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Doc 10068

# Manual on the Development of a Regulatory Framework for Instrument Flight Procedure Design Service

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First Edition (advance unedited) — 2018

INTERNATIONAL CIVIL AVIATION ORGANIZATION



Published in separate Arabic, Chinese, English, French, Russian and Spanish editions by the  
INTERNATIONAL CIVIL AVIATION ORGANIZATION  
999 Boulevard Robert-Bourassa, Montréal, Quebec, Canada H3C 5H7

For ordering information and for a complete listing of sales agents and booksellers, please go to the  
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Advance edition (unedited)

*Doc 10068, Manual on the Development of a Regulatory Framework  
for Instrument Flight Procedure Design Service*

Order Number: 10068

ISBN [TBD]

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## FOREWORD

The instrument flight procedure (IFP) is an essential component of the aviation system. Every day, thousands of aircraft around the world are flying instrument departure, arrival or approach procedures to airports in every country. It is a responsibility of the International Civil Aviation Organization (ICAO) Member States to provide an instrument flight procedure design service (IFPDS) so operators are able to fly safe and effective IFPs.

However, many States are still struggling with the implementation of an IFPDS. Contributing to this is the lack of a standardized ICAO regulatory framework for the service, as well as guidance material to support this. As a result, in some States, instrument flight procedures are developed and published without appropriate regulatory involvement by the State and in some cases may even be completely unregulated.

To address this, ICAO adopted Standards and Recommended Practices (SARPs) in Annex 11 — *Air Traffic Services* regarding State responsibility for an IFPDS. This manual provides guidance on how a regulatory framework for the provision of an IFPDS may be implemented. This guidance material aims to enhance compliance with the IFPDS SARPs found in Annex 11.

Chapter 2 of this document provides guidance for States on developing a regulatory framework for the provision of an IFPDS. The responsibilities of States (as per Annex 11) are reviewed (Section 2.1) followed by a description of the components which comprise the regulatory framework to be established by States (Attachment to Chapter 2).

Chapter 3 of this document provides guidance for service provider(s) on developing their work procedures (Sections 3.2 and 3.3). In addition, other issues concerning quality assurance (Section 3.4), training and qualification of personnel (Section 3.5) and safety management system (SMS) (Section 3.6) are addressed.





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# GLOSSARY

## DEFINITIONS

**Certification.\*** An authoritative confirmation of meeting specific standards.

**Competency.** A dimension of human performance that is used to reliably predict successful performance on the job.

**Flight procedure designer.\*** A person responsible for flight procedure design who meets the competency requirements as laid down by the State.

**Flight procedure design process.** The process which is specific to the design of instrument flight procedures leading to the creation or modification of an instrument flight procedure.

**Flight procedure inspectorate (FPI).** A State entity designated to carry out the safety oversight activities in the area of development and maintenance of visual and instrument flight procedures.

**Flight procedure inspectorate staff.** A person responsible for the oversight of the process of development and maintenance of visual and instrument flight procedures.

**Instrument flight procedure design service (IFPDS).\*** A service established for the design, documentation, validation, continuous maintenance and periodic review of instrument flight procedures necessary for the safety, regularity and efficiency of air navigation.

**Instrument flight procedure design service provider (IFPDSP).** A body that provides an IFPDS.

**Validation.\*** Confirmation, through the provision of objective evidence, that the requirements for a specific intended use or application have been fulfilled (ISO 9000\*).

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\* These terms have been defined in other ICAO documents.

## ABBREVIATIONS AND ACRONYMS

AC	Advisory Circular
AIP	Aeronautical Information Publication
AIS	Aeronautical Information Service
ANSP	Air Navigation Service Provider
CAA	Civil Aviation Authority
CFR	Code of Federal Regulations
FMS	Flight management system
FPD	Flight procedure design
FPI	Flight Procedure Inspectorate
FPIS	Flight Procedure Inspectorate staff
IFP	Instrument flight procedure
IFPDS	Instrument flight procedure design service
IFPDSP	Instrument flight procedure design service provider
QM	Quality manual
QMS	Quality management system
SARPs	Standards and Recommended Practices

# Chapter 1

## INTRODUCTION

### 1.1 GENERAL

1.1.1 This document provides guidance material for States on developing a State safety regulatory and oversight framework for the provision of an instrument flight procedure design service (IFPDS).

1.1.2 This document also provides guidance material for the related service providers in developing their work procedures and operations manual. It should be noted that the State oversight and procedure design service provision are two separate components which should work in collaboration to ensure the safe development and maintenance of IFPs.

### 1.2 ICAO STANDARDS FOR AN IFPDS

1.2.1 Annex 11 — *Air Traffic Services*, Chapter 2, paragraph 2.33, and Appendix 8 contain the ICAO provisions concerning the State safety oversight function in the area of IFPDS.

