



Part 312

INSTRUMENT FLIGHT PROCEDURE DESIGN

TABLE OF CONTENTS

ITEM	TITLE
SUBPART A:	General
312.1	Applicability
312.3	Definitions
312.5	Application for certification
312.7	Issuance of certificate
312.9	Privileges of certificate
312.11	Duration of certificate
312.13	Renewal of certificate
312.14	Inspection by ECAA
312.15	Enforcement issues
312.17	Withdrawal or change in level of service
312.19	Provisional approval
312.21	Transfer of service
312.23	Display of certificate
312.25	Register of certificates
312.27	Information/ IFPD documentation Availability
312.29 - 312.49	Reserved
SUBPART B:	Certification Requirements
312.51	Personnel requirements
312.53	Training
312.55	Training record
312.57	RE – qualification requirements
312.59	Facility Requirements
312.61	Operations manuals
312.63	Contingency plan
312.65	Criteria for the Approval of IFP Designers
312.67	Authorisation of Persons to Certify Instrument Flight Procedures
312.69	Certification of Instrument Flight Procedures
312.71	Errors in published instrument flight procedures
312.73	Management of IFP Records/ Documentation
312.75	Flight Procedure Design Software Validation
312.77	Quality Management System (QMS) Requirements
312.79	Safety Management System (SMS) Requirements
312.81 - 312.99	Reserved
SUBPART C:	Operating Requirements
312.101	Design Criteria of Instrument Flight Procedure
312.103	Design Criteria
312.105	Aerodrome Operating Minima to be Published in Instrument

ITEM	TITLE
312.107	Instrument Flight Procedure Process
312.109	FPD Initiation
312.111	Collection and Validation of the Data
312.113	Flight Procedure Design (FPD)
312.115	FPD Documentation
312.117	Validation of IFP
312.119	Ground Validation
312.121	Flight Validation
312.123	Flight Validation Pilot or Organization
312.125	Submission of IFP Designs for Approval
312.127	IFP dissemination
312.129	Continuous Maintenance and Periodic Review of IFP
312.131 - 312.199	Reserved
Appendix A	Qualifications and Experience for Chief Designer and Qualified Flight Procedure Designer
Appendix B	Instrument Flight Procedure References Documents and guidance materials
Appendix C	Instrument Flight Procedure Process
Appendix D	Instrument Flight Procedure Validation Process

Subpart A General

312.1 Applicability

- (a) This part prescribes rules governing:
 - (1) The certification and operation of organizations providing Instrument Flight Procedure Design Service (IFPDS) in Egypt,
 - (2) The operating and technical standards for the provision of Instrument Flight Procedure Design Service (IFPDS).
 - (3) Instrument Flight Procedure (IFP) process, submission, approval, maintenance and Validation of IFPs.
 - (4) Training requirements for Flight Procedures Design (FPD) staff.
- (b) The aim of this Subpart is to ensure that Instrument Flight Procedures (IFPs):
 - (1) Are designed in accordance with the required standard as stipulated in this part;
 - (2) Are safe and flyable;
 - (3) Meet Air Traffic Management requirements; and
 - (4) Are environmentally acceptable.
- (c) These Rules were developed using:
 - (1) ICAO Document 8168 (PANS– OPS) Volume II as the base document,
 - (2) ICAO DOC 9368 Instrument Flight Procedures Construction Manual
 - (3) ICAO DOC 9371 Reversal and Racetrack Procedures,
 - (4) ICAO DOC 10066 (Aeronautical Information Management)
 - (5) ANNEX 4 (Aeronautical charts) and ICAO DOC 8697 (Aeronautical Charts Manual)
 - (6) ANNEX 11 (Air Traffic Services) and ICAO DOC. 9426 (Air Traffic Services Planning Manual)
 - (7) ANNEX 14 (Aerodromes) and ICAO DOC. 9613 Performance-based Navigation (PBN) Manual
- (d) Instrument Flight Procedure Design Service (IFPDS) shall conform within the scope of this Part.
- (e) Instrument Flight Procedure Design Service (IFPDS) produced under the standard of this Part shall be sent to ECAA for approval to be published in the AIP.

312.3 Definitions

When the following terms are used in the Standards and Recommended Practices for aeronautical charts, they have the following meanings:

Aeronautical chart. A representation of a portion of the earth, its culture and relief, specifically designated to meet the requirements of air navigation.

Airway. A control area or portion thereof established in the form of a corridor.

Area minimum altitude (AMA). The lowest altitude to be used under instrument meteorological conditions (IMC) that will provide a minimum vertical clearance of 300 m (1 000 ft) or in designated mountainous terrain 600 m (2 000 ft) above all obstacles located in the area specified, rounded up to the nearest (next higher) 30 m (100 ft).

Arrival routes. Routes identified in an instrument approach procedure by which aircraft may proceed from the en-route phase of flight to an initial approach fix.

Change-over point. The point at which an aircraft navigating on an ATS route segment defined by reference to very high frequency omni directional radio ranges is expected to transfer its primary navigational reference from the facility behind the aircraft to the next facility ahead of the aircraft.

Contour line. A line on a map or chart connecting points of equal elevation.

Electronic aeronautical chart display. An electronic device by which flight crews are enabled to execute, in a convenient and timely manner, route planning, route monitoring and navigation by displaying required information.

Final approach fix or point. That fix or point of an instrument approach procedure where the final approach segment commences.

Final approach segment. That segment of an instrument approach procedure in which alignment and descent for landing are accomplished.

Glide path. A descent profile determined for vertical guidance during a final approach.

Holding procedure. A predetermined maneuver which keeps an aircraft within a specified airspace while awaiting further clearance.

Hypsometric tints. A succession of shades or color gradations used to depict ranges of elevation.

Initial approach segment. That segment of an instrument approach procedure between the initial approach fix and the intermediate approach fix or, where applicable, the final approach fix or point, between either the intermediate approach fix and the final approach fix or point, or between the end of a reversal, racetrack or dead reckoning track procedure and the final approach fix or point, as appropriate.

Isogonal. A line on a map or chart on which all points have the same magnetic variation for a specified epoch.

Magnetic variation. The angular difference between True North and Magnetic North.

