Civil Aviation Safety Authority
of Papua New Guinea

Advisory Circular

AC173-6

Training Programme for Instrument Flight Procedure Design staff

Initial Issue

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GENERAL

Civil Aviation Authority Advisory Circulars (AC) contain information about standards, practices and procedures that the Director has found to be an Acceptable Means of Compliance (AMC) with the associated rule.

An AMC is not intended to be the only means of compliance with a rule, and consideration will be given to other methods of compliance that may be presented to the Director. When new standards, practices or procedures are found to be acceptable, they will be added to the appropriate Advisory Circular.

PURPOSE

This Advisory Circular provides specific guidance acceptable to the Director, for showing compliance with Civil Aviation Rule 173 Maintenance Requirements of Instrument Flight Procedures requirements and explanatory material to assist in showing compliance.

RELATED CAR

This AC relates to Civil Aviation Rule Part 173, specifically rules:

- 173.51(b) Personnel requirements
- 173.52 Training Programme
- 173 Appendix A — Qualifications and experience for senior persons, qualified designers and apprentice instrument flight procedure designers.

CHANGE NOTICE

There was no previous issue of this AC, consequently no change is in effect.

APPROVAL

This AC has been approved for publication by the Director of Civil Aviation

Table of Content

1. Subpart B — Certification Requirements

EM 173.51(b) Personnel requirements

These requirements are measures that ensure that all people, particularly senior staff, are well-equipped to handle their tasks, hence preserving the integrity of instrument flight procedures and ensuring that they are safe.

1. **Initial Assessment and Training Programme**:
   - **Purpose**: To ensure that all personnel involved in the planning, design, verification, and maintenance of instrument flight procedures are competent.
   - **Components**:
     - **Initial Assessment**: Evaluates the current skills and knowledge of personnel to identify any gaps.
     - **Training**: Provides the necessary education and practical experience to fill identified gaps. This includes understanding the principles of instrument flight procedures, regulatory requirements, and the use of relevant tools and software.
     - **Ongoing Competence**: Regular training sessions and assessments to ensure that personnel maintain their skills and stay updated with any changes in regulations or technology.

2. **Personnel Involved:**
   - **Rule 173.51(b)(1)**: Designers and Planners - Individuals who create and plan the instrument flight procedures.
   - **Rule 173.51(b)(1)**: Verification and Maintenance Staff - Those who check the accuracy and reliability of the procedures and ensure they are maintained correctly.
   - **Rule 173.51(b)(2)**: Certifying Personnel - Individuals authorised to certify that the procedures meet all necessary standards and regulations.

3. **Senior Personnel:**
   - **Role and Responsibilities**:
     - **Rule 173.51(b)(3)**: Planning and Supervision - Senior personnel are responsible for overseeing the planning and design activities. They ensure that all procedures are developed according to the required standards and regulations.
     - **Rule 173.51(b)(3)**: Conducting and Verifying Design Activities - They play a crucial role in conducting and verifying the design activities to ensure accuracy and compliance.
     - **Rule 173.51(b)(4)**: Certification - Senior personnel must be authorised to certify the instrument flight procedures. This involves a thorough understanding of the procedures and the ability to ensure they meet all regulatory requirements.
   - **Authorization**:
     - **Rule 173.56**: Specifies that senior personnel responsible for certification must be authorised. This ensures that only qualified individuals can certify the procedures, maintaining high safety and accuracy standards.

- **Training and Competence:**
    - **Initial Training**: Senior personnel must undergo initial training to understand their roles and responsibilities fully.
    - **Ongoing Training**: Regular training sessions to keep them updated with any changes in regulations, technology, or best practices.
    - **Assessment**: Continuous assessment to ensure they maintain the necessary competence to perform their duties effectively.

EM 173.52 Training Programme

Objective of this requirement is to ensure each assigned designer or person is trained and competent to perform their assigned duties and by incorporating these elements, you can ensure that your training policy & programme for Instrument Flight Procedure Designers meets the regulatory requirements and maintains high standards of training and competence.

