CIVIL AVIATION AUTHORITY

**ADVISORY CIRCULAR
RCAA-AC-PANSOPS002**

CONSTRUCTION OF VISUAL AND INSTRUMENT FLIGHT PROCEDURES

1.0 PURPOSE

- 1.1. Regulation 23.060 of Civil aviation (Instrument Flight Procedure Design) requires instrument flight procedure design service to meet the applicable requirements and standards prescribed by regulations.
- 1.2. This Advisory Circular provides guidance to personnel involved in construction of instrument and visual flight procedures for publication in the Aeronautical Information Publication. It provides the basic guidelines to the ANSP, and those operators and organizations producing instrument flight charts that will result in uniform practices at all aerodromes where instrument flight procedures are carried out.
- 1.3. Uniform application of the guidance material prescribed herein will enhance uniformity and ensure safety to aircraft executing the procedures.

2.0 REFERENCES

2.1 Applicable Standards and Guidance Material for development of flight procedures in compliance with the provisions of the following documents:

2.1.1 Part 23 of Civil Aviation regulations

2.1.2 ICAO Doc 8168 – OPS/611 Aircraft Operations;

2.1.3 ICAO Doc 9274 – AN/904 Manual on the Use of the Collision Risk Model (CRM) for ILS operations;

2.1.4 ICAO Doc 9368 – AN/911 Instrument Flight Procedure Construction Manual;

2.1.5 ICAO Doc 9674 – AN/946 World Geodetic System 1984 (WGS-84) Manual;

2.1.6 ICAO Doc 9906 – AN/472 Quality Assurance Manual for Flight Procedure Design.

3.0 GUIDANCE INFORMATION

3.1 Scope

3.1.1 Flight Procedures considered in this Advisory Circular include conventional and RNAV departure, arrival and approach including non precision and precision approaches.

3.1.2 The PANS OPS criteria contained in ICAO Doc 8168- PANS-OPS/611 shall be applied in developing instrument approach procedures.

3.1.3 The design and format for IAP charts shall be in accordance with ICAO Annex 4 and ICAO Doc 8697.

3.2 Organizational Responsibilities for Flight Procedures.

3.2.1 Air Navigation Service Providers are responsible for planning, construction, and publication of flight procedures. The Authority is responsible for the standards and approval of the flight procedures.

3.2.2 On receipt of a request for approval of a flight procedure for publication, the Authority will evaluate the proposal including the supporting documentation and respond to the applicant.

Note: The Matrix of organizational responsibilities for Standard Flight Procedures design and approval is shown in Attachment 1 to this circular.

3.3 Requirement for new procedures

3.3.1 Where an operational requirement exists for a new flight procedure, the Air Navigation Services Provider shall ensure that such procedure is designed in accordance with the standards outlined in Section 2.1 above and submitted to the Authority for approval. The supporting documentation outlined in Section 3.9 below should be included.

3.3.2 The ANSP may consult with the Authority in advance or during the design process to clarify on regulatory requirements.

3.4 Requirement for revision of flight procedures

3.4.1 Each flight procedure published in the AIP should be revised as follows:

- a) when a significant change to the obstacle environment occurs, requiring an amendment of procedural minimum altitudes;
- b) when a published bearing, track or radial would fall into error by 1⁰, consequent on a change to magnetic variation or station declination;
- c) to improve safety or operational efficiency, as identified by an interested party;
- d) to accommodate changes to aircraft category or characteristics;
- e) to accommodate route connectivity or airspace organisation change;

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- f) necessitated by changes to the supporting navigation facility;
 - g) to comply with amendments to applicable ICAO provisions and other international and national standards and recommended practices;
 - h) where a change in procedural attitude is required;
 - i) when a significant change occurs to aerodrome physical characteristics such as runways;
 - j) when any other significant change occurs to aeronautical, cultural or topographical data

3.4.2 Each procedure should be reassessed at least yearly and a revision proposed if necessary.

3.5 Proficiency of Procedure Designer

3.5.1 In order to ensure that flight procedures, submitted to the Authority for approval and publication in AIP, meet the required standard of quality assurance the proficiency of the designers is specified as follows:

