Regulatory Framework of IFP Oversight and IFP Approval Process

ICAO Asia and Pacific Regional Office

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Part I
Regulatory Framework for IFP Oversight (Doc 10068)

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

ICAO Asia and Pacific Regional Office

State Obligations and responsibilities

- **ICAO Standards for an IFPDS**
  - **Annex 11, Chapter 2, 2.34**
    - **State shall ensure that an instrument flight procedure design service (IFPDS) is in place in accordance with Appendix 7**
  - **Annex 11, Appendix 7**
    - **State shall provide an IFPDPS; agree with one or more Contracting State(s) to provide a joint service; and/or delegate the provision of the service to external agency(ies).**
    - **State concerned shall approve and remain responsible for all IFPs for aerodromes and airspace under the authority of the State.**
    - **IFPs shall be designed in accordance with State-approved design criteria.**
    - **Each State shall ensure that an IFPDSP intending to design an IFP for aerodromes or airspace under the authority of that State meets the requirements established by that State's regulatory framework.**
    - **A State shall ensure that an IFPDSP utilizes a QMS at each stage of the IFP design process.**
    - **A State shall ensure that maintenance and periodic review of IFPs (not exceeding 5 years) for aerodromes and airspace under the authority of the State are conducted.**

State Obligations and responsibilities

- **Approval and responsibility of IFPs**
  - State concerned approves and remains responsible for all IFPs for aerodromes and airspace under the authority of the State.
    - Providing a joint service and/or a service by external agency(ies) is not the delegation of responsibility, but the delegation of the IFPDS function.
  - 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.
  - 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.
- **Design criteria**
  - IFPs must be designed in accordance with the State-approved design criteria.
    - PANS-OPS (Doc 8168) Volume II provides a globally applicable set of criteria for IFPD that should be transposed in the State's regulations.
  - Deviations from PANS-OPS, Volume II criteria should be promulgated in the State's regulations and published in the State's AIP in accordance with Annex 15

State Obligations and responsibilities

- **State Safety Oversight**
  - A State (referred to as "Regulator" or "Flight Procedure Inspectorate") must assume safety oversight responsibilities for an IFPDS to ensure the safety and quality of IFPs for aerodromes and airspace under their authority.
  - Oversight can be conducted through:
    - the "certification" of a service provider(s) and their personnel;
    - ensuring that a service provider has developed an operations manual and related procedures that meet the regulatory framework established by the State; and
    - ensuring that a service provider complies with the operations manual and related procedures they have established ("Oversight by Process").
  - A State must identify the body who is accountable for IFP design tasks within State's regulatory framework.
    - State, airport operator, ANSP or IFP design organization
    - When a State conducts IFPDS itself, the safety oversight should be functionally separated from the State's service provision.

State Obligations and responsibilities

- **State risk assessment**
  - A safety risk assessment of an IFP is considered completed when the IFPD is in compliance with the State regulatory framework.
  - A safety risk assessment must be conducted when there is a deviation from the State regulatory framework.
- **Quality Management System (QMS)**
  - A State must ensure that service provider(s) providing IFPDS implement(s) a QMS at each stage of the IFP design process.
- **Continuous maintenance and periodic review**
  - A State must ensure that continuous maintenance and periodic review of IFPs for aerodromes and airspace under the responsibility of the State are conducted.
  - Each State must establish an interval schedule for periodic review of IFPs not exceeding 5 years (Annex 11).
  - IFPs without continuous maintenance or periodic review may be suspended and/or cancelled by the State.

State Obligations and responsibilities

- **Scheme for the provision of IFPDS**
  - An IFPDS provider may be a part of the State organization, the ANSP, an independent provider, or a mix of these, and may be conducted jointly by multiple States
  - In all cases, the State remains responsible for all IFPs for the aerodromes and airspace under its responsibility
- **Use of the manual (Doc 10068)**
  - For State Authority, use it as a guideline in establishing a regulatory framework for the oversight of a service provider, including certification, approval and audit (Chapter 2).
  - For Service Provider, use it as guideline in establishing its organization, working procedures and operations manual (Chapter 3).
    - Chapter 3 can be utilized by the service provider for preparation of an audit by the State authority.