1.2.2 Appendix 8 of Annex 11 stipulates that States may choose to implement IFPDS in the following manner:

- a) provide an instrument flight procedure design service; and/or
- b) agree with one or more other Member State(s) to provide a joint service; and/or
- c) delegate the provision of the service or a part of the service to non-governmental agency(s).

1.2.3 The manner in which the IFPDS is implemented should be described in the State's regulations.

### 1.3 APPROVAL AND RESPONSIBILITY OF IFPs

1.3.1 In all cases in paragraph 1.2.1 above, the State concerned approves and remains responsible for all instrument flight procedures for aerodromes and airspace under the authority of the State. It should be noted that cases b) and c) are not about the delegation of responsibility, but the delegation of the IFPDS function.

1.3.2 The process by which a State meets its obligation to approve and remain responsible for all IFPs will be documented in the State's regulations.

1.3.3 In some States, there may be IFPs that are only available to operators with special authorization for use. The State concerned remains responsible for such IFPs.

### 1.4 DESIGN CRITERIA

1.4.1 Instrument flight procedures must be designed in accordance with the State-approved design criteria. *Procedures for Air Navigation Services — Aircraft Operations*, Volume II — *Construction of Visual and Instrument*

*Flight Procedures* (PANS-OPS, Doc 8168) provides a globally applicable set of criteria for IFPD that should be transposed in the State's regulations.

1.4.2 Deviations from PANS-OPS, Volume II criteria should be promulgated in the State's regulations and published in the State AIP in accordance with Annex 15 — *Aeronautical Information Services*.

## 1.5 STATE SAFETY OVERSIGHT

1.5.1 Each State must ensure that service provider(s) providing IFPDS as in paragraph 1.2.1 above (or part of the service) intending to design an instrument flight procedure for aerodromes or airspace under the responsibility of that State meets the requirements established by that State's regulatory framework.

1.5.2 When a State conducts instrument flight procedure design service (IFPDS) itself, the safety oversight should be functionally separated from the State's service provision.

## 1.6 SAFETY RISK ASSESSMENT

1.6.1 A safety risk assessment of an IFP is considered completed when the IFPD is in compliance with the State regulatory framework.

1.6.2 A safety risk assessment must be conducted when there is a deviation from the State regulatory framework.

## 1.7 QUALITY MANAGEMENT SYSTEM

A State must ensure that service provider(s) providing IFPDS as in paragraph 1.2.1 above (or part of the service) implements a quality management system at each stage of the instrument flight procedure design process.

*Note.— This requirement can be met by means of a quality assurance methodology, such as that described in PANS-OPS, Volume II, Part I, Section 2, Chapter 4 — Quality Assurance. Guidance for implementing such a methodology is contained in the Quality Assurance Manual for Flight Procedure Design (Doc 9906).*

## 1.8 CONTINUOUS MAINTENANCE AND PERIODIC REVIEW

A State must ensure that continuous maintenance and periodic review of instrument flight procedures for aerodromes and airspace under the responsibility of the State are conducted. Each State must establish an interval for periodic review of instrument flight procedures not exceeding five years (Annex 11).

*Note.— Guidance on continuous maintenance and periodic review is contained in Doc 9906.*

## 1.9 SCHEME FOR THE PROVISION OF IFPDS

Many options can be applied to the scheme for the provision of service. An IFPDSP may be a part of the State organization, the ANSP, an independent provider, or a mixture of these. Additionally, an IFPDS may be conducted jointly by multiple States however, it is emphasized that, in all cases, the State remains responsible for all instrument flight procedures for the aerodromes and airspace under its responsibility.

## **1.10 TARGET AUDIENCE OF THE MANUAL**

1.10.1 This manual is intended but not limited to be used by:

- a) State authorities responsible for the safety oversight of an IFPDS; and
- b) IFPDSP.

### **1.10.2 State Authority**

A State authority can utilize this manual as a guideline in establishing a regulatory framework for the oversight of a service provider, including certification, approval and audit. Chapter 2 of this manual provides information intended to be used by the State authority.

### **1.10.3 Service Provider**

A service provider can utilize this manual as a guideline in establishing its organization, procedures and operations manual, etc. Chapter 3 of this manual provides information intended to be used by a service provider. Chapter 2 can be utilized for preparation of an audit by the State authority.

## **1.11 GOAL OF THE MANUAL**

1.11.1 The primary goal of this manual is to provide guidance to State safety oversight authorities in the development of a regulatory framework for the provision of IFPDS and its safety oversight.

1.11.2 A secondary goal of this manual is to provide guidance to IFPD service providers in the development of their organization and working procedures. The established regulatory framework and the practices and procedures of the service providers are inseparably related. Practices and procedures are to be developed in accordance with the established regulatory framework. For this reason, it is essential that a State authority have knowledge of the practices and procedures used by service providers. Chapter 3 provides the State authority with introductory information on such practices and procedures.

