Egyptian Air Navigation Circular

EAC No.311-4

Jan., 2018

TRAINING AND QUALIFICATIONS

CONTENTS

4.1 REFERENCES AND DOUCMENTS

 ECAR Part 311 — Aeronautical charts

 Documentation:-

- Doc 8168 (Procedures for Air Navigation Services- Aircraft Operation, Vol 1 Flight Procedures and Vol II – Construction of Visual and Instrument Flight Procedures)
- Annex 4 (Aeronautical Charts)
- Annex 10 (Aeronautical Telecommunications)
- Annex 11 (Air Traffic Services)
- Annex 14 (Aerodromes)
- Doc 8697 (Aeronautical charts manual)
- Doc 8400 (ICAO Abbreviations and codes)
- Construction Manual
- Other related documents

4. 2 PURPOSE

The instructions and information mentioned in this Egyptian Air Navigation Circular shall be applied to any applicants for certification as:

1- AERONAUTICAL CHARTS DESIGN

2- WATCH SUPERVISOR

3- ENROUTE AND INSTRUMENT APPROACH CHARTS

4- TRAINING PROGRAMS

4. 3 STATUS OF THIS EAC

This is the first **E**AC to be issued on this subject.

4.4 AERONAUTICAL CHART DESIGN

4.1.4 BACKGROUND

4.4.1.1 The applicant for a certificate under ECAR Part 311 is required to supply sufficient information to ECAA to permit an application to be properly considered.

4.4.1.2 This **E**AC sets out the information that will normally be expected to be provided in support of an application.

4.4.1.3 Minimum qualification required:

1- Successful completion of ICAO course 022.
2- Successful completion of NOTAM position rating program and work for a period not less than one year at that position.

4.4.2 Rating Conditions:

1- Seminar training for 1 week in classroom.
2- on-job training for a period between 80/100 hours at a period not less than three months.
3- Validation: written, oral and practical examination.

4.4.3 INFORMATION TO BE SUPPLIED

4.4.3.1 General

An application shall include:

- Applicant's name
- Corporate structure and executive personnel
- Place of Business
- Summary of relevant experience
- Details of organizational structure
- Experience and qualifications of key personnel

4.4.3.2 Insurance

An applicant must supply details of the liability insurance cover that the applicant has or intends to obtain. An applicant who does not have adequate liability insurance provision may be considered by ECAA as unlikely to be a viable commercial organization, and therefore not an appropriate person to hold a certificate under ECAR Part 311.

4.4.3.3 Operations manual

A complete LCE (Local competency examination) is to be submitted for approval in accordance with the ECAR Part 311.

4.4.3.4 Verification

Standard operating procedures, including record keeping corrective actions should be appropriately detailed in the general directorate.

4.4.3.5 Organization

The operations manual must contain details of the aeronautical chart designer's organizational structure.

Details of the duties, responsibilities, and authority of each relevant position in the organization must be provided.

4.4.3.6 Personnel

The qualifications and experience of all aeronautical chart design staff should be included.

Where appropriate, or where personnel are not identified, job descriptions and/or selection criteria may be used to support the application.

4.4.4 Training and Checking Program

4.4.4.1 An applicant shall demonstrate that a suitable training and checking program is
Contained the following outline

4.4.4.2 ICAO SARPs related to the aeronautical charts

- General Specification
- Types of charts
- example for charts:-
  - Aerodrome Obstacle Chart : Type A (Operating limitations)
  - Aerodrome/Heliport Chart
  - Precision approach terrain chart
  - En route chart
  - Instrument Approach Chart
  - World aeronautical chart 1:1 000 000
- Principles of chart drawing

4.4.4.3 The program must ensure that staff proficiency is formally assessed at appropriate
intervals, and that adequate training is provided to ensure knowledge and skills in current and
new aeronautical chart.

4.4.5 Examples of product

4.4.5.1 An applicant shall provide for examination by ECCA at least two complete aeronautical chart designs of aeronautical chart type that the applicant intends to design.
Examples shall include full
documentation, including data, maps, and finished charts in the format required for publication.