State Safety Oversight Function

State Safety Oversight System

- To demonstrate fulfilment of ICAO safety oversight requirements, a State (regulator) must consider 8 critical elements (CE) of State safety oversight system to establish a regulatory for the IFPDS.
- A State Safety Oversight System is described in the Safety Oversight Manual (Doc 9734), Part A — The Establishment and Management of a State Safety Oversight System, Chapter 3.

State Safety Oversight Function

- **CE 1 : Primary aviation legislation (e.g. law, decree, order)**
  - **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.**
  - **Primary aviation legislation includes:**
    - **Establish a regulatory framework for the safety of civil aviation**
    - **Empower an authority (regulator) with the aviation safety oversight responsibilities to control an activity (IFPDS)**
    - **Clearly include the purpose of the regulator and the objectives of the regulatory framework for the regulator's staff, regulated entities and citizens**
    - **Clearly specify the regulatory and other functions to be carried out to achieve the regulator's objectives**
    - **Should include a high level statement, e.g. Civil Aviation Act, to establish the responsibility of the State for the safety of IFPs for the aerodromes and airspace under its authority.**

State Safety Oversight Function

- **CE 2: Specific operating regulations (e.g. instructions, rules, orders, directives, etc.)**
  - 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.
  - The specific operating regulations for IFPDS should include but are not limited to:
    - Transposition of the relevant provisions of Annex 11, PANS-OPS, Volume II, Annex 4, Annex 15 and PANS-AIM in separate national documents;
    - Administrative arrangements on the roles of the State authority and IFPDS providers (IFPDSP), including the process of IFP approval for publication;
    - 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;
    - General regulatory criteria to develop procedures for the establishment of aerodrome operating minima, if applicable;
    - Quality management system (QMS) requirements as per PANS-OPS and Doc 9906;
    - Qualification and competencies for IFPDSPs and the flight procedure inspectorate (FPI);
    - Requirements for periodic reviews and continuous maintenance of IFPs;
    - Requirements for ground and flight validations of IFPs; and
    - State surveillance processes (planning, inspections, and monitoring activities) of IFPDSPs.

State Safety Oversight Function

- **CE 3: State system and functions**
  - 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.
  - A State can establish the 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.
  - 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)

State Safety Oversight Function

- **CE 3: State system and functions (Cont')**
  - **Functions and responsibilities of FPI personnel**
    - **The FPI is responsible for the oversight of the development, maintenance and approval process for the flight procedures of an IFPDS provider.**
    - **The FPI functions and responsibilities should be clearly defined and documented.**
    - **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.**
    - **The FPI should be provided with a job description that reflects its duties.**
    - **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**
  - **Resources of FPI**
    - **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.**

State Safety Oversight Function

- **CE 4: Qualified technical personnel**
  - 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.
  - The State must ensure that the established qualifications and experience requirements are met by all FPI staff.
  - 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).
  - 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.
  - All FPI staff must complete OJT prior to assignment of tasks and responsibilities. The OJT should be provided by senior, more experienced, FPI staff.
  - The State must ensure that the FPI has a system to maintain training records.
  - FPI staff competency. In general, competencies required for FPI staff are as follows:
    - 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
    - Expertise in IFP design to optimize the quality of the safety oversight duties for IFPDS.

State Safety Oversight Function

- **CE 5: Technical guidance, tools and provision of safety-critical information**
  - 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.
  - States must provide technical guidance to the aviation industry on the implementation of relevant regulations.
  - Such material should include
    - information on how to process an application for initial compliance of an IFPDS provider, including detailed procedures and checklists, which may take the form of a "certification"
    - procedures and checklists for ongoing surveillance activities, e.g. inspections and audits.
    - procedures and checklists to be used by the FPI in the process of approving IFPs for publication
    - guidance on the implementation of applicable regulations, instructions and directives.

State Safety Oversight Function

- CE 5: Technical guidance, tools and provision of safety-critical information (cont')
  - A FPI handbook is a useful tool that should be developed to include all these information.
  - The FPI should be provided with adequate tools to enable the effective accomplishment of its tasks, such as transportation, 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.