- a) successful completion of an ICAO PANS-OPS courses for the relevant flight procedure type;
- b) a minimum of five years aviation experience as a pilot, air traffic controller or equivalent experience; and
- c) completion of a minimum of two approved flight procedures designs under the supervision of a competent procedure designer

3.5.2 Flight procedures submitted for approval should be accompanied by details of competence of the designer(s).

3.6 Airspace Organization

3.6.1 Instrument flight paths should be contained within controlled airspace, where established.

3.6.2 Where instrument flight paths are contained within controlled airspace which lies above uncontrolled airspace, the minimum procedural altitude should be at least 500ft above the base of the controlled airspace.

3.6.3 Any proposal to establish a terminal instrument flight path in uncontrolled airspace will require a safety assessment including consideration of types and density of air traffic, risk analysis and acceptable mitigation.

3.7 Flight Procedure Construction Principle

In addition to the primary consideration of obstacle clearance, principles which should be applied to the design of flight procedures are that they should be safe, simple and economic in terms of time and airspace. Consistency between different procedures to the same runway should be applied to the extent feasible e.g. harmonization of platform altitudes and FAFs.

3.8 Supporting Documentation

3.8.1 Documentation to be included with flight procedures submitted for approval should include, as appropriate:

- a) obstacle survey data including dates of last full and update surveys;
- b) airfield and navigation facility data;
- c) diagram of each segment and holding areas showing dominant obstacles;
- d) procedural and minimum altitudes for each segment;
- e) track guidance;

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- f) chart depicting the procedure;
 - g) textual or abbreviated description and path terminators where applicable;
 - h) associated positional data e.g. co-ordinates, bearings, distances;
 - i) description of methodology and options considered;
 - j) sufficient detail of significant calculation and design data to enable the proposal to be validated;
 - k) other information considered relevant in support of the request for approval

3.9 Quality Assurance

3.9.1 The quality requirements for the procedures shall conform to ICAO Doc 9906 – AN/472 Quality Assurance Manual for Flight Procedure Design

3.9.2 Working Practices

- a) **Use of software** where practicable calculation and drawing of flight paths and protected areas should be done using accredited software.
- b) **Data Processing** Data processing and transfer techniques shall, where practicable, be based on electronic rather than manual methods. Techniques for deriving positional data shall ensure that accuracy, resolution and integrity of such data complies with ICAO Doc 9674 AN/946 (WGS-84 Manual).

3.9.3 **Survey and Charting Accuracies:** Account must be taken of survey and charting accuracies by adding vertical and horizontal tolerances, as deemed appropriate.

3.10 Exceptions from PANS-OPS Criteria;

Any exceptions from PANS-OPS criteria applied in the procedure construction should be identified. Such exceptions will require to be considered in conjunction with operators before approval for publication is issued. Only where an identifiable operational advantage can be gained, without compromising safety taking account of the local environment will exceptions to the PANS-OPS criteria be accepted.

3.11 Consultation with User Representatives

The ANSP is advised to consult with user representatives, where feasible, before submission of new procedures, particularly where there are complexities in the design. Such consultation may be informal but a note of the outcome may be included with the supporting documentation. During the evaluation process a determination will be made as to whether formal consultation with user representatives is required.

3.12 Terms of Reference for Procedure Designers

The ANSP shall develop terms of reference of personnel responsible for the construction of visual and instrument flight procedures.

3.13 Retention of records

The ANSP shall ensure that all documents produced from the time the need for the design or amendment of a procedure is determined to the actual request for approval are retained.