4.4.5.2 ECAA will assess product examples to determine that aeronautical chart designs conform to ICAO
SARPs and ECAR Part 311 and that the designs are accurate and complete.

4.4.5.3 Where deficiencies are found in submitted examples, ECAA may require further
Examples to be supplied in accordance with ECAR Part 311

4.5 WATCH SUPERVISOR

4.5.1 BACKGROUND

4.5.1.1 The holder of a procedure design certificate is required under ECAR Part 311 and related air circular to appoint a Watch Supervisor and that appointment must be approved by ECAA.

44.5.1.2 This **E**AC sets out the information that is required to enable ECAA to consider an application for approval and the method ECAA may use to assess an application.

4.5.1.3 Minimum qualification required:

1- Successful completion of En route &Instrument Approach Charts position rating program and work for
a period not less than two years at that position.

2- The nomination by the general Manager by operating needs

3- Achieve the required standards in terms of seniority and competence

4.5.2 Rating Conditions:

1- Seminar training for 3 weeks in classroom.

2- Validation: written, oral and practical examination.

4.5.3 APPLICATIONS

4.5.3.1. An application may be made by an instrument flight procedure design organization that is the holder of a procedure design certificate, or has applied for a procedure design certificate.

4.5.3.2 The application must address all relevant requirements of ECAR Part 311 and related air circulars, and in
particular should specifically detail the manner in which the certificate holder will ensure that the Watch Supervisor's functions and duties are performed.

4.5.4 APPROVAL PROCESS

4.5.4.1 ECAA will consider an application for approval in two stages.

4.5.4.2 An initial assessment will be made of the written application. If it is determined from that assessment that the Watch Supervisor possesses appropriate qualifications and experience, ECAA will proceed to the second stage, which will be an interview.

4.5.5 ASSESSMENT

ECAA will assess the Watch Supervisor's qualifications & experience in the following areas:

QUALIFICATIONS	
Basic qualification	Evidence of completion of an approved PANS-OPS course Must be provided.
Advanced training	Evidence of advanced training must be provided. It is expected that a person appointed as Watch Supervisor will have completed a number of advanced or refresher courses after gaining the initial qualification. Details of attendance and participation in relevant Conferences including papers presented etc, should be included

.

RELEVANT EXPERIENCE:	
Procedure design	**Details of the Watch Supervisor's procedure design experience should be detailed. The Watch Supervisor must demonstrate experience in the design of each type of procedure for which he/she will be responsible. Experience shall be assessed by ECAA as sufficient for the Watch Supervisor to competently fulfill the duties and function of a Watch Supervisor. It is expected that the experience required for a Watch Supervisor to achieve competency would not normally be less than 2 years full-time experience in procedure design involving the design of a considerable number of individual procedures. The assessment of design experience relative to a particular type of procedure will take into account the number of approaches that an "experienced" designer is likely to design in the normal course of his/her duties. For example, the number of ILS designs that an "experienced" designer may have completed may be limited, but, taken in the context of the designer's overall experience, may be assessed an satisfactory. Similarly a designer may be "experienced" in new types of procedures that because of their recent development only a relatively small number of procedures have been designed.** **Design of procedures in other countries, and to other design criteria (e.g. PANS-OPS), may be taken into account in the assessment of the Watch Supervisor's overall experience, but ECAA must be satisfied that the Watch Supervisor possesses detailed knowledge and experience in PANS-OPS procedures and Egyptian design rules & procedures.** **In the case of a Watch Supervisor who has extensive experience but limited recent experience ECAA may take into consideration appropriate recent training or other measures that the Watch Supervisor has taken to ensure that he/she is fully conversant with current procedure design and has adequate recent "hands-on" design experience.**
Supervision & Management	**The role of Watch Supervisor involves accepting responsibility for the work of other persons, including designers, and the effective management of an organization and design work. A Watch Supervisor must demonstrate design experience in a supervisory role and/or equivalent supervisory or management experience in a related industry.**