State Safety Oversight Function

- **CE 6: Licensing, certification, authorization and approval obligations**
  - 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 license, certificate, authorization and/or approval to conduct the relevant aviation activity.
  - A State prior to designating an IFPDSP should ensure that the service provider complies with the regulatory requirements in force.
    - The IFPDSP is subject to continuing surveillance to ensure that the requirements continue to be met.
  - Unsatisfactory conditions noted by the FPI should be brought to the attention of the applicant.
    - In the case of deficiencies or weaknesses, the applicant should be given an opportunity to correct the problem and reapply.
    - All discrepancies and non-compliance items must be corrected or resolved to the satisfaction of the FPI prior to the issuing of a license, certificate, authorization and/or approval.

State Safety Oversight Function

- **CE 6: Licensing, certification, authorization and approval obligations (Cont')**
  - 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.
  - The State should ensure that an IFPDS provider develops a job description, training programme and training plan, and maintains training records for its flight procedure designers and flight validation pilots.

State Safety Oversight Function

- **CE 7: Surveillance obligations**
  - States must implement documented surveillance processes, by defining and planning inspections, audits, and monitoring activities on a continuous basis, to proactively assure that aviation license, certificate, authorization and/or approval holders continue to meet the established requirements.
  - As part of the IFPDS provider surveillance activities, the FPI must establish periodic surveillance plans. The surveillance activities should be carried out using standardized procedures and checklists, particularly paying attention to the following:
    - Design criteria: The State must ensure that an IFPDS 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 OCA/H in accordance with the State-approved design criteria.
      - ✓ 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, MDA/H, DA/H) for the IFPs developed at aerodromes.

State Safety Oversight Function

❖ **CE 7: Surveillance obligations**

- **Quality management system (QMS): The State must ensure that the QMS used by the service provider responsible for developing flight procedures is effective.**
  - ✓ **Data quality management, personnel training, and validation of software are all integral elements of a quality assurance programme.**
  - ✓ **An IFPDS 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.**
- **Continuous maintenance and periodic review: 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.**
- **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.**

State Safety Oversight Function

- **CE 8: Resolution of safety issues**
  - 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.
  - The State should establish within the regulatory framework:
    - a mechanism/system with a time frame for elimination of any deficiency identified by the FPI; and
    - the authority and responsibility to suspend or revoke the IFP design privileges, if a deficiency is not corrected within the established time frame.

Service Provider Function

General

- IFPDS providers and safety service office authorities are partners that in collaboration ensure the safety and quality of IFPDS.
- IFPDS providers need to clearly understand the roles of safety service office authorities and their expectations for service providers.
  - This would allow IFPDS providers to better prepare their processes and documentation to be able to demonstrate to the safety service office authorities that the established requirements are met on an initial and ongoing basis.

Service Provider Function

- **Process/procedures to be established for a service provider**
  - The service provider should establish its own process and procedures in accordance with the State's regulatory framework.
    - If no specific State regulatory framework exists, the process and procedures should be established in accordance with SARPs and PANS.
  - A service provision organization should establish its own operations manual in accordance with the State regulatory framework, which should be customized to its unique qualities.
    - (Contents) roles and responsibilities, staffing requirements, training and qualification, facility and resources, agreements with other organizations, compliance, operational instructions, services to be provided, IFP design process, SMS and QA system, etc.
  - Organizations with a QMS will have their own quality manual (QM). In these cases, the procedure design process is also subject to this QM.
    - The QM may be a part of the IFPDS's operations manual.

Service Provider Function

- **Provision of service**
  - **Design and publication of new procedures**
    - 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.
    - The service provider should establish its own work process and describe it in its operations manual in accordance with State regulations.
    - Any significant safety-related change to the ATS system must be effected only 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.
      - ✓ Either an IFPDSP or the organization that requested a procedure design (ANSP, aerodrome, etc.) could 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.