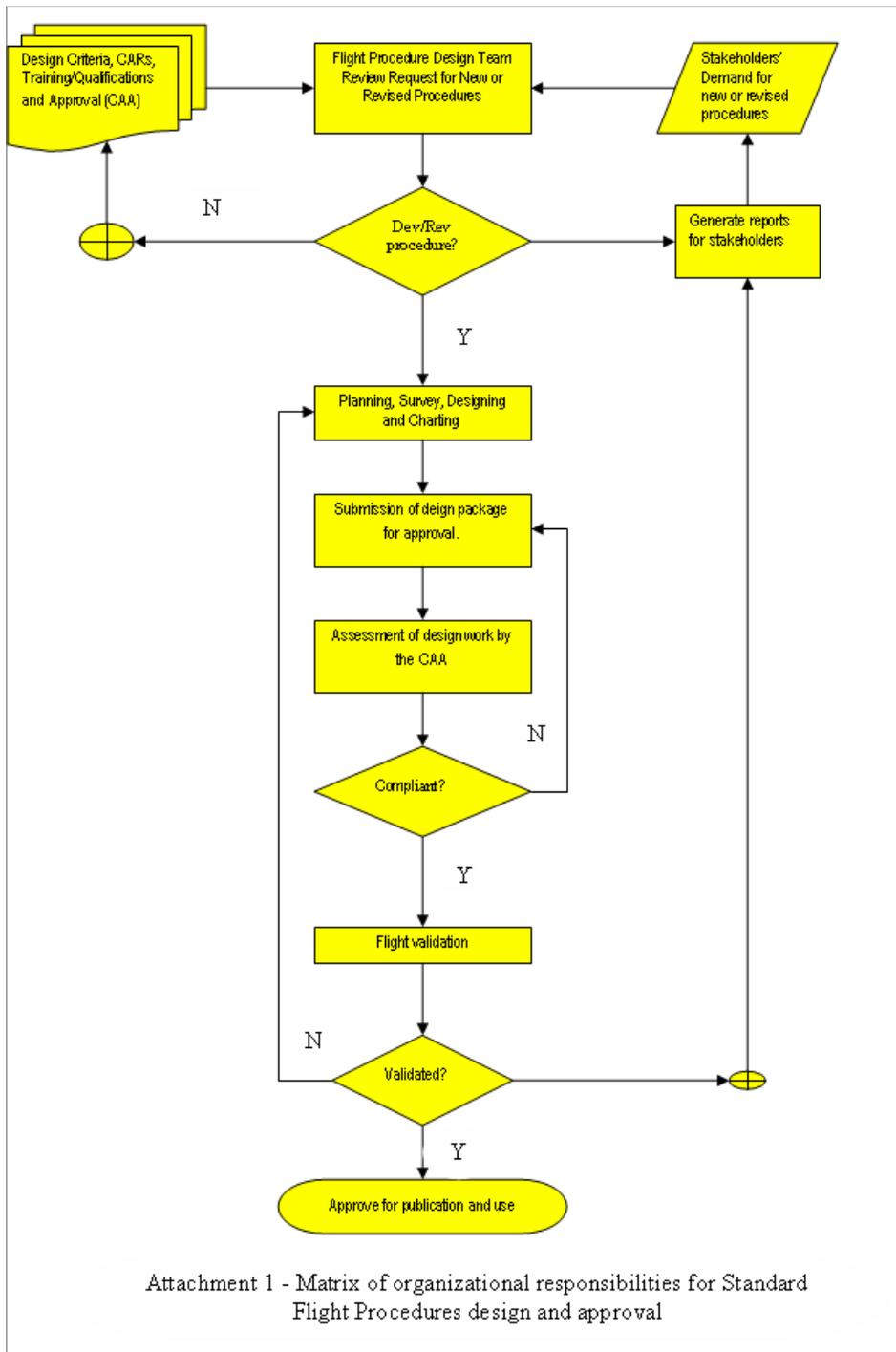
3.14 Flight Checking

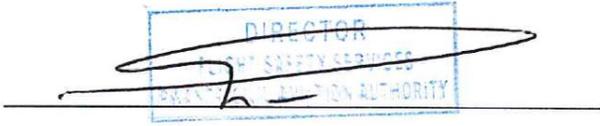
During the approval process the Authority will determine the extent of flight checking required and advise the ANSP.

3.15 IFP Approval

3.15.1 An instrument flight procedure for use by civil aircraft within Rwanda shall be submitted to the authority for approval before publication by approved procedure designers in accordance with part 23 of civil aviation regulations.

Note: See Attachment 1 - Matrix of organizational responsibilities





Director Flight Safety Services
Rwanda Civil Aviation Authority