Relevant operational experience.	It is expected that a Watch Supervisor will possess experience in a relevant operational environment enabling them to apply design criteria with due regard to operational circumstances. Suitable experience will include experience as an instrument rated pilot, or navigator on IFR operations. In cases where the Watch Supervisor does not have such experience, evidence must be produced to satisfy ECAA that equivalent other experience has been gained which enables the Watch Supervisor to properly fulfill all the duties of Watch Supervisor.
KNOWLEDGE: Note: The following criteria will normally be assessed during an interview.	
Current procedure design practices	A **Watch Supervisor must demonstrate a high standard of detailed knowledge in respect of instrument flight procedure design.**
Egyptian Operations	A Watch Supervisor must demonstrate a thorough knowledge of Egyptian operating rules & procedures as contained in the *Civil Aviation Act 128*, ECAR Part311 and related aircircular, AIP,
ECAR Part 311	**The Watch Supervisor must demonstrate a thorough knowledge of ECAA Part 311 – Instrument Flight Procedure Design, including the requirements for:** **Staff qualifications & minimum experience** **Supervision of staff** **Recency**
PANS-OPS	**Detailed knowledge in the principles and practice of design in accordance with the rules contained in ICAO Doc 8168 is required.**
Navigation Systems	**A Watch Supervisor must demonstrate a thorough understanding of the principles of operation of relevant ground and space-based navigation systems.**

Company operating procedures.	At **interview the Watch Supervisor must demonstrate that he/she is fully conversant with the company operations manual. In general it is expected that except, in matters of detail, the Watch Supervisor can demonstrate this knowledge without reference to the operations manual.** **The Watch Supervisor must demonstrate detailed knowledge of all company operating procedures including:** **Data management & control** **Verification of designs** **Record keeping** **Environmental requirements** **Publishing standards** **Validation requirements** **Procedure maintenance**
Company safety management system	A **Watch Supervisor must demonstrate a high standard of knowledge of and a commitment to the principle of a Safety Management System.** **The Watch Supervisor must have a thorough knowledge of the company safety management system and be able to discuss action appropriate to typical safety management issues.**
Responsibilities as Watch Supervisor	**The Watch Supervisor must have a thorough understanding of the responsibilities of a Watch Supervisor. The assessment will include the ability of the Watch Supervisor to manage staff, including unqualified persons and support staff, and to conduct periodic assessment of staff competence.**

4.5.6 APPROVAL

4.5.6.1 If ECAA approves an appointment the applicant will be advised in writing and the Watch Supervisor will be issued a notice of approval of appointment.

4.5.6.2 The notice of approval will contain:

- The name of the person appointed as Watch Supervisor
- The name of the organization holding a procedure design certificate in respect of which the appointment is made
- any conditions that ECAA may impose

4.5.6.3 The approval is not transferable.

4.5.6.4 The approval will remain valid unless withdrawn by ECAA, a person ceases to occupy the position of Watch Supervisor, or the Watch Supervisor ceases to be employed by the procedure design certificate holder specified in the notice of approval.

4.5.6.5 An appointment as Watch Supervisor will normally apply in respect of a single instrument flight procedure design organization. i.e. a person may not be the Watch Supervisor for more than one certificate holder.

4.5.7 REJECTION OF APPLICATION

4.5.7.1 ECAA will notify the applicant in writing if an appointment is not approved. The advice will state the qualification, experience, or knowledge areas that have been assessed as unsatisfactory.

4.5.7.2 An unsuccessful applicant may re-apply if additional evidence can be provided to rectify any deficiency in the original application.

4.6 EN ROUTE &INSTRUMENT

APPROACH CHARTS

4.6.1 BACKGROUND

4.6.1.1 The applicant for a certificate under ECAR Part 311 is required to supply sufficient information to ECAA to permit an application to be properly considered.

4.6.1.2 This **E**AC sets out the information that will normally be expected to be provided in support of an application.

4.6.1.3 Minimum qualification required:

1- Successful completion of ICAO course (PANS-OPS 155).
2- Successful completion of Aeronautical Charts Design position rating program and work for a period not less than two years at that position.