1.11.3 This manual provides a typical regulatory framework for the establishment and provision of an instrument flight procedure design service. In general, any regulatory framework established in accordance with this manual can be an acceptable means, but not the only means, of compliance with the IFPDS SARPs stipulated in Annex 11. States are encouraged to establish their regulatory framework by taking into consideration their specific circumstances.

## **1.12 STRUCTURE OF THE MANUAL**

1.12.1 This manual consists of the chapters described below.

1.12.2 Chapter 1, Introduction, provides introductory information on the manual: target audiences, goals, structure, and how to use the manual.

1.12.3 Chapter 2, State Safety Oversight Function, provides guidance material for the State safety oversight authorities. First it provides an overview of the IFPDS responsibilities as provided in Annex 11. Then it provides a description of the regulatory framework to be established by States to meet the requirements of Annex 11.

1.12.4 Chapter 3, Service Provider Function, provides guidance material for a service provider. This chapter describes the process and procedures to be developed by a service provider. This chapter also includes a basic description of the work items of service providers. More detailed information on the work process is found in Doc 9906, Volume 1 — *Flight Procedure Design Quality Assurance System* and Volume 5 — *Validation of Instrument Flight Procedures*.

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# Chapter 2

## STATE SAFETY OVERSIGHT FUNCTION

### 2.1 STATE SAFETY OVERSIGHT SYSTEM

2.1.1 A State Safety Oversight (SSO) System consists of eight critical elements (CE) as described in the *Safety Oversight Manual* (Doc 9734), Part A — *The Establishment and Management of a State's Safety Oversight System*, Chapter 3. The following sections provide guidance on each of the critical elements.

#### 2.1.2 CE-1: Primary legislation (ref Doc 9734, Part A, Section 3.2)

2.1.2.1 States must promulgate a comprehensive and effective aviation law, commensurate with the size and complexity of their aviation activity and consistent with the requirements contained in the Convention on International Civil Aviation to enable the oversight and management of civil aviation safety and the enforcement of regulations through the relevant authorities or agencies established for that purpose.

2.1.2.2 It is recommended that a State provide a high-level statement in its legislation that should clearly establish the responsibility of the State for the safety of instrument flight procedures for the aerodromes and airspace under its authority.

#### 2.1.3 CE-2: Specific operating regulations (ref Doc 9734, Part A, Section 3.3)

2.1.3.1 States must promulgate regulations to address, at a minimum, national requirements emanating from the primary aviation legislation for standardized operational procedures, products, services, equipment and infrastructures in conformity with the Annexes to the Convention on International Civil Aviation.

2.1.3.2 The specific operating regulations for IFPDS should include but are not limited to:

- a) transposition of the relevant provisions of Annex 11, PANS-OPS, Volume II, Annex 4 — *Aeronautical Charts* and Annex 15. Where appropriate, such regulations could be separate national documents equivalent to each ICAO Annex and PANS, or could be transposed into one national document the ICAO provisions from several Annexes and PANS;
- b) administrative arrangements on the roles of the State authority and IFPDSPs, including the process of IFPs approval for publication;
- c) State-approved IFP design criteria. A statement for the adoption of PANS-OPS, Volume II is sufficient with a list of deviations from it, or other State approved design criteria;
- d) general regulatory criteria to develop procedures for the establishment of aerodrome operating minima, if applicable;
- e) QMS requirements as per PANS-OPS and Doc 9906;
- f) qualification and competencies for IFPDSPs and FPI;
- g) requirements for periodic reviews and continuous maintenance of IFPs;

- h) requirements for ground and flight validations of IFPs; and
- i) State surveillance processes (planning inspections, audits, and monitoring activities) of IFPDSPs.

*Note 1.— The term “regulations” is used in a generic sense, and includes but is not limited to, instructions, rules, edicts, directives, sets of laws, requirements, policies and orders.*

*Note 2.— The State is not required to establish State minima. However, once State minima are established, they must be promulgated by the State AIP, AD 1.1.4, “Aerodrome operating minima” (Annex 15, Appendix 1).*

*Note 3.— Sample State regulations can be found in the attachment to Chapter 2, Sample State Regulations.*

#### 2.1.4 CE-3: State civil aviation system and safety oversight functions (ref Doc 9734, Part A, Section 3.4)

##### 2.1.4.1 *General requirements*

2.1.4.1.1 States must establish relevant authorities or agencies, as appropriate, supported by sufficient and qualified personnel and provided with adequate financial resources for the management of safety of flight operations. States authorities or agencies must have stated safety functions and objectives to fulfil their safety management responsibility.

2.1.4.1.2 A State can establish the Flight Procedure Inspectorate (FPI) within a State authority or agency, or delegate this function to another Member State or group of States as defined within its regulatory framework. Such delegation of functions must be appropriately documented with roles and responsibilities clearly described. The delegating State should establish mechanisms to ensure that the State accepting the delegated responsibilities complies with the established regulations.