Service Provider Function

- **Provision of service**
  - **Periodic review**
    - **All published IFPs must be subject to a periodic review. Tasks to be conducted are:**
      - ✓ **Assessment of the impact of all changes to obstacle data by applying amended obstacle data to the design data of the published IFP.**
      - ✓ **Assessment of the impact of all changes to aerodrome, aeronautical and navaid data. In most cases, changes to this data will require amendment to the existing IFP.**
      - ✓ **Assessment of the impact of all criteria amendments and changes to depiction standards to ensure that all IFPs be maintained to current design criteria and depiction standards in accordance with a State's regulatory framework time frame.**
        - **If these amendments are not safety-related issues, the existing IFP can be maintained but the design file may be amended and updated to current criteria to facilitate IFP maintenance.**
      - ✓ **Assessment of the impact of all changes to user requirements, which includes 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.**

Service Provider Function

- **Provision of service**
  - **Periodic review**
    - **In order to conduct a periodic review efficiently, it is essential to obtain and store design data.**
    - **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 a safety impact, return to the "initiation" step (Step no. 1 in the FPD process, see Doc 9906, Volume 1) to reinitiate the FPD process.**
    - **Periodic review must be conducted in accordance with the interval established by the State (maximum 5 years).**
    - **A level of procedure design competency equivalent to that necessary for the design of a new procedure is required to conduct a periodic review.**

Service Provider Function

- **Provision of service**
  - **Continuous maintenance**
    - **Assess changes that affect procedure design to determine if action is required prior to the periodic review, e.g. obstacles, aerodrome, aeronautical, navaid data, design criteria and design specification.**
    - **If an action is required, reinitiate FPD Process.**
    - **If necessary, immediately issue a NOTAM announcing changes to existing IFP's, or suspend the existing IFP considering the FMS navigation database is only revised on AIRAC cycle date .**
    - **An equivalent level of Procedure Design competency is required to conduct continuous maintenance.**
    - **For conducting continuous maintenance, it is recommended a system for reporting new obstacles should be established.**

Service Provider Function

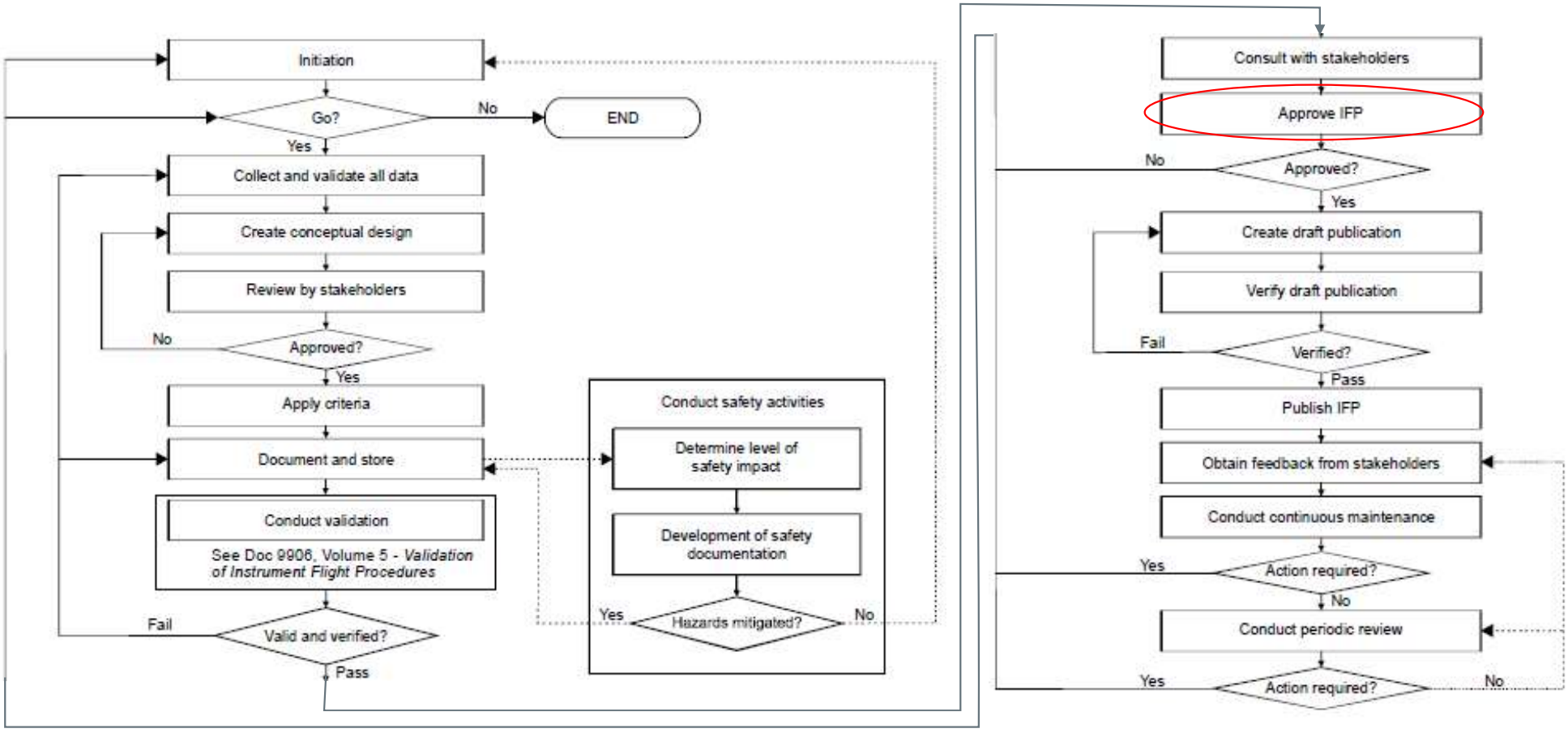
- **Provision of service**
  - **Quality Assurance**
    - A service provider must establish and comply with an appropriate quality assurance methodology (see Doc 9906, Volume 1).
  - **Training and qualification**
    - A service provider must establish and comply with its own scheme for training and qualification of its procedure designers in accordance with the State regulatory framework. (see Doc 9906, Volumes 2 for FPD training and 6 for FVP training).
  - **Safety Management System (SMS)**
    - The ATS provider's interfaces with IFPDS can make 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.