4.6.2 Rating Conditions:

1- Seminar training for 1 week in classroom.
2- on-job training for a period between 80/100 hours at a period not less than three months.
3- Validation: written, oral and practical examination.

4.6.3 INFORMATION TO BE SUPPLIED

4.6.3.1 General

An application shall include:

- Applicant's name
- Corporate structure and executive personnel
- Place of Business
- Summary of relevant experience
- Details of organizational structure
- Experience and qualifications of key personnel

4.6.3.2 Insurance

An applicant must supply details of the liability insurance cover that the applicant has or intends to obtain. An applicant who does not have adequate liability insurance provision may be considered by ECAA as unlikely to be a viable commercial organization, and therefore not an appropriate person to hold a certificate under ECAR Part 311.

4.6.3.3 Operations manual

A complete LCE (Local competency examination) is to be submitted for approval in accordance with

The ECAR Part 311.

4.6.3.4 Verification

Standard operating procedures, including record keeping procedures should be appropriately detailed in the company operating manual.

4.6.3.5 Organization

The operations manual must contain details of the designer's organizational structure. Details of the duties, responsibilities, and authority of each relevant position in the organization must be provided.

4.6.3.6 Personnel

The qualifications and experience of all design staff should be included. Where appropriate, or where personnel are not identified, job descriptions and/or selection criteria may be used to support the application.

4.6.4 Training And Checking Program

4.6.4.1 An applicant shall demonstrate that a suitable training and checking program is contained the following outline

4.6.4.2 **General Criteria and Conventional Practices**

- o ICAO's Standards and Recommended Practices
  - Overview of ICAO
  - Instrument procedure design and promulgation

- o General Criteria
  - Aircraft speeds: Indicated air speed and true air speed
  - Altitude and temperature effects
  - Descent and climb gradients and rates
  - Turn rates and radii
  - Procedure segments and parameters
  - Obstacle clearance principles
  - Establishing altitudes

- o Non-precision Approach
  - Navigation systems
  - Criteria for segments
  - Final approach
  - Obstacle clearance altitude/height
  - Missed approach
  - Practical design laboratory exercise

- o Precision Approach (Instrument and Microwave Landing System)
  - Facilities and equipment
  - Vertical path definition
  - Principles of precision approach

- Criteria for segments
- Precision segment
- Obstacle assessment surfaces
- Collision Risk Model
- Practical design laboratory exercise

o Instrument Departures: Conventional
- General principles and criteria
- Aircraft performance
- Departure types
- Areas and construction
- Obstacle evaluation
- Practical design exercise

4.6.4.3 The program must ensure that staff proficiency is formally assessed at appropriate intervals, and that adequate training is provided to ensure knowledge and skills in current and new procedures. Procedures must provide for records to be kept of checks completed, the results achieved and any remedial action or additional training provided to address any deficiency.

4.6.4.4 In the case of Chief Designers, suitable procedures shall be provided to ensure that the Chief Designer is able to maintain adequate skills and knowledge.

4.6.5 Examples of product

4.6.5.1 An applicant shall provide for examination by ECCA at least two complete designs of each type of procedure that the applicant intends to design. Examples shall include full documentation, including data, maps, computation sheets and finished charts in the format required for publication.

4.6.5.2 Samples of designs may include designs carried out in the normal course of the designer's business at locations inside Egypt, provided those examples are representative of work by current staff, and are designed to PANS-OPS criteria.

4.6.5.3 ECAA will assess product examples to determine that designs conform to ICAO PANS-OPS criteria and ECAR Part 311 and that the designs are accurate and complete.

4.6.5.4 Where deficiencies are found in submitted examples, ECAA may require further examples to be supplied in accordance with ECAR Part 311

4.7 TRAINING PROGRAMS

4.8.1.Flight Procedure Designer
4.8.1.1 BACKGROUND
4.8.1.1.1 General presentation of the training program

4.8.1.1.1.1 This program comprises training courses delivered by a training provider for initial, advanced, recurrent and refresher training and on-the-job training tutored by a qualified procedure design team. Ongoing competency-based assessments are conducted throughout the training program.