2.1.4.1.3 The State oversight function must be performed by the FPI in accordance with the State regulatory framework (oversight at the products and/or process level).

##### 2.1.4.2 *Functions and responsibilities of the FPI personnel*

2.1.4.2.1 In general terms, the FPI is responsible for the oversight of the development, maintenance and approval process for the flight procedures of an IFPDSP(s).

2.1.4.2.2 The FPI functions and responsibilities should be clearly defined and documented.

2.1.4.2.3 The FPI should be provided with the necessary resources, both human and financial to be able to effectively carry out oversight obligations on behalf of the State.

2.1.4.2.4 The FPI should be provided with a job description(s) that reflects its duties.

2.1.4.2.5 The FPI could be assigned other regulatory tasks of the civil aviation system. Sometimes the FPI functions are merged with the inspectorate for Annex 4 and Annex 15 domains.

### 2.1.4.3 Resources for FPI

2.1.4.3.1 Funding levels should be adequate to enable the FPI to effectively fulfil the functions and responsibilities set by the government, including obligations imposed by other legislation.

*Note.— In some States, cost for the activities of the FPI is compensated from fees paid by the service providers for certifications, surveillance activities, etc.*

## 2.1.5 CE-4: Qualification and training of FPI staff (ref Doc 9734, Part A, Section 3.5)

2.1.5.1 States must establish minimum qualification requirements for the technical personnel performing safety-related functions and provide for appropriate training to maintain and enhance their competence at the desired level.

2.1.5.2 The State must ensure that the established qualifications and experience requirements are met by all FPI staff.

2.1.5.3 The State authority should have a training programme for FPI staff within an established period. Such training should include initial, advanced, recurrent, refresher and on-the-job training (OJT).

2.1.5.4 The training programme must be appropriately implemented in accordance with periodic training plans detailing and prioritizing the type of training needed over a specified time frame.

2.1.5.5 All FPI staff must complete OJT prior to assignment of tasks and responsibilities. The OJT should be provided by senior, more experienced, FPI staff.

2.1.5.6 The State must ensure that the FPI has a system to maintain training records.

### 2.1.5.5 FPI staff competency

In general, competencies required for FPI staff are as follows:

- a) technical expertise as a civil aviation safety inspector which requires the capability to apply and improve technical knowledge and skills to perform safety oversight duties for IFPDS; and
- b) expertise in instrument flight procedure design to optimize the quality of the safety oversight duties for IFPDS.

*Note.— For more detailed information on the competency for instrument flight procedure design, also refer to Doc 9906, Volume 2 — Flight Procedure Designer Training (Development of a Flight Procedure Designer Training Programme).*

## 2.1.6 CE-5: Technical guidance, tools and provision of safety critical information (ref Doc 9734, Part A, Section 3.6)

2.1.6.1 States must provide appropriate facilities, comprehensive and up-to-date technical guidance material and procedures, safety-critical information, tools and equipment, and transportation means, as applicable, to the technical personnel to enable them to perform their safety oversight functions effectively and in accordance with established procedures in a standardized manner.

2.1.6.2 States must provide technical guidance to the aviation industry on the implementation of relevant regulations.

2.1.6.3 Such material should include information on how to process an application for initial compliance of IFPDSP, including detailed procedures and checklists, which depending on the national regulations may take the form of a “certification”. Procedures and checklists for ongoing surveillance activities, e.g. inspections, audits, should be another element of such guidance material. The third component would be the procedures and checklists to be used by the FPI in the process of approving IFPs for publication. The State’s technical guidance should also include guidance on the implementation of applicable regulations, instructions and directives. A FPI handbook is a useful tool that should be developed to include all above-mentioned material.

*Note.— Among sample regulations in one State (Table 2A-1), Order 8260.43B, Order 8900.1 and Order FS 8260.57 include technical guidance for a State’s regulatory authority.*

2.1.6.4 The FPI should be provided with adequate tools to enable the effective accomplishment of its tasks, such as transportation as applicable, adequate offices, telephones and other communication facilities. Access to the Internet to supplement a technical library has become a necessity in today’s world of information and communication technology.

#### 2.1.7 CE-6: Licensing, certification, authorization and approval obligations (ref Doc 9734, Part A, Section 3.7)

2.1.7.1 States must implement documented processes and procedures to ensure that individuals and organizations performing an aviation activity meet the established requirements before they are allowed to exercise the privileges of a licence, certificate, authorization and/or approval to conduct the relevant aviation activity.

2.1.7.2 Although there is no ICAO provision for certification of IFPDSPs, States prior to designating an IFPDSP should ensure that the service provider complies with the regulatory requirements in force. The IFPDSPs is then subject to continuing surveillance to ensure that the requirements continue to be met.