Training Policy [173.52(a)(1)]

1. **Objectives**
    - **Enhance Skills**: Ensure that all personnel are equipped with the necessary skills to perform their duties effectively.
    - **Regulatory Compliance**: Maintain adherence to relevant regulations and standards.
    - **Safety and Efficiency**: Promote high standards of safety and operational efficiency.
2. **Methods**
    - **Classroom Instruction**: Provide theoretical knowledge through lectures and discussions.
    - **Hands-On Practice**: Facilitate practical training sessions to apply theoretical knowledge.
    - **Simulations**: Use simulated environments to mimic real-world scenarios for better preparedness.
    - **E-Learning Modules**: Offer online courses for flexible and accessible learning.
3. **Standards**
    - **Trainer Qualifications**: Ensure trainers have the necessary credentials and experience.
    - **Completion Criteria**: Define what constitutes successful completion of the training (e.g., exams, practical assessments).
    - **Evaluation Metrics**: Establish metrics to assess the effectiveness of the training programme (e.g., feedback surveys, performance reviews).

Training Programme Segments [173.52(a)(3)(4)(5)]

1. **Initial Training**
    - **Objective**: Equip new designers with foundational knowledge and skills.
    - **Content**:
        - **Basic Principles**: Introduction to instrument flight procedures (IFP) design, including relevant ICAO documents (e.g., Doc 8168, PANS-OPS).

- **Safety Protocols**: Training on safety measures and emergency procedures specific to IFP design.
- **Introductory Tasks**: Hands-on practice with basic IFP design tasks.

- **Assessment**: Written exams and practical assessments to ensure understanding and competence.

2. Advanced Training

- **Objective**: Enhance the skills of designers who have completed initial training.
- **Content**:
  - **In-Depth Technical Knowledge**: Detailed study of advanced IFP design concepts, including PBN (Performance-Based Navigation) and conventional navigation procedures.
  - **Specialized Tasks**: Training on complex IFP design tasks and problem-solving techniques.
  - **Regulatory Updates**: Keeping up-to-date with the latest regulations and standards.
- **Assessment**: Advanced practical assessments and scenario-based evaluations.

3. On-Job Training (OJT)

- **Objective**: Provide practical, hands-on experience under the supervision of experienced designers.
- **Content**:
  - **Real-World Application**: Applying theoretical knowledge in real-world IFP design scenarios.
  - **Mentorship**: Guidance and feedback from experienced designers.
  - **Problem-Solving**: Developing situational awareness and decision-making skills.
- **Assessment**: Continuous performance evaluations and feedback sessions.

4. Recurrent Training

- **Objective**: Ensure designers maintain their skills and knowledge over time.
- **Content**:
  - **Regular Updates**: Training on new IFP design procedures, technologies, and regulations.
  - **Refresher Courses**: Revisiting essential IFP design skills and knowledge.
  - **Performance Reviews**: Regular assessments to identify areas for improvement.
- **Assessment**: Periodic exams and practical assessments to ensure ongoing competence.

5. Refresher Training

- **Objective**: Reinforce and update the knowledge and skills of designers who may have been away from their duties.
- **Content**:

- **Review of Essential Skills**: Revisiting core IFP design concepts and procedures.
- **Updates on Changes**: Training on any changes in IFP design regulations, procedures, or technologies.
- **Re-Certification**: Ensuring designers meet current standards and requirements.

- **Assessment**: Re-certification exams and practical assessments.

Training Syllabus and Implementation [173.52(a)(4)&(5)]

1. **Syllabus**: Each segment must have a detailed syllabus that is acceptable to the Director. This should outline:
   - **Objectives**: Clear goals for what the training aims to achieve.
   - **Content**: Detailed topics and materials to be covered.
   - **Methods**: Instructional methods to be used (e.g., lectures, hands-on practice, simulations).
   - **Assessment Criteria**: How the trainees will be evaluated (e.g., exams, practical assessments).

2. **Implementation**: The training programme should be implemented according to periodic training plans, ensuring that all personnel receive the necessary training at appropriate intervals. This includes:
   - **Scheduling**: Regularly scheduled training sessions to ensure continuous learning.
   - **Tracking**: Keeping records of training completion and performance.
   - **Feedback**: Collecting feedback from trainees to improve the training programme.

Training Record Keeping [173.52(a)(6)]

1. **Procedures**: Establish procedures for maintaining up-to-date training records for all technical staff. These procedures should be in line with the requirements of rule 173.73 and acceptable to the Director.
   - **Content of Records**: Include details such as training dates, types of training completed, assessment results, and any certifications obtained.
   - **Accessibility**: Ensure records are easily accessible for review and audit purposes.
   - **Updates**: Regularly update records to reflect ongoing training and any new qualifications or certifications.