4.8.1.1.1.2 It is strongly recommended that the trainee puts into practice what has been learnt as soon as possible after completion of the training courses. It can be useless to attend a training program in procedure design if no application is planned in the short or medium term.

Note. — It is essential that procedure design be carried out by a team rather than a single person. A team approach is critical in ensuring that all points of view and assumptions are taken into consideration as well as to ensure quality.
Training flight procedure designers is a resource-intensive and lengthy exercise. Therefore, given the average expected duration of training, turnover should be limited as much as possible, as it will affect the efficiency and productivity of the flight procedure design team. It is suggested that a qualified procedure designer should work at least three years to balance the training cost. To limit this effect, it is recommended that the employing organization develop a recruitment plan, a training policy and a career development plan for procedure designers.

4.8.1.1.2 Training program goal
Once the trainee has completed the training program, he or she will be able to design IFR procedures, more specifically, non-precision approach procedures, precision approach procedures, standard instrument arrival (STAR), standard instrument departures (SID), using conventional means of navigation and RNAV information (VOR/DME, DME/DME, GNSS), RNP procedures and APV procedures, in accordance with standards specified in PANS-OPS (Doc 8168), Doc 9905 for RNP AR procedures, or any other applicable criteria.

4.8.1.1.3 Training program duration
The training program outlined in the example has a duration of approximately fifteen months, starting from ab initio training.

Note. — According to the employing organization's expectations, the training steps proposed here can be programmed in different ways, for instance, beginning with RNAV/RNP procedures.

4.8.1.2 TRAINING PROGRAM STEPS
Step 0 – AB INITIO
Location: Training provider, PDSPs.
Duration: One week. This duration depends on the entry level required.
Goal: Review basic knowledge and skills required for entry in initial training course.

Means: Pre-test at the beginning of the course to identify the level of skill and knowledge of each trainee and post ab initio training test to ensure trainees meet initial training entry levels. Lectures and practical exercises.

❖ ***Course Topics:***

– Mathematics
– System units
– Basics of navigation
– Basics of avionics
– Altimetry
– Cartography, scale, WGS-84 system, projection
– Computer science

Step 1 – INITIAL TRAINING

Location: Training provider, PDSPs.

Duration: Six weeks.

Goal: Design non-RNAV PA and NPA approach procedures and non-RNAV arrival and departure procedures.

Description:

A six-week course is provided in procedure design criteria NPA, PA, departure and arrival procedures for conventional means of navigation, finishing with a two-week practical work training period very close to "on-the-job" work. During the first four weeks of initial training in PANS-OPS, lectures and practical exercises are programmed to enable the trainees to acquire the knowledge and skills necessary to apply criteria for the design of the IFR non-RNAV procedures. During the last two weeks, the trainees will work in groups of two to perform the connection between STAR and approaches, then
to design one NPA and one PA and one SID procedure. Then they will have to write the associated report and produce the corresponding instrument approach charts, SID and STAR charts. Part of the training should emphasize the attitude of the procedure designers as team players and their skill at communicating and presenting their work.

Module (from Competency elements):

– Module 1: Design Non RNAV NPA
– Module 2: Design Non RNAV Arrival
– Module 3: Design Non RNAV PA
– Module 4: Design Non RNAV Departure

Teaching points (from the evidence and assessment guide in competency framework):

Module 1

– Fix and tolerance calculation
– Segment and protection area, MOC
– Initial segment (racetrack, reversal procedure…)
– Intermediate segment
– Connection between segment and turn protection
– Minimum altitude/procedure altitude computation
– Holding pattern
– NPA Straight in approach - final segment
– NPA missed approach
– OCH computation

– Circling
– Charting NPA – Annex 4
Module 2
– MSA
– En-route and arrival criteria
– Charting – Annex 4
Module 3
– Precision approach segment
– OAS, Basic ILS Surface, CRM
– Connection with intermediate segment
– PA missed approach
– OCH computation
– ILS GP inoperative
– Charting – Annex 4
Module 4
– Straight departure criteria
– Turning departure criteria
– Guided or dead reckoning track
– Omni directional departure
– Charting – Annex 4
Additional units:
– Annex 14 surfaces
– Pilot point of view: flight simulation

Assessment: Progress test and mastery tests administered as planned in the course module plan.