2.1.7.3 Unsatisfactory conditions noted by the FPI should be brought to the attention of the applicant. In the case of deficiencies or weaknesses, an opportunity should be provided for the applicant to correct the problem, and the applicant should be given an opportunity to re-apply. All discrepancies and items of non-compliance must be corrected or resolved to the satisfaction of the FPI prior to the issuing of a licence, certificate, authorization and/or approval to conduct the relevant aviation activity.

2.1.7.4 As part of this process, States should establish, within their regulatory framework, standards for the required competency level for technical personnel in charge of flight procedure design, flight validation, etc.

2.1.7.5 The State should ensure that a service provider develops a job description, training programme, training plan and maintains training records for its flight procedure designers and flight validation pilots.

*Note.— See Doc 9906, Volume 2 for guidance on flight procedure designer training, and Volume 6 for guidance on flight validation pilot training.*

#### 2.1.8 CE-7: Surveillance obligations (ref Doc 9734, Part A, Section 3.8)

2.1.8.1 States must implement documented surveillance processes, by defining and planning inspections, audits, and monitoring activities on a continuous basis, to proactively assure that aviation licence, certificate, authorization and/or approval holders continue to meet the established requirements. This includes the surveillance of personnel designated by the Authority to perform safety oversight functions on its behalf.

2.1.8.2 As part of the IFPDSP surveillance activities, the FPI must establish periodic surveillance plans. The surveillance activities should be carried out using standardized procedures and checklists. Among other items, the procedures and checklists should pay particular attention to the following:

- a) **Design criteria:** The State must ensure that a procedure design service provider designs procedures in accordance with the design criteria promulgated by the State.

- The State must ensure that the service provider responsible for developing flight procedures establishes obstacle clearance altitudes/heights (OCA/H) in accordance with the State-approved design criteria.

*Note.— This requirement is normally accomplished through the verification of design documents and related evidences (“Oversight by Process”). However, the State may also check the output itself by other means such as flight validation (“Oversight by Output”).*

- Where aerodrome operating minima have been established by the State, the State must ensure that the service provider responsible for developing flight procedures has established specific operating minima (e.g. visibility, minimum descent altitude/height (MDA/H), decision altitude/height (DA/H)) for the IFPs developed at aerodromes.

- b) **Quality management system (QMS):** The State must ensure that the QMS used by the service provider responsible for developing flight procedures is effective. To be effective, a systemic quality assurance process should be part of this system. Data quality management, personnel training, and validation of software are all integral elements of a quality assurance programme.

*Note.— Guidance material on quality assurance may be found in Doc 9906.*

The State must ensure that a service provider retains all procedure design documentation for which it is responsible, so as to allow any data anomalies or errors found during the production, maintenance or operational use of the procedure to be corrected in accordance with the State’s regulatory framework.

- c) **Continuous maintenance and periodic review:** Oversight functions are applied even after the initial promulgation of flight procedures. The State must ensure that published IFPs are maintained continuously and reviewed periodically to ensure they continue to comply with current criteria and user requirements assessed.

*Note.— Depending on the regulatory framework applied in each State, different organizations may take responsibility for continuous maintenance and periodic review.*

- d) **Oversight of the validation process:** As part of the quality assurance process, a State should ensure that a validation process is conducted for IFPs. The validation process is subdivided into ground validation and flight validation.

*Note.— Guidance material on validation may be found in Doc 9906.*

#### 2.1.9 CE-8: Resolution of safety concerns (ref Doc 9734, Part A, Section 3.9)

2.1.9.1 States must use a documented process to take appropriate actions, up to and including enforcement measures, to resolve identified safety issues. States must ensure that identified safety issues are resolved in a timely manner through a system which monitors and records progress, including actions taken by individuals and organizations performing an aviation activity in resolving such issues.

2.1.9.2 The State should establish within the regulatory framework:

- a) a mechanism/system with a timeframe for elimination of any deficiency identified by the FPI; and
- b) the authority and responsibility to suspend or revoke the FPD privileges, if a deficiency is not corrected within the established timeframe.

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## **Attachment to Chapter 2**

### **SAMPLE STATE REGULATIONS**

The following is a list of the regulations, including the primary legislation and operating regulations, for the IFPDS and its oversight of one State.