Training Facilities, Equipment, and Personnel [173.52(a)(7)]

1. **Facilities**: Ensure that training facilities are suitable for both theoretical and practical training sessions. This includes having adequate space, proper lighting, and necessary safety measures.
2. **Equipment**: Provide the necessary equipment for training, such as computers, simulation tools, and any specific instruments used in IFP design.
3. **Personnel**: Ensure that trainers and training checking personnel are qualified and acceptable to the Director. This includes having the necessary credentials, experience, and expertise in IFP design.

Training Programme Approval [173.52(a)(8)]

Approval Process: The training programme must be submitted for approval by the Director.

- **Submission**: Prepare and submit a detailed training programme, including objectives, methods, content, and assessment criteria as per stated above.
- **Review**: The Director will review the programme to ensure it meets all regulatory requirements and standards.
- **Feedback and Revisions**: Be prepared to make any necessary revisions based on feedback from the Director.
- **Final Approval**: Once all requirements are met, the Director will grant final approval for the training programme.

2. 173 Appendix A — Qualifications and experience for senior persons, qualified designers and apprentice instrument flight procedure designers.

EM A.1 Senior person to certify instrument flight procedures

To meet the requirements for a senior person to certify instrument flight procedures, the following training criteria must be fulfilled:

Training Requirements

1. **ICAO PANS-OPS Training Course**
   - **Completion**: The individual must have successfully completed an ICAO PANS-OPS training course or an equivalent course accepted by the Director.
   - **Course Content**: The ICAO PANS-OPS training typically covers:
     - **Basic Principles**: Definitions, abbreviations, units of measurement, and frame of reference.
     - **Fundamental IFP Design**: Criteria for en-route, arrival (STAR), departure (SID), MSA, holding, NPA, and ILS procedures based on ground navigation aids.
     - **Advanced Concepts**: Turn parameters, protection areas, and merging methods for different segments.
     - **Practical Application**: Design and cross-checking of conventional and PBN procedures, including VOR approaches and ILS CAT I procedures.
2. **Approved Training Programme (CAR 173.52)**
   - **Completion**: The individual must have satisfactorily completed an approved training programme as prescribed in CAR 173.52.
   - **Programme Segments**: The training programme should include:
     - **Initial Training**: Foundational knowledge and skills in IFP design.
     - **Advanced Training**: In-depth technical knowledge and specialized tasks.
     - **On-Job Training (OJT)**: Practical, hands-on experience under supervision.
     - **Recurrent Training**: Regular updates and refresher courses to maintain skills.
     - **Refresher Training**: Reinforcement and updates for personnel returning to duty.

- **Syllabus**: Each segment must include a detailed syllabus acceptable to the Director, outlining objectives, content, methods, and assessment criteria.
- **Implementation**: The training programme must be implemented according to periodic training plans and approved by the Director.

EM A.1 Qualified Designers

To ensure that designers are qualified under rule 173 A.2, the following training requirements must be met:

Training Requirements

1. ICAO PANS-OPS Procedures Design Training Course

- **Completion**: Designers must satisfactorily complete an approved ICAO PANS-OPS procedures design training course.
- **Course Content**: This course typically includes:
  - **Basic Principles**: Definitions, abbreviations, units of measurement, and frame of reference.
  - **Fundamental IFP Design**: Criteria for en-route, arrival (STAR), departure (SID), MSA, holding, NPA, and ILS procedures based on ground navigation aids.
  - **Advanced Concepts**: Turn parameters, protection areas, and merging methods for different segments.
  - **Practical Application**: Design and cross-checking of conventional and PBN procedures, including VOR approaches and ILS CAT I procedures.

2. Equivalent Training Course

- **Completion**: Alternatively, designers can complete a training course that is acceptable to the Director as equivalent to the ICAO PANS-OPS course.
- **Course Content**: The equivalent course should cover similar topics and provide the same level of knowledge and skills as the ICAO PANS-OPS course.

3. In-Service Training in Procedures Design

- **Completion**: Designers must satisfactorily complete a course of in-service training in procedures design as detailed in the designer's operations manual.
- **Content**: This in-service training should include:
  - **On-the-Job Training (OJT)**: Practical experience under the supervision of experienced designers.
  - **Mentorship**: Guidance and feedback from senior designers.
  - **Continuous Learning**: Regular updates on new procedures, technologies, and regulations.
- **Documentation**: The operations manual should detail the specific requirements and procedures for in-service training.