Expected level: In accordance with the competency standards set in the terminal objectives for initial
training.

Step 2 – ON-THE-JOB TRAINING – Initial

Location: On site, tutored by a qualified procedure designer or instructor in procedure design designated by the appropriate authority.

Duration: Fifteen weeks.

Goal: *Within the workplace, using the means available, improve the knowledge and skill on design of non-RNAV PA and NPA approach procedures and non-RNAV arrival and departure procedures in accordance with standards established in competency framework.*

Description: Under a tutorial frame.

– Under the supervision of an OJT instructor, the trainee will design one NPA and PA procedure taking into account constraints such as noise abatement, airspace management and the airline's request.

– The trainee should collect the data, design the selected procedures with the tools/means available at the local procedure design unit, and acquire the employing organization's method to integrate his/her work in the quality process, validation process and archiving process specific to the company/organization.

– As part of his/her OJT, the trainee can technically handle some issues related to continuous maintenance of SID and STAR.

Competency elements:

– Design non-RNAV SID, STAR, NPA, and PA.
Additional units:
– Use of the specific tools such as excel sheet, software, geodetic calculator.
– Use of the regulation documents, official websites dedicated to the activities.
Assessment: Ongoing assessment against performance criteria for each competency element as work is carried out.
Expected level: Non-RNAV NPA and PA can be designed for selected procedures in accordance with the terminal objective.
Step 3 – ADVANCED TRAINING I
Location: Training provider, PDSPs.
Duration: Three weeks.
Goal: Given a more constrained environment such as design procedures involving advanced criteria for departures and approach procedures in accordance with competency standards.
Description: During the first week of training, instructional events such as lectures and practical exercises will provide skill and knowledge. During the last two weeks, the trainees will work in teams of two to design procedures on an airport with an obstacle-rich environment and/or operational constraints. Sharing of experience with other procedure designers will be encouraged in order to facilitate learning.
Module (from Competency elements):
– Module 1: Departure for parallel runway
– Module 2: NPA in obstacle-rich environment
– Module 3: Non-standard ILS approaches
Teaching points (from the evidence and assessment guide in competency framework):
– For SID: Departure for parallel runways
– For NPA:
Use of step-down fixes in NPA Turn at the missed approach point
– For PA:
Missed approach procedure as soon as possible ILS with steep angle
Offset LOC
Additional unit:
– Noise abatement
– Airspace management
– Aeronautical study
Assessment: Progress test and mastery tests administered as planned in course module plan.
Expected level: Advanced criteria and design process for non-RNAV SID NPA and PA must be acquired in accordance with the standard specified in terminal objectives for this course.
Step 4 – ON-THE-JOB TRAINING – Advanced I
Location: On site, tutored by a qualified procedure designer or instructor in procedure design designated by the appropriate authority.
Duration: Twelve weeks.
Goal: Non-RNAV SID and STAR can be designed for selected procedures in accordance with competency standards.
Description:
– Under the supervision of an OJT instructor, the trainee will design a selected STAR and SID omnidirectional departure and arrival among the procedures to be reviewed.