**Table 2A-1: The Regulations for an Instrument Flight Procedure Design Service of One State**

Title	Explanation
Title 14 CFR*, Part 77, Objects Affecting Navigable Airspace	Primary law on the restriction of obstacle affecting the safety of aircraft operations in the vicinity of aerodrome, etc., including obstacle limitation surface.
Title 14 CFR*, Part 97, Instrument Flight Procedures	Primary law stipulating the responsibility by the State on Instrument Flight Procedure Design Service.
Order 8360.3B, United States Standard for Terminal Instrument Procedures (TERPS)	Design criteria by the States. (There are other regulations providing design criteria besides this, but not listed here.)
Order 8260.19F, Flight Procedures and Airspace	Operating procedures by the State's IFPDS function.
Order 8260.43B, Flight procedures Management Program	This document describes how to request design, validation, revision or abolishment of instrument flight procedures to the State Authority. It also provides policy for the State Authority in coordination, approval and prioritization of such request.
Order 8900.1 Flight Standards Information Management System (FSIMS), Volume 11, AFS Program, Chapter 12, Instrument Flight Procedure Validation	This document includes operating procedures on the provision of flight validation service (Section 1) and on the certification of FVSP (Section 2) in the State, specifically for the regulator, as follows : - Section 1, Requirements to Conduct an Instrument Flight Procedure Validation; - Section 2 Issue a Letter of Authorization to Conduct an Instrument Flight Procedure Validation. (See also AC 90-113 for related information for service providers.)
Order FS 8260.57, Oversight of Third Party Instrument Flight Procedure Service Providers	Guidelines for State's regulatory functions on the process of oversight and audit of third party PDSP and FVSP.
Order 8260.60 Special Instrument Procedures	Operating procedures for the development (including validation), processing and maintenance of special instrument procedure (private procedure), for State's regulator. (See also AC 90-112 for related information for service providers.)
AC 90-110 Authorization Guidance for Development of Required Navigation Performance Procedures with Authorization Required by Third Party Instrument Flight Procedure Service Providers	Applicable means of compliance for the approval of third party FPDSP designing RNP AR APCH.
AC 90-112 Development and Submission of Special Instrument Procedures to the FAA	Operating procedures for the development (including validation), processing and maintenance of special instrument procedure (private procedure), for service providers. (See also Order 8260.60 for related information for State's regulator.)
AC 90-113, Instrument Flight Procedure Validation (IFPV) of Satellite Based Instrument Flight Procedures (IFP)	Applicable means of compliance for FVSP for the establishment of their operating framework and work procedures. (See also Order 8900.1).

\*: Code of Federal Regulations



# Chapter 3

## SERVICE PROVIDER FUNCTION

### 3.1 GENERAL

3.1.1 This chapter provides guidelines for service providers, conducting IFPDS or a part of it, in developing their process, procedures and organizations, in accordance with SARPs, PANS and State regulations. It should be emphasized that IFPDSPs and safety service office (SSO) authorities are partners that in collaboration ensure the safety and quality of IFPDS. IFPDSPs need to clearly understand the roles of SSO authorities and their expectations for service providers. This would allow IFPDSPs to better prepare their processes and documentation to be able to demonstrate to the SSO authorities that the established requirements are met on an initial and ongoing basis.

### 3.2 PROCESS AND PROCEDURES TO BE ESTABLISHED FOR A SERVICE PROVIDER

3.2.1 The service provider(s) should establish its own process and procedures in accordance with the States' regulatory framework. If no specific State regulatory framework exists, the process and procedures should be established in accordance with SARPs and PANS. Doc 9906, Volume 1 provides guidelines for establishing a FPD process.

#### 3.2.2 Operations manual

3.2.2.1 An organization responsible for the service provision should establish its own operations manual in accordance with the State regulatory framework. The following is a sample of the contents of an operations manual for a service provider. The operations manual should be customized to the unique qualities of each organization.

**Table 3-1: Sample contents of an operations manual for a service provider**

PART / Chapter	Contents	Reference
PART I Administrative		
Chapter 1 Responsibility for revision of the operations manual	<ul style="list-style-type: none"> <li>● Describe               <ul style="list-style-type: none"> <li>➢ Under whom the operations manual is established</li> <li>➢ Who is responsible for the technical contents</li> </ul> </li> <li>● Version control</li> </ul>	
PART II General and Organization		
Chapter 1 General	<ul style="list-style-type: none"> <li>● Purpose of the operations manual</li> <li>● Precedence of the operations manual</li> <li>● Scope of the operations manual</li> <li>● Functions to be performed by the service provider</li> </ul>	