Metadata. Data about data (ISO 19115*).

Missed approach point (MAPt). That point in an instrument approach procedure at or before which the prescribed missed approach procedure must be initiated in order to ensure that the minimum obstacle clearance is not infringed.

Point light. A luminous signal appearing without perceptible length.

Precision approach procedure. An instrument approach procedure utilizing azimuth and glide path information provided by ILS or PAR.

Procedure altitude/height. A specified altitude/height flown operationally at or above the minimum altitude/height and established to accommodate a stabilized descent at a prescribed descent gradient/angle in the intermediate/final approach segment.

Procedure turn. A manoeuvre in which a turn is made away from a designated track followed by a turn in the opposite direction to permit the aircraft to intercept and proceed along the reciprocal of the designated track.

Radar vectoring. Provision of navigational guidance to aircraft in the form of specific headings, based on the use of radar.

Reversal procedure. A procedure designed to enable aircraft to reverse direction during the initial approach segment of an instrument approach procedure. The sequence may include procedure turns or base turns.

Terminal arrival altitude (TAA). The lowest altitude that will provide a minimum clearance of 300 m (1 000 ft) above all objects located in an arc of a circle defined by a 46-km (25 NM) radius centered on the initial approach fix (IAF), or where there is no IAF on the intermediate approach fix (IF), delimited by straight lines joining the extremity of the arc to the IF. The combined TAAs associated with an approach procedure shall account for an area of 360 degrees around the IF.

Visual approach procedure. A series of predetermined maneuvers by visual reference, 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 go-around procedure can be carried-out.

312.5 Application for certification

- (a) Each applicant for the grant of Instrument Flight Procedure Design Service (IFPDS) certificate shall:
 - (1) Complete the ECAA Instrument Flight Procedure Design Service (IFPDS) and production certification form which requires the following information:
 - (i) The applicant's name and address for service in Egypt;
 - (ii) The specific Instrument Flight Procedure Design and production or services to be provided and
 - (iii) An acceptable Operations Manual in accordance with paragraph 312.61;
 - (iv) An acceptable Quality Management System (QMS) in accordance with paragraph 312.77 and in compliance with ICAO DOC 8168 Vol II, Chapter 4 (Quality Assurance) and ICAO DOC 9906 Vol 1 (Quality Assurance Manual for Flight Procedure Design);
 - (v) An acceptable Safety Management System (SMS) in accordance with item 312.79
 - (vi) Such other particulars relating to the applicant and the intended service as may be required by the ECAA as indicated on the form.
 - (2) Submit the completed form to the ECAA with payment of the appropriate application fee prescribed by ECAA
- (b) Each applicant shall include with the application all the documents listed in the application form.

312.7 Issuance of certificate

An applicant to provide Instrument Flight Procedure Design Service (IFPDS) will be certified if ECAA is satisfied that:

- (a) The applicant meets ECAA requirements of this Part.
- (b) The applicant and persons qualifications listed in paragraph 312.51 are met;
- (c) The documentation required under this CAR is acceptable to the Authority; and
- (d) The granting of the certificate is not contrary to the interests of aviation safety.

312.9 Privileges of certificate

- (a) Instrument Flight Procedure Design Service (IFPDS) certificate:
 - (1) Shall specify the IFPDS that the certificate holder is authorised to provide; and
 - (2) Shall not provide an IFPDS that is not specified on the IFPDS certificate.

312.11 Duration of certificate

- (a) An Instrument Flight Procedure Design Service (IFPDS) certificate may be issued or renewed for a maximum period up to 2-years.
- (b) An Instrument Flight Procedure Design Service (IFPDS) certificate remains in force until it expires or is surrendered by the certificate holder, or is withdrawn or suspended or revoked by the Authority.
- (c) The validity of the Instrument Flight Procedure Design Service (IFPDS) certificate is subject to the continued compliance of the IFPDS certificate holder with this part.
- (d) The IFPDS certificate shall remain valid subject to periodic surveillance audits and inspections conducted at the discretion of the Authority confirming continued compliance with this part.
- (e) The holder of the IFPDS certificate that expires or is revoked shall forthwith surrender the certificate to the ECAA.
- (f) The holder of the IFPDS certificate is subject to an appropriate enforcement by ECAA in case of any deviation of this part in accordance with paragraph 312.15 of this part.

312.13 Renewal of certificate

- (a) The renewal application shall be submitted to the ECAA not less than 30 days before the certificate expires.
- (b) Where the certificate has been in force for the full 2-years period, the applicant will be subjected to a full entry-level assessment by the ECAA.

312.14 Inspection by ECAA

- (a) The holder of the certificate under this part (or applied for such certificate) shall grant unrestricted and unlimited access for ECAA inspectors to inspect his personnel, facilities, equipment, documents and records to determine:
 - (1) Eligibility to continue to hold his certificate.
 - (2) Compliance with this ECAR part
- (b) ECAA shall conduct an initial certification audit and thereafter audits at intervals not exceeding 2 years (24 months) to verify and ensure compliance of the IFPDS certificate holder.
- (c) Failure to comply with paragraph 312.14 (a) above shall be a basis to suspend, withdraw or revoke any certificate issued under this part.
- (d) When objective evidence is found showing non-compliance of the IFPDS certificate holder with the requirements, the finding shall be set out as follows:
 - (1) Category 3 (Critical): A Safety Oversight Inspection finding that identify area(s) where there is direct impact on safety .
 - (2) Category 2 (major): A Safety Oversight Inspection finding that identifies areas where law, ECARs, ICAO Standards, Recommended Practices, and provisions in related manuals are not implemented
 - (3) Category 1 (Minor): A Safety Oversight Inspection finding that identifies areas where standards and procedures specified in the Service provider manuals and related documents are not applied or not applied correctly.
 - (4) Observations: An area, which, in the view of the Safety Oversight Inspection team, could improve efficiency and/or generate improved safety outcome, and which the Safety Oversight Inspector should note and address.
- (e) After a receipt of notification of findings:
 - (1) Category 3 (Critical) Finding shall be rectified immediately;