– The trainee will participate with the OJT instructor in meetings and studies to be aware of and to take into account the constraints related to noise abatement, airspace management and airlines'
requests.
– The trainee should collect the data and design the selected procedures taking into account the constraints expressed.
– Comply with the quality process, validation process and archiving process specific to the company/organization.
– In the meantime, the trainee can technically deal with issues related to continuous maintenance of PA and NPA even in an obstacle-rich environment or constraining airspace.
Units of competency:
– Design non-RNAV SID/STAR Omni directional departure and arrival.
Additional units:
– Noise abatement
– Airspace management
– Aeronautical study
Assessment: Ongoing assessment against performance criteria for each competency element as work is carried out.
Step 5 – ADVANCED TRAINING II
Location: Training provider.
Duration: Three weeks.
Goal: The trainee will be able to design RNAV and RNP SID STAR NPA and Design RNAV (VOR/DME, DME/DME and GNSS) and RNP NPA SID and STAR.
Description: This course will be three weeks long and will consist of instructional events such as lectures, practical exercises and practical work conducted in teams of two. The flyability and efficiency of the RNAV/RNP procedure will be highlighted.
Module (from competency element):
Module 1: Design RNAV NPA based on sensor VOR/DME, DME/DME, GNSS
Module 2: Design RNAV terminal procedures (based on sensor)
Module 3: Design RNP procedures
Teaching points (from the evidence and assessment guide in competency framework):
– Nominal track: strategy, minimum length, path terminator, fly ability of a procedure, constraint, procedure altitude, minimum altitude
– T and Y concept
– Tolerance of the waypoint according to the different sensors
– Fly by turn followed by TF
– Fly-over turn followed by TF, DF
– Connection between segment for wide and small turn
– Protection area for each segment according to each sensor, e.g. initial, intermediate, final approach and missed approach
– Critical navaid assessment for DME/DME sensor
– Departure procedure
– Departure with a turning altitude followed by a DF path terminator
– Arrival criteria
– Terminal arrival altitude
– RNP criteria

– Charting criteria
– Waypoint coordinate calculation, resolution
– Data encoding information
Additional units:
– GNSS concept (ABAS, SBAS, GBAS)
– Information about the existing or ongoing system, time schedule
– Airworthiness information
– Pilot point of view: Flight simulation of the designed procedure in a flight simulator
– CDA (Continuous Descent Approach)
Assessment: Progress test and mastery tests administered as planned in course module plan.
Step 6 – ON-THE-JOB TRAINING – Advanced II
Location: On site, tutored by a qualified procedure designer or an instructor in procedure design designated by an appropriate authority.
Duration: Twenty weeks with a period of one week at the mid-point to attend the GBAS and APV Baro-VNAV, SBAS training course.
Goal: The trainees will be able to design different types of RNAV/RNP approaches and arrivals/ departures. Through this training, they will improve, practice and gain confidence in the application of RNAV procedure criteria.
Description:
– Under the supervision of an OJT instructor, the trainee will design a selected RNAV NPA, PA and APV approaches, SID and STAR among the procedures to be reviewed, or propose the study of the improvement of the airspace management by implementation of an RNAV/RNP procedure.
– The trainee should collect all the information by contacting and meeting with the ATC, airlines and airport authorities to define the present difficulties, analyses the issues and propose assumptions for enhancement of efficiency in the airspace management.
– The trainee should collect the data, design the selected procedures with the tools/means available at the local procedure design unit, present the solutions, and amendments if necessary, and integrate the work in the quality process, validation process and archiving process specific to the company/organization.
– In the meantime, the trainee can technically deal with issues related to continuous maintenance of NPA SID and STAR.
Units of competency:
– Design RNAV SID STAR NPA.
Additional units:
– Airspace management.
Assessment: Ongoing assessment against performance criteria for each competency element as work is carried out.
Step 7 – ADVANCED TRAINING III
Location: Training provider.
Duration: One week in the middle of the previous on-the-job training.
Goal: Design GBAS, APV Baro-VNAV, APV SBAS procedure.
Description: This course will be one week long and will consist of instructional events such as lectures, practical exercises and practical work conducted in teams of two.
Module (from units of competency in competency framework):
– Design APV SBAS final and missed approach segment
– Design APV Baro-VNAV final and missed approach segment

– Design GBAS final and missed approach segment
Teaching points (from the evidence and assessment guide in competency framework):
– GBAS OAS, basic surface, CRM
– SBAS OAS
– Extension of OAS
– VSS
– Baro VNAV surfaces
– Intermediate and final segment connection
– Straight-in missed approach
– FAS data block
– Data encoding
– Waypoint coordinate calculation, resolution
– Earth curvature impact
Additional units:
– Airworthiness information
– VNAV avionic information
– Pilot point of view: Flight simulation in a flight simulator of the designed procedure
Assessment: Progress test and mastery tests administered as planned in course module plan.
Step 8 – RECURRENT TRAINING
Goal: Maintain competency standards for newly developed procedure design features.
Description: Update knowledge according to each PANS-OPS (Doc 8168) amendment by following a seminar/course/workshop and by meeting procedure designers and sharing experiences.
Step 9 – REFRESHER TRAINING
Goal: Maintain and upgrade skills and knowledge in accordance with competency framework.
Description: Update knowledge and strengthen skill after a long period of non-application of specific
criteria.

4.8.2 AERONAUTICAL CHARTS

4.8.2.1 BACKGROUND

4.8.2.1.1 General presentation of the training program

The trainee must have basic aeronautical charting knowledge with a minimum of two years' experience in the civil aviation industry.

4.8.2.1.2 Training program goal

Once the trainee has completed the training program, he or she will be able to design all types of charts which included in annex 4.

4.8.2.1.3 Training program duration

The training program outlined in the example has a duration of approximately six weeks, starting from ab initio training.

4.8.2.2 TRAINING PROGRAM

Location: *Training provider.*

Duration: *One week. This duration depends on the entry level required.*

Goal: *Review basic knowledge and skills required for entry in initial training course.*

Means: *Pre-test at the beginning of the course to identify the level of skill and knowledge of each trainee and post ab initio training test to ensure trainees meet initial training entry levels. Lectures and practical exercises.*

4.8.2.3 COURSE TOPICS

4.8.2.3.1 General specifications

1. Operational requirements for charts
2. Titles
3. Miscellaneous information
4. Symbols
5. Units of measurement
6. Scale and projection
7. Date of validity of aeronautical information
8. Spelling of geographical names
9. Abbreviations
10. Political boundaries
11. Colors
12. Relief
13. Prohibited, restricted and danger areas
14. Air traffic services airspaces
15. Magnetic variation
16. Typography
17. Aeronautical data

4.8.2.3.2 Aerodrome Obstacle Chart - ICAO Type A (Operating limitations)

1. Function
2. Availability
3. Units of measurement
4. Coverage and scale
5. Format
6. Identification
7. Magnetic variation
8. Aeronautical data
9. Accuracy

4.8.2.3.3 Precision Approach Terrain Chart — ICAO

1. Function
2. Availability
3. Scale
4. Identification
5. Plan and profile information

4.8.2.3.4 En route Chart — ICAO

1. Function
2. Availability
3. Coverage and scale
4. Projection
5. Identification
6. Culture and topography
7. Magnetic variation
8. Bearings, tracks and radials
9. Aeronautical data

4.8.2.3.5 Standard Departure Chart — Instrument (SID) — ICAO

1. Function
2. Availability
3. Coverage and scale
4. Projection
5. Identification
6. Culture and topography
7. Magnetic variation
8. Bearings, tracks and radials
9. Aeronautical data

4.8.2.3.6 Standard Arrival Chart — Instrument (STAR) — ICAO

1. Function
2. Availability
3. Coverage and scale
4. Projection
5. Identification

6. Culture and topography
7. Magnetic variation
8. Bearings, tracks and radials
9. Aeronautical data

4.8.2.3.7 Instrument Approach Chart — ICAO

1. Function
2. Availability
3. Coverage and scale
4. Format
5. Projection
6. Identification
7. Culture and topography
8. Magnetic variation
9. Bearings, tracks and radials
10. Aeronautical data

4.8.2.3.8 Aerodrome/Heliport Chart — ICAO

1. Function
2. Availability
3. Coverage and scale
4. Identification
5. Magnetic variation
6. Aerodrome/heliport data

4.8.2.3.9 Aircraft Parking/Docking Chart — ICAO

1. Function
2. Availability
3. Coverage and scale
4. Identification
5. Magnetic variation
6. Aerodrome data

4.8.2.3.10 World Aeronautical Chart — ICAO 1:1 000 000

1. Function
2. Availability
3. Scales
4. Format
5. Projection
6. Identification
7. Culture and topography
8. Magnetic variation
9. Aeronautical data