Chapter 2 Roles and responsibilities	<ul style="list-style-type: none"> <li>● Describe the roles and responsibilities of the department, section and / or position (Paragraphs for each department, section and/or position follow.)</li> </ul>	
Chapter 3 Staffing requirement	<ul style="list-style-type: none"> <li>● Describe the staffing requirements such as: <ul style="list-style-type: none"> <li>➢ number of personnel per procedures, or</li> <li>➢ number of procedures which can be designed by a designer</li> </ul>                     (Statement does not have to be quantitative; statement such as “sufficient number of qualified staff is required...” may be acceptable.)                 </li> <li>● Define hierarchy – e.g. supervisor, chief designer, senior designer, designer, trainee designer (depending on each organization)</li> </ul>	
Chapter 4 Training and qualification	<ul style="list-style-type: none"> <li>● Provisions concerning training and qualification of personnel</li> <li>● Appointment of special position (e.g. chief, supervisor etc.)</li> <li>● Describe types of training and its contents, duration, interval (frequency)</li> </ul>	
Chapter 5 Facility and resources	<ul style="list-style-type: none"> <li>● Define the facilities and resources to be utilized to perform the task such as: <ul style="list-style-type: none"> <li>➢ Building, office, table, and other equipment</li> <li>➢ Software and design tool</li> <li>➢ Aircraft and on-board equipment</li> </ul> </li> </ul>	
Chapter 6 Agreements with other organizations	<ul style="list-style-type: none"> <li>● Define the procedures and/or rules to establish agreements with other organizations, including procurement of service and/or goods (Reference to some other document is acceptable)</li> </ul>	
Chapter 7 Compliance	<ul style="list-style-type: none"> <li>● Define the processes to comply with regulations and verification (Reference to some other document is acceptable)</li> <li>● Describe how to demonstrate the compliance</li> </ul>	
Chapter 8 Operational instructions	<ul style="list-style-type: none"> <li>● Define the methodology to provide operational instructions to staff members such as: <ul style="list-style-type: none"> <li>➢ Circular</li> <li>➢ Information bulletin</li> <li>➢ Amendment to existing document</li> </ul>                     (including notification of changes in design criteria)                 </li> </ul>	
Chapter 9 Services to be provided	<ul style="list-style-type: none"> <li>● Define the services (and/or product) to be provided by the organization such as: <ul style="list-style-type: none"> <li>➢ (Initial) design</li> <li>➢ Continuous maintenance</li> <li>➢ Periodic review</li> <li>➢ Documentation process</li> <li>➢ Validation process</li> </ul> </li> <li>● Define the types of flight validation to be provided by the organization such as: <ul style="list-style-type: none"> <li>➢ Validation of newly designed flight procedures</li> <li>➢ Periodic validation (with its interval for each type of flight procedures)</li> <li>➢ Validation upon amendment of flight procedures</li> <li>➢ Other validation conducted for special needs</li> </ul> </li> <li>● Describe the criteria how to determine the necessity of these types of service</li> <li>● Describe the criteria how to determine the necessity of simulator evaluation</li> <li>● Describe the criteria how to determine the necessity of simulator evaluation</li> </ul>	

PART III Flight procedure design process		
Chapter 1 Design process	<ul style="list-style-type: none"> <li>● Define the process to be followed</li> </ul>	Doc 9906, Vol. 1
Chapter 2 Acquisition of data / information	<ul style="list-style-type: none"> <li>● Define <ul style="list-style-type: none"> <li>➢ Types of data / information required for the design of instrument flight procedures</li> <li>➢ How to acquire such data / information</li> <li>➢ From whom / where</li> </ul> </li> </ul>	
Chapter 3 Consultation with stakeholders	<ul style="list-style-type: none"> <li>● Identify stakeholders</li> <li>● Describe <ul style="list-style-type: none"> <li>➢ on which matters consultation with stakeholders are needed</li> <li>➢ with whom</li> <li>➢ when</li> <li>➢ how</li> </ul> </li> </ul>	PBN manual Doc 9906, Vol. 1 Doc 9906, Vol. 5
Chapter 4 Environmental consideration	<ul style="list-style-type: none"> <li>● Describe what should be considered upon the design or flight procedures</li> </ul>	
Chapter 5 Documentation	<ul style="list-style-type: none"> <li>● Describe <ul style="list-style-type: none"> <li>➢ how to record the activities</li> <li>➢ how to maintain documents</li> </ul> </li> <li>● Define the period of maintenance of record</li> </ul>	
Chapter 6 Format	<ul style="list-style-type: none"> <li>● Provide format (template) for design documents to record: <ul style="list-style-type: none"> <li>➢ Rationale for the design</li> <li>➢ Controlling obstacle</li> <li>➢ Summary of calculation process</li> </ul> </li> <li>● Provide format (template) for flight validation report to record</li> </ul>	
Chapter 7 Validation	<ul style="list-style-type: none"> <li>● Describe: <ul style="list-style-type: none"> <li>➢ Who validates the procedures</li> <li>➢ How</li> </ul> </li> <li>● Define the process to be followed</li> <li>● Items (charts, aeronautical data, obstacle, flyability, Navaid/lighting) to be validated for each type of validation</li> <li>● Tolerance</li> <li>● Define the type of result (pass, pass on condition, fail) <ul style="list-style-type: none"> <li>➢ Actions to be taken for failed procedure</li> </ul> </li> </ul>	Doc 9906, Vol. 5
Chapter 8 Preparation of publication	<ul style="list-style-type: none"> <li>● Define the types of material to be submitted to AIS (Depending on the protocol with AIS)</li> <li>● Define the timing of submission</li> </ul>	
PART IV Safety and Quality		
Chapter 1 SMS and QA system	<ul style="list-style-type: none"> <li>● Define how to be involved in the) SMS (e.g. SMS of an entire ANSP)</li> <li>● Provide reference to organization's quality manual</li> <li>● Provide statement on the resolution of safety / quality -related issues.</li> </ul>	Annex 19 Doc 9859 Doc 9906, Vol. 1
Chapter 2 Oversight by regulator	<ul style="list-style-type: none"> <li>● Describe how to manage the oversight</li> </ul>	

### 3.2.3 Quality manual

3.2.3.1 Organizations with a QMS will have their own quality manual (QM). In these cases, the procedure design process is also subject to this QM. Doc 9906, Volume 1 provides basic guidelines to establish a quality assurance system for an IFPDS.