Part II
IFP Approval Process

ICAO Asia and Pacific Regional Office

Where are we?

❖ IFP Process Flow Diagram



Reference Documents

- **Annex 6. Aircraft Operations, Part 1**

4.4.8 Instrument Flight Procedures

4.4.8.1 One or more instrument approach procedures designed to support instrument approach operations shall be approved and promulgated by the State in which the aerodrome is located to serve each instrument runway or aerodrome utilized for instrument flight operations.

4.4.8.2 All aeroplanes operated in accordance with instrument flight rules shall comply with the instrument flight procedures approved by the State in which the aerodrome is located.

Reference Documents

- **Annex 11. Air Traffic Services**

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

  2.34 Instrument flight procedure design service

  States shall ensure that an instrument flight procedure design service is in place in accordance with Appendix 7.

Reference Documents

- **Appendix 7. State Responsibilities concerning an IFP Design Service**

  1. **A State shall:**

     a) **provide an instrument flight procedure design service; and/or**

     b) **agree with one or more Contracting State(s) to provide a joint service; and/or**

     c) **delegate the provision of the service to external agency(ies).**

  2. **In all cases in paragraph 1 above, the State concerned shall approve and remain responsible for all IFPs for aerodromes and airspace under the authority of the State.**

  3. **IFPs shall be designed in accordance with State-approved design criteria.**

  4. **Each State shall ensure that an IFPDSP intending to design an IFP for aerodromes or airspace under the authority of that State meets the requirements established by that State's regulatory framework.**

     Note.— Guidance material for regulatory framework for the oversight of instrument flight procedure design service is contained in the Manual on the Development of a Regulatory Framework for Instrument Flight Procedure Design Service (Doc 10068).

Reference Documents

- **Appendix 7. State Responsibilities concerning an IFP Design Service**

5. **A State shall ensure that an IFPDSP utilizes a quality management system at each stage of the IFP design process.**

   Note.— This requirement can be met by means of a quality assurance methodology, such as that described in PANS-OPS (Doc 8168), Volume II. Guidance for implementing such a methodology is contained in the Quality Assurance Manual for Flight Procedure Design (Doc 9906).

6. **A State shall ensure that maintenance and periodic review of IFPs for aerodromes and airspace under the authority of the State are conducted. Each State shall establish an interval for periodic review of IFPs not exceeding 5 years.**

   Note.— Guidance on maintenance and periodic review is contained in the Quality Assurance Manual for Flight Procedure Design (Doc 9906).

Reference Documents

- **Doc 9906 QA Manual for Flight Procedure Design