- (2) Category 2 (major) Findings shall be rectified within 15 to 90 days depending on the nature and circumstance of the non-compliance.
- (3) Category 1 (Minor) Findings shall be rectified within 40 to 90 days depending on the nature and circumstance of the non-compliance.
- (4) Observations should be rectified within 60 to 90 days depending on the nature and circumstance of the non-compliance..
- (5) The certificate holders shall:
 - i. Conduct a Root Cause Analysis to identify the root cause of the non-compliance(s);
 - ii. Define a Corrective Action Plan (CAP), including Estimate Completion Dates (ECD), acceptable to the Authority; and
 - iii. Demonstrate corrective action implementation to the satisfaction of the Authority within the period agreed with the Authority.
- (f) In the case of Category 3 or Category 2 findings, the IFPDS certificate may be subject to restriction, a partial or full suspension or revocation. The IFPDS certificate holder shall provide confirmation of receipt of the notice of suspension or revocation of the certificate upon receipt of the inspection report.
- (g) Non-compliance with this Regulation or instructions issued by the Authority may require the Authority to restrict, suspend or revoke the IFPDS certificate.
- (h) If deemed necessary, the Authority may take additional enforcement action in terms of paragraph 312.15 of this part.

312.15 Enforcement issues

(a) Penalties:

- (1) ECAA may impose a penalty (according to the Civil aviation Law NO 28), or reduce some privileges to the certificate holder if:
 - (i) It finds that the certificate holder does not comply with the requirements of this Part and such holder failed to remedy such non-compliance within 60-days after receiving notice in writing from ECAA to do so;
 - (ii) Such action is necessary in the interest of safety;
 - (iii) Its inspector is prevented by the service provider from carrying out a safety inspection when his report recommends such action;
 - (iv) The certificate holder failed to provide the service in the required standard level, which is confirmed to ECAA by receiving reports from the users of the service and proved by a legal investigation; and
- (2) When proposing a penalty, ECAA will state the reasons for such action and will furnish them to the certificate holder.

(b) Suspension of certificate this is a subsequent procedure to impose a penalty:

- (1) ECAA may suspend for a defined period, an IFPDS certificate issued under this part if:
 - (i) the certificate holder still unable to remedy any of these non-compliant areas with the specified time frame of 60 days;
 - (ii) The investigation, in case of an accident, proves that it was caused due to the faulty procedures and/or the malfunction or failure of IFPDS equipment or system;
 - (iii) The certificate holder failed to perform the action plan stated in the certificate in the exact period of time if so stated; and
 - (iv) Such actions still necessary in the interest of aviation safety.
- (2) When proposing a suspension, the ECAA will state the reasons for such action and furnish them to the certificate holder;
- (3) The certificate holder may appeal against such notice within 30-days of receipt;
- (4) The applicant shall furnish to ECAA any documents, records, or other pertinent information supporting the appeal; and
- (5) ECAA may confirm, modify, or set aside the proposed suspension based on the appeal.

(c) Revocation of certificate this is a subsequent procedure to suspension:

- (1) ECAA may permanently revoke an IFPDS certificates issue under this part if:

- (i) It is verified that the certificate holder will not be able to overcome non-compliant areas; and
 - (ii) The certificate holder stops providing the service concerned without a convincing argument.
- (2) ECAA has decided for the interest of safety to terminate the services.
 - (3) The Ministerial Order issued for the certificate holder is revoked.
 - (4) The revoked certificate cannot be renewed, it has to be reissued not less than one year after the revocation date.

312.17 Withdrawal or change in level of service

- (a) Each holder of the IFPDS certificate who wishes to permanently withdraw the IFPDS shall give the ECAA at least 90 days notice of the proposal and include in that notice a summary of factors considered in arriving at the decision to withdraw the service.
- (b) Each holder of the IFPDS certificate that intends to permanently reduce the hours of operation of IFPDS shall provide to the ECAA an advance notice of, and the reasons for, the proposed reduction.
- (c) Each holder of the IFPDS certificate that is the outgoing provider of IFPDS shall not hinder the preparation and execution of transitional arrangements.

312.19 Provisional approval

The ECAA may, if it is considered in the interest of safety, grant an existing certificate holder a provisional approval to act as a substitute IFPDS in respect to certificate that has been withdrawn, suspended or revoked.

312.21 Transfer of service

An IFPDS certificate granted under this part is not transferable.

312.23 Display of certificate

Each IFPDS certificate holder shall display the certificate in a prominent place, generally accessible to the public at the holders principal place of business and, if a copy of the approval is displayed, shall produce the original approval to an ECAA inspector if so requested by such inspector.

312.25 Register of certificates

- (a) ECAA will maintain a register of IFPDS certificate issued under this Part.
- (b) The register contains:
 - (1) The full name of the certificate holder;
 - (2) The business address of the certificate holder;
 - (3) The date on which the certificate was approved;
 - (4) The type of IFPDS for which the certificate was issued;
 - (5) The date on which the certificate is revoke or suspend, if applicable; and
 - (6) The date on which the certificate expires.

312.27 Information/ IFP documentation Availability

- (a) Information. A certificate holder shall on request by ECAA provide all information relating to the Egyptian territory that is necessary to enable the Standards of this Part to be met.
- (b) IFP documentaion. A certificate holder shall, when so specified, ensure the availability of IFP documentaion in whichever of the appropriate ways prescribed in this Part for a particular.

312.29 - 312.49 [Reserved]

Subpart B **Certification Requirements**

312.51 Personnel requirements

Each applicant for the grant of IFPDS certificate shall employ or contract:

- (a) A senior person acceptable to the ECAA, who has the authority within the applicant's organization to ensure that each activity listed in their exposition:
 - (1) Can be financed and is provided to meet operational requirements; and
 - (2) Is provided in accordance with the requirements prescribed by this Part.
- (b) A senior person or group of senior persons who are responsible for assuring that the applicant's organization complies with the requirements of this Part. Such nominated person or persons shall be ultimately responsible to the ECAA;
- (c) Sufficient number of suitably qualified personnel to collect, check, coordinate, design, edit, and amend Instrument Flight Procedures.
- (d) Sufficient number of suitably qualified personnel to ensure compliance with minimum qualifications and experience details as mentioned in accordance to Appendix A of this part;
- (e) Establish a procedure to initially assess the competence of those personnel authorized by the applicant to do what is mentioned in Item (c).
- (f) Establish a procedure to maintain the competence of those authorized personnel.
- (g) Provide those authorized personnel with written evidence of the scope of their authorization.
- (h) An applicant for an IFPDS certificate shall develop Job descriptions for its FPD personnel.
- (i) Qualifications and experience details for the qualified personnel nominated by the applicant for the positions above shall be forwarded to the ECAA for acceptance and approval. ECAA retains the right to reject any person appointed and who has been found unsuitable for the position.

312.53 Training

Each applicant for the grant of IFPDS certificate shall:

- (a) Develop Training Program Manual and Training Plan acceptable to ECAA.
- (b) Send Training Program Manual and Training Plan to ECAA for approval.
- (c) Establish procedures acceptable to ECAA and follow the approved training programs for IFP designers position as follows:
 - 1- Initial training;
 - 2- Advanced training;
 - 3- On –job –training;
 - 4- Recurrent training; and
 - 5- Refresher training.
- (d) Ensure that the Training Programme must include all the training required for the incumbent of the position to acquire and maintain the necessary competencies for the position.
- (e) Ensure that the training programmes are appropriately implemented in accordance with periodic training plans detailing and prioritising the type of training needed over a specified time frame;
- (f) Ensure that the Personnel giving instructions in an operational working position shall hold appropriate current instructor authorization by the ECAA.

Note: This authorization for personnel who are qualified and have received an instructional technique course and are selected for a specified appropriate in connection with training.

- (g) Nominate the qualified personnel carrying out assessment, training and examining to be authorized by the ECAA.
- (h) Ensure that Each of training types mentioned in (b) shall fulfill qualifications and experience the in accordance with Appendix A of this part.
- (i) Ensure that all examinations conducted by IFPDSP shall be attended by ECAA PANS-OPS representative for supervising.

312.55 Training record

- (a) Each applicant for the grant of IFPDS certificate shall establish acceptable procedures by ECAA for keeping training record for all technical staff (in accordance with paragraph 312.53) and to be maintained up to date.
- (b) Each holder of an IFPDS certificate shall ensure that Training Record is done according to its Training Program Manual and Training Plan and shall send it to ECAA for approval.

312.57 RE – qualification requirements

Each IFPDSP personnel who has become unqualified due to not having satisfactorily completed recurrent training, competency or familiarization with the appropriate eligibility period shall comply with the re-qualification procedures accepted by the ECAA.

312.59 Facilities and equipments

Each applicant for an IFPDS certificate shall establish offices equipped with appropriate hardware and other facilities; including access to up-to-date reference documents, manuals, data and IFP Design Software; that are appropriate for the IFPDS listed in its Operations Manual.

312.61 Operations manuals

- (a) Each applicant for an IFPDS certificate shall provide an up to date operations manual, to be available for compliance by its personnel, to perform the services listed in its exposition.
- (b) Operations manual shall include and not limited to the following:
 - 1- Details of the applicant's staffing structure, including an organisation chart showing lines of responsibility of the persons specified and description for all services listed;
 - 2- The duties and responsibilities of the person or persons;
 - 3- List of the types of instrument flight procedure to be designed and certified by the applicant's organisation;
 - 4- Description for all services listed;
 - 5- Contain the Technical specifications for the services provided Such as: procedures, instructions and information required by the operations personnel to perform their duties;
 - 6- Exposition contain the title, duties and responsibilities for the persons and seniors;
 - 7- Contingency, emergency, safety and quality plans;
 - 8- Other Technical and administrative procedures concerned
 - 9- The format and standards for the IFP designed under the authority of their IFPDS certificate;
 - 10- The relevant parts of the Operations Manual are accessible to the personnel concerned;
 - 11- Procedures to control, amend and distribute the Operations Manual.
 - 12- Operations personnel are informed of amendments to the Operations Manual.
- (c) Each holder of an IFPDS certificate shall ensure that FPD staff have access to relevant and up-to-date reference material such as and not limited to (ICAO documents and other user material/guides) instructions, and any other documentation that is necessary for the execution of IFP service listed in their Operations Manual according to Appendix B of this part.

312.63 Contingency plan

Each applicant for the grant of IFPDS certificate shall establish a contingency plan providing for the safe and orderly flow of information in the event of a disruption, and / or interruption.

312.65 Criteria for the Approval of IFP Designers

- (a) Each applicant for the grant of IFPDS certificate shall provide to ECAA (according to his Training Programme Manual) evidence of the following:

- 1- Proof of successful completion of a PANS-OPS training course based on ICAO DOC 8168 Vol 2 presented by an organisation acceptable to the ECAA.
 - 2- Evidence of a recent IFP design work which should include evidence of specific designs which have been approved for use;
 - 3- Proof of working knowledge of navigation, navigation systems, aircraft operations, aircraft performance, aeronautical information services, geography, and geodesy.
- (b) Each holder of an IFPDS certificate shall ensure that FPD staff met the qualification according to Appendix A of this Part.

312.67 Authorisation of Persons to Certify Instrument Flight Procedures

- (c) Each applicant for the grant of IFPDS certificate shall establish a procedure for authorising a Chief Designer to certify IFPs.
- (d) An authorisation shall not be issued to a person unless the person meets the applicable training and experience requirements specified in paragraph 312.53.
- (e) Every authorisation that is issued to a person shall be in writing and must specify the types of IFPs that the person is authorised to certify.
- (f) An IFP type that is specified on an authorisation shall not be inconsistent with the types of IFPs specified on the IFPDS certificate.

312.69 Certification of Instrument Flight Procedures

- (a) Each applicant for an IFPDS certificate shall establish procedure for the certification of every IFP that the an IFPDSP proposes to design, make available for operational use, and publish in the Egyptian AIP.
- (b) The required procedure by paragraph (a) shall include details of the checks to be carried out by the Chief Designer, who is authorised to certify the particular type of IFP, to ensure that the IFP meets the applicable requirements and standards prescribed by this PART;
- (c) The authorised Chief Designer shall certify that the IFP has been designed in accordance with, and meets, the applicable standard and requirement prescribed by this PART, and
- (d) A person who is authorised in accordance with this PART to certify an IFP shall not certify an IFP that he has designed.

312.71 Errors in published instrument flight procedures

- (a) The holder of an IFPDS certificate shall establish a procedure for recording, investigating, correcting, and reporting any identified error, and any identified non-conformance with the standards and requirements of this PART, in an IFP that is certified or maintained under the authority of the IFPDS certificate.
- (b) The procedure required by paragraph (a) shall require the following:
 - (1) An IFP is immediately withdrawn from operational use if the error or non-conformance affects, or may affect, the safety of an aircraft operation; and
 - (2) The error or non-conformance is corrected, and certified by the Chief Designer who is appropriately authorised in accordance with this PART; and
 - (3) The correction required by paragraph (2) is clearly identified and promulgated by the most appropriate means relative to the operational significance of the error or non-conformance; and
 - (4) The source of the error or non-conformance is identified, and:
 - i. if possible, eliminated to prevent a recurrence; and
 - ii. preventive action is taken to ensure that the source of the error or non-conformance has not affected the integrity of any other IFP; and
 - (5) The holder of an IFPDS certificate shall send to ECAA information incident relating to an error or non- conformance referred to in paragraph (a) is subject to verification by ECAA during the inspection.

312.73 Management of IFP Records/ Documentation

- (a) Each applicant for an IFPDS certificate shall establish a procedure for the management of records relating to the design, verification, validation, certification and maintenance of IFP.
- (b) The management of records includes the identification, collection, indexing, storage, safekeeping, accessibility, maintenance and disposal of records.
- (c) The procedure required by paragraph (a) must provide for the following to be recorded for every IFP Package:
 - (1) A complete documentation of the design process including copies of all source data (Aerodrome survey report, electronic terrain and obstacle data, airport infrastructure information, ...etc.), information, calculations and drawings used in the project;
 - (2) All parameters used (speeds, bank angles, wind velocity, temperature, ISA value, descent gradient, climb gradient, timings, height loss margins, Obstacle Assessment Surface (OAS) coefficients, etc.);
 - (3) Proposed IFP chart/depiction of sufficient detail to safely navigate and identify significant terrain, obstacles and obstructions;
 - (4) Proposed ARINC 424 Path Terminators (for PBN procedures only);
 - (5) List of relevant obstacles, identification and description of controlling obstacles and obstacles otherwise influencing the design of the procedure, waypoint fix latitude/longitude, procedural tracks/course, distances and altitudes;
 - (6) OCA/H, MOCA and/or Procedure Altitude/Height, as applicable.
 - (7) Any special local operational procedure (e.g. noise abatement, non-standard traffic patterns, lighting activation);
 - (8) Detailed listing of deviations from design criteria and proposed mitigation;
 - (9) Safety assessments;
 - (10) Relevant signed Design, Verification and Validation Reports, including stakeholder endorsement if any;
 - (11) Electronic design files in industry standard GIS (Geodatabase or Shapefiles) or CAD (.dwg or .dgn) file format.
 - (12) Draft AIP submission.
 - (13) The IFP Package shall be retained for a minimum period of one year from the date at which the IFP is replaced or withdrawn from use.

312.75 Flight Procedure Design Software Validation

Each applicant for an IFPDS certificate shall:

- (a) Validate IFP Design Software in compliance with ICAO DOC 9906 Vol III;
- (b) Document any non-compliances and differences identified;
- (c) Include in the Operations Manual the risks identified in these non-compliances/differences and how it will be mitigated; and
- (d) Training of FPD staff on these non-compliances/differences and mitigation techniques must be incorporated in the Training Programme required.
- (e) The results of these systems and related audits and corrective actions shall be made available to the ECAA upon request.

312.77 Quality Management System (QMS) Requirements

Each applicant for an IFPDS certificate shall establish and implement an acceptable Quality Management System (QMS) for FPD in accordance with ICAO DOC 8168 Vol II Chapter 4 (Quality Assurance) and ICAO DOC 9906 Vol 1 (Quality Assurance Manual for Flight Procedure Design).

312.79 Safety Management System (SMS) Requirements

- (a) Each applicant for an IFPDS certificate shall establish and implement an acceptable Safety Management System.
- (b) The results of these systems and related audits and corrective actions shall be made available to the ECAA upon request.

312.81 - 312.99 [Reserved]

Subpart C

Operating Requirements

312.101 Design Criteria of Instrument Flight Procedure

Each holder of an IFPDS certificate shall ensure that IFPD, Airspace Design, ATS Route Design, SID and STAR within CAIRO FIR shall be designed in accordance with ICAO Doc 8168, Procedures for Air Navigation Services — Aircraft Operations, Volume II, Construction of Visual and Instrument Flight Procedures and Instrument Flight Procedures and the appropriate guidance material within ICAO DOCs mentioned in Appendix B.

312.103 Design Criteria

Each holder of an IFPDS certificate shall:

- (a) Apply the additional requirements from ICAO Doc 9613 (Performance Based Navigation (PBN) Manual) Vol 1 and 2 when developing RNAV based procedure.
- (b) Apply the provisions from ICAO Doc 9906 (The Quality Assurance Manual for Flight Procedure Design) in the construction of all IFPs.
- (c) Coordinated with all appropriate Air Traffic Service Providers and other interested and affected parties;
- (d) Be compatible with any air traffic service and associated procedure that is provided within the area or areas of airspace where the IFP is intended to be implemented;
- (e) Take into account:
 - (1) Any prescribed noise abatement procedure;
 - (2) Any legislation restricting aircraft operations;
 - (3) The classification and any associated designation of the airspace in which the IFP is to be established and any adjacent airspace that may be affected by the procedure; and
 - (4) The effect that the proposed IFP may have on any other IFPs established in the airspace.
- (f) Ensure that an IFP must not be designed on or use a ground based aeronautical facility unless the holder of the aeronautical telecommunication service certificate agrees in writing that the aeronautical facility can be used for the intended IFP.
- (g) Take into account the effect of the design on the environment, and also to the as well as Egyptian environmental regulations, international standards and best practices.
- (h) Whenever applicable; Ensure that All terminal IFP shall be, to the extent possible, designed to consider Continuous Climb Operations (CCO) and Continuous Descent Operations (CDO).

312.105 Aerodrome Operating Minima

- (a) Aerodrome Operating Minima shall be published in the Egyptian AIP for each Instrument Approach Procedure (IAP) and Visual Manoeuvring/Circling Procedure designed and/or maintained in accordance with the design criteria referred to in this part.
- (b) Each holder of an IFPDS certificate shall establish procedure to provide OCA/H as one of the factors taken into account in establishing operating minima for an aerodrome.

312.107 Instrument Flight Procedure Process

Each holder of an IFPDS certificate shall ensure that:

- (a) The Instrument Flight Procedure process is developed according to ICAO DOC 8168 Vol II and ICAO DOC 9906 (See Appendix C).
- (b) The IFP Process encompasses the initiation and collection of requirements and constraints, the acquisition of data, the FPD, verification, ground validation, flight validation, approval and publication.

312.109 FPD Initiation

Each holder of an IFPDS certificate shall:

- (a) initiate the design process for a new, review or change to an existing IFP.

- (b) Notify the Authority of his intention to establish or amend any IFP.
- (c) Submitted the request to ECAA for a formal review and acceptance.
- (d) Ensure that IFP process carried out in accordance with ICAO DOC 8168 Vol II, ICAO DOC 9906.

312.111 Collection and Validation of the Data

Each holder of an IFPDS certificate shall:

- (a) Collect data from recognized sources and incorporate them into the design documentation;
- (b) Data originator is responsible for validating accuracy, resolution, integrity, reference geodetic datum of the collected data, and
- (c) The required data are, but is not limited to:
 - (1) Airport, navigation aid, obstacle and terrain data based on verified WGS-84 surveys and complying with ICAO Annex 11, 14 and 15 requirements;
 - (2) Airspace requirements;
 - (3) User requirements: needs of Air Traffic Service and operators who will use this procedure;
 - (4) Airport infrastructure such as runway classification, lighting, communications, runway markings, and availability of local altimeter setting;
 - (5) Environmental considerations; and
 - (6) Any other potential issue associated with the procedure.
- (d) The acquisition of data for the FPD process must ensure that the acquired data's quality characteristics are known and adequate, or that, in the case where the data's quality characteristics are unknown or inadequate (invalid), that appropriate data verification occurs prior to use.

312.113 Flight Procedure Design (FPD)

Each holder of an IFPDS certificate shall ensuring that every IFP certified under its authority is:

- (a) Designed or amended using methods ensuring that the procedure meets the applicable requirements and standards prescribed in this part; and
- (b) Independently verified, before certification, by a qualified procedure designer who is independent of the person directly responsible for the design to ensure compliance with applicable criteria; and
- (c) Certified by the Chief designer in accordance with this part.

312.115 FPD Documentation

- (a) Each holder of an IFPDS certificate shall prepare an IFP Validation Package to enable an Independent Procedure Designer to carry out a Ground Validation of the IFP.
- (b) The package shall include:
 - (1) A plan view of each segment and obstacle evaluation area,
 - (2) Complete documentation identifying obstacles, obstructions and terrain relevant to the IFP, including identifying the controlling obstacle/terrain, OCA/H, MOCA and/or Procedure Altitude/Height, as applicable.
 - (3) Plan and profile views of the IFP.
 - (4) Data relating to each fix and/or holding pattern involved in the IFP,
 - (5) ARINC424 compliant coding for PBN procedures,
 - (6) Confirmation that Navigation Aid coverage, if applicable, is satisfactory,
 - (7) Draft chart of the procedure suitable for use by the Flight Validation crew.
 - (8) Safety assessments.
- (c) All documentation shall undergo a final verification for accuracy and completeness prior to validation, approval and publication.

312.117 Validation of IFP

- (a) The IFP validation process shall be carried out as part of the initial IFP design as well as for any amendment to an existing IFP. An overview of the necessary steps in the validation process can be found in Appendix D.
- (b) The validation of IFPs is required under:
 - (1) ICAO DOC 8168 Vol II,
 - (2) ICAO DOC 9906 Vol 1 and 5.
- (c) The IFP design process starts with the collection of relevant data, proceeds through the design phase, verification, then Ground and/or Flight Validation prior to publication.
- (d) Validation shall occur at the collection of data phase, the Ground and/or Flight Validation stage and, in the case of PBN IFP, the validation of the navigation database ARINC 424 coding instructions.

312.119 Ground Validation

Each holder of an IFPDS certificate shall ensure that:

- (a) Ground Validation is undertaken for all IFPs. Ground Validation consists of an independent IFP design review and Preflight Validation.
- (b) Ground Validation is conducted by an Independent Procedure Designer who did not design or verified the IFP.
- (c) Any concerns or changes required by the Independent Procedure Designer is communicated to the FPD who shall determine whether or not the IFP should be revised. Such concerns or changes shall be documented and included in the IFP package.
- (d) Any issues identified in the Ground Validation is addressed prior to any Flight Validation.
- (e) Justification is provided where it is recommended that Flight Validation be dispensed with.

312.121 Flight Validation

Each holder of an IFPDS certificate shall:

- (a) Verify the obstacle that is determined as the controlling obstacle for each segment and to check that no new obstacles have been erected since the IFP was designed or that no obstacle information are grossly inaccurate to the extent that it may affect the IFP.
- (b) Prove the fly-ability of an IFP whose Ground Validation caused some concern about track adherence or crew workload.
- (c) Ensure that a Flight Validation shall be carried out during the initial approval, amendment or review of an IFP or when determined necessary by the Authority.
- (d) Approve the IFP by ECAA, Flight Validation may be dispensed with if the accuracy and completeness of all obstacle and navigation data considered in the procedure design, and any other factors normally considered in the Flight Validation can be verified during the Ground Validation.
- (e) Ensure that a Flight Validation shall however be carried out when:
 - (1) The flyability of a procedure cannot be determined by other means;
 - (2) The procedure requires mitigation for deviations from design criteria;
 - (3) The accuracy and/or integrity of obstacle and terrain data cannot be determined by other means;
 - (4) New procedures differ significantly from existing procedures; and
- (f) Ensure that a Flight Validation shall only be conducted after the Ground Validation Package was reviewed and accepted by ECAA.
- (g) Ensure that The Flight Validation is conducted, recorded and documented in accordance with ICAO DOC 9906 Vol V.

312.123 Flight Validation Pilot or Organization

- (a) Flight Validation shall be conducted by a Flight Validation Pilot or Organization who meets the requirements of ICAO DOC 9906 Vol 6 and are accepted by ECAA.
- (b) The qualifications for Flight Validation Pilot shall include:
 - (1) At least a commercial pilot license with instrument rating;
 - (2) A requirement that the license held by the flight validation pilot shall be for the aircraft category appropriate for the procedure to be validated; and
 - (3) Meet all the experience requirements for the airline transport pilot license in the relevant category of aircraft as described in personnel licensing regulations except that the Flight Validation Pilot does not have to be the pilot-in-command of the validation flight nor is he required to have the type rating on the aircraft used for the validation flight.
- (c) The Flight Validation may be conducted during the Flight Inspection of the associated Navigation Aid if it is conducted during daylight and when Visual Meteorological Conditions (VMC) prevail throughout each segment.

312.125 Submission of IFP Designs for Approval

- (a) Submission of IFP Designs for approval by ECAA is the responsibility of IFPDSP.
- (b) ECAA will only accept IFPs designed by a IFPDSP certified under this part and for the type of IFP shown in the scope of their IFPDS certificate.
- (c) IFP designs submitted for evaluation and approval by ECAA shall include:
 - (1) An official application for IFP Designs for Approval.
 - (2) A graphical representation which accurately reflects the content of the narrative provided;
 - (3) A relevant Safety Assessments conducted;
 - (4) A relevant signed Design and Verification and Validation Reports (Ground and Flight Validation check list of Verification);
- (d) A comprehensive design documentation in text format, including references to ICAO DOC 8168 VOL II may request by ECAA.
- (e) Proposals for new airspace or airways or amendments to existing airspace or airways shall be developed and submitted to ECAA in accordance with the Airspace Change Proposal process.

312.127 IFP dissemination

- (a) ECAA is responsible for dissemination of the IFP and associated documentation to the Aeronautical Information Service (AIS) for publication following appropriate approval of the IFP by ECAA.
- (b) ECAA shall ensure that:
 - (1) The design and format of the IFP charts are in a standardized format in accordance with the requirements of ECAR PART 311; and
 - (2) Where the IFP is a PBN procedure, it is described in a clear and unambiguous fashion as detailed in ICAO DOC 8168 (Procedures for Air Navigation Services – Aircraft Operations) Vol 2 and ICAO Annex 15 (Aeronautical Information Services); and
 - (3) Where the IFP is a PBN procedure, prior to publication, it is validated to ensure that the dataset is complete, coherent and correct; and
 - (4) The IFPDSP performs a final check of the draft AIP/chart amendment before publication to ensure that no errors have been introduced during the data transfer process.

312.129 Continuous Maintenance and Periodic Review of IFP

- (a) Published IFP shall be subjected to a continuous maintenance and periodic review to ensure that they continue to comply with changing criteria and meet user requirements.
- (b) IFPDSP shall establish a procedure to ensure that each IFP under its responsibility is reviewed whenever:
 - (1) There is a change to the obstacle environment which may affect the IFP,

- (2) Procedures based on newly installed or relocated Radio Navigational Aids (excluding visual aids), or airport runway addition/change, Magnetic Variation,
 - (3) There is a change in airspace structure that may affect the IFP,
 - (4) There is a change to user requirements that may affect the IFP,
 - (5) There are changes in design criteria which have safety impact, or
 - (6) A maximum period of 5 years has lapsed since the IFP was designed or last reviewed.
- (c) Failure by IFPDSP to ensure continuous maintenance and periodic review of IFPs may require ECAA to impose operational restrictions, suspend or withdraw the IFP and/or take enforcement action.
- (d) The existing IFP can be maintained even upon the amendment of design criteria and/or depiction standards if it is determined that these amendments are not safety-related issues.

312.131 - 312.199 [Reserved]

Appendix A

Qualifications and Experience for Chief Designer and Qualified Flight Procedure Designer

- (a) IFPDSP shall ensure that the qualifications, experience and training for the Flight Procedure Designer are in accordance to this part and the approved Training Program Manual and Training Plan of the IFPDSP.
- (b) The IFPDSP should ensure that Flight Procedure Designer training meets requirements prescribed in ICAO Doc 9906 Volume 2 (Flight Procedure Designer Training (Development of a Flight Procedure Designer Training Programme)).
- (c) The IFPDSP should ensure that personnel selected to attend Flight Procedure Designer training meets the knowledge, skill and experience requirements defined in ICAO Doc 9906 Volume 2 (Flight Procedure Designer Training (Development of a Flight Procedure Designer Training Programme)).

A1. Chief Designer:

- (a) Have successfully completed an ICAO PANS-OPS training courses, or a training courses accepted by ECAA.
- (b) Experience in design of IFPs (at least 5 years' experience designing IFPs) which shall include:
 - (1) Under supervision by a flight procedure designer whose qualifications are accepted by ECAA, the design of at least 3 IFPs of the type that the person is to be authorized to certify; or
 - (2) For a new IFP type, experience accepted by ECAA in designing or certifying similar IFP types.

A.2 Qualified Flight Procedure Designer

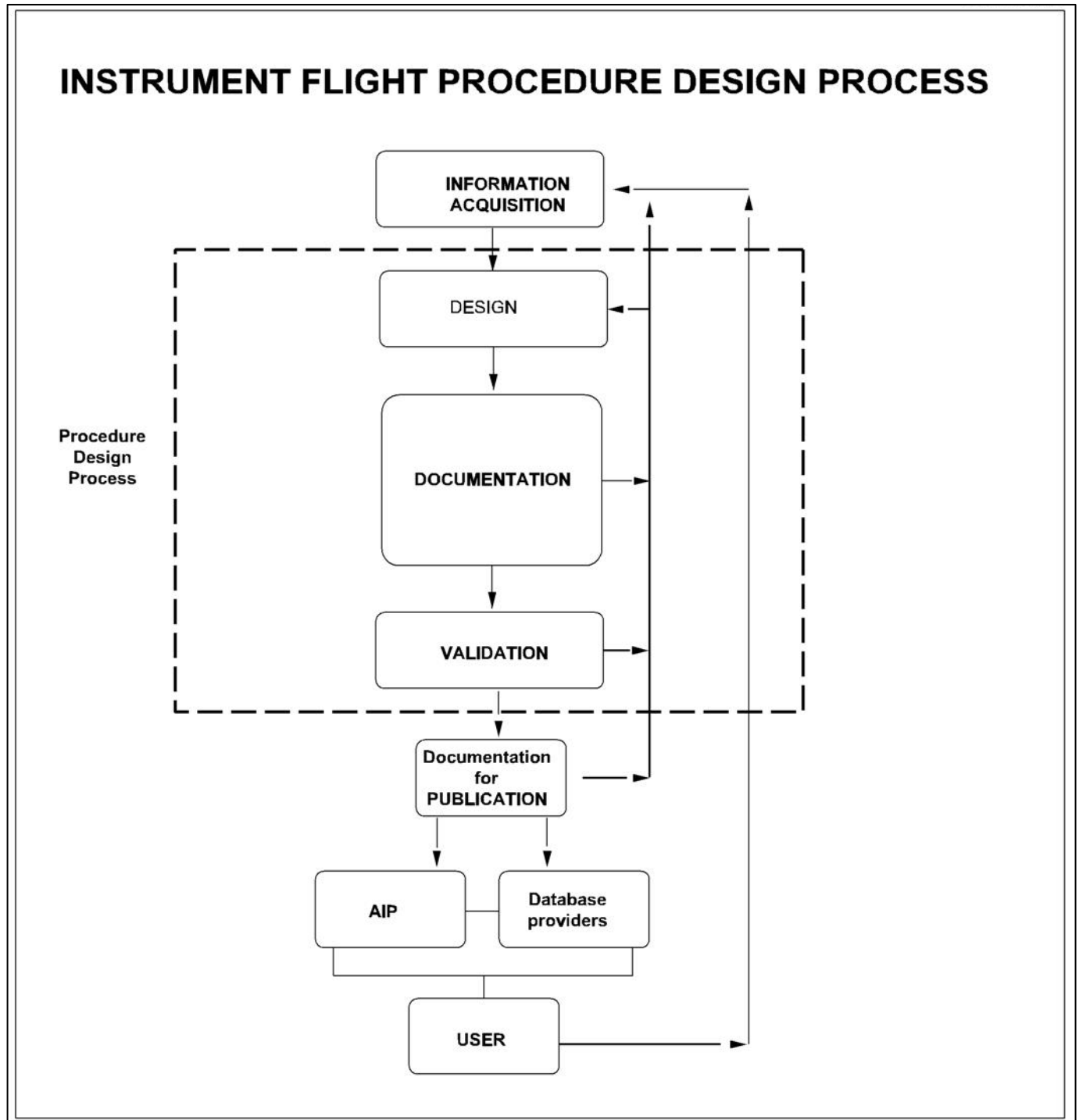
- (a) Have successfully completed an ICAO PANS-OPS training courses, or a training courses accepted by ECAA.
- (b) Experience in design of IFPs — at least 2 years' experience designing IFPs which must include —
 - (1) Under supervision by a flight procedure designer whose qualifications are accepted by ECAA, the design of at least 3 IFPs of the type that the person is to be authorized to design; or
 - (2) For a new IFPs type, experience accepted by ECAA in designing similar IFP types.

Appendix B

Instrument Flight Procedure References Documents and guidance materials

- 1- ICAO Annex 2, Rules of the Air.
- 2- ICAO Annex 4, Aeronautical Charts
- 3- ICAO Annex 5, Units of Measurement
- 4- ICAO Annex 6, Operation of Aircraft
- 5- ICAO Annex 10, Telecommunication
- 6- ICAO Annex 11, Air Traffic Service
- 7- ICAO Annex 14, Aerodromes
- 8- ICAO Annex 15, Aeronautical Information Service
- 9- ICAO DOC 4444, Air Traffic Management
- 10- ICAO DOC 7030, Regional Supplementary Procedures
- 11- ICAO DOC 8071, Manual on Testing of Radio Navigation Aids
- 12- ICAO DOC 8126, Aeronautical Information Services Manual
- 13- ICAO DOC 8168, Vol I, II and III, Aircraft Operation
- 14- ICAO DOC 8697, Aeronautical Chart Manual
- 15- ICAO DOC 9274, Manual of the use of the Collision risk model (CRM)
- 16- ICAO DOC 9365, Manual of All - Weather Operations
- 17- ICAO DOC 9368, Instrument Flight Procedures Construction Manual
- 18- ICAO DOC 9371, Template Manual for Holding reversal and Racetrack Procedures
- 19- ICAO DOC 9501, Environmental Technical Manual
- 20- ICAO DOC 9613, Performance-based Navigation (PBN)
- 21- ICAO DOC 9643, Manual on simultaneous Runways [SOIR]
- 22- ICAO DOC 9674, World Geodetic System - 1984 (WGS-84) Manual
- 23- ICAO DOC 9708, Air Navigation Plan - Middle East region
- 24- ICAO DOC 9826, Annual Report of the Council
- 25- ICAO DOC 9849, Global Navigation Satellite System [GNSS]
- 26- ICAO DOC 9905, Required Navigation Performance Authorization Required [RNP AR] Procedure Design Manual
- 27- ICAO DOC 9906 Vol 1, 2, 3, 5 and 6, Quality Assurance Manual for Flight Procedure Design
- 28- ICAO DOC 9931, Continuous Descent Operations Manual [CDO]
- 29- ICAO DOC 10031, Gaudiness on Environmental Assessment of Proposed Air traffic Management Operational Changes
- 30- ICAO DOC 10068, Manual on the Development of a Regulatory Frame work for Instrument Flight Procedures Design Service
- 31- ECAR part 311
- 32- ECAR part 312
- 33- ECAR part 172
- 34- ECAR part 173
- 35- National and Regional Airspace and Navigation Plans.
- 36- Software user manuals.

Appendix C Instrument Flight Procedure Process Flowchart



Appendix D. Instrument Flight Procedure Validation Process