3.2.3.2 The QM may be a part of the IFPDS's operations manual.

*Note.— Considering the characteristics of an instrument flight procedure design service, implementation of a QMS can be achieved by implementing specific safety assurance methodologies developed for this service. Provisions to establish a quality assurance methodology are contained in PANS-OPS, Volume II, Part I, Section 2, Chapter 4 — Quality Assurance. Guidance on implementing a quality assurance system is contained in Doc 9906.*

## 3.3 PROVISION OF SERVICE

### 3.3.1 Design and publication of new procedures

3.3.1.1 IFPs must be designed in accordance with State-approved design criteria. If deviation from the criteria is required, consultation with the regulator for approval is needed.

3.3.1.2 The service provider should establish its own work process and describe it in its operations manual (for sample operations manual, see Table 3-1), in accordance with State regulations. For details of the FPD process, see Doc 9906, Volume 1.

3.3.1.3 In accordance with Annex 11 provisions, any significant safety-related change to the ATS system, including the implementation of a reduced separation minimum or a new procedure, must only be effected after a safety assessment has demonstrated that an acceptable level of safety will be met and users have been consulted. When appropriate, the responsible authority must ensure that adequate provision is made for post-implementation monitoring to verify that the defined level of safety continues to be met. Depending on the organizational arrangements within a State, it could be either an IFPDSP or organization that requested a procedure design (e.g ANSP, aerodrome, etc.) that would be responsible for a safety assessment that would be submitted to the State Safety Oversight Authority to support the approval of the IFP for publication.

### 3.3.2 Periodic review (ref Doc 9906, Volume 1)

3.3.2.1 All published IFPs must be subject to a periodic review. Upon periodic review, the following tasks are to be conducted:

- a) **Assessment of the impact of all changes to obstacle data.** This may be conducted by applying amended obstacle data to the design data (design document, design file, etc.) of the published IFP. For example, if the MOC is not ensured due to a newly developed obstacle, amendment to the existing IFP is required.
- b) **Assessment of the impact of all changes to aerodrome, aeronautical and navaid data.** In most cases, changes in this data will require amendment to the existing IFP.

- c) **Assessment of the impact of all criteria amendments and changes to depiction standards.** It is intended that all IFPs be maintained to current design criteria and depiction standards in accordance with a State's regulatory framework timeframe.

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. However, even if the resulting IFP depiction is unchanged, the design file may be amended and updated to current criteria to facilitate IFP maintenance.

- d) **Assessment of the impact of all changes to user requirements.** Such changes to user requirements include, but are not limited to:

- fleet type (performance)
- scheduled service route
- ATM procedures
- airspace

Even if the user requirements are not a safety-related issue, IFP amendments and/or new IFPs may be needed to satisfy current user requirements.

3.3.2.2 In order to conduct a periodic review efficiently, it is essential to obtain and store design data.

3.3.2.3 If it is determined that any action is required, such as amendment to the existing IFP, due to new obstacle and/or changes in design criteria which have safety impact, return to the "initiation" step (step no. 1 in the FPD process) to reinitiate FPD process.

3.3.2.4 Periodic review must be conducted in accordance with the interval established by the State (maximum five years (Annex 11 / PANS-OPS, Volume II)).

3.3.2.5 An equivalent level of procedure design competency is required to conduct a periodic review as for the design of a new procedure.

### 3.4 QUALITY ASSURANCE

A service provider must establish and comply with an appropriate quality assurance methodology. Doc 9906, Volume 1 provides guidelines to establish a quality assurance methodology for IFPDS.

### 3.5 TRAINING AND QUALIFICATIONS

A service provider must establish and comply with its own scheme for training and qualification of its procedure designers in accordance with the State regulatory framework. Doc 9906, Volumes 2 and 6 provide guidelines for establishing a training scheme for both flight procedure designers and flight validation pilots.

### 3.6 SAFETY MANAGEMENT SYSTEM (SMS)

The ATS provider's interfaces with IFPDS can have a significant contribution to the safety of its products or services. Therefore, the SMS aspects of IFPDS products would be normally included as part of an ATS provider's SMS.

*Note.— Guidance on interface management as it relates to SMS is provided in the Safety Management Manual (SMM) (Doc 9859).*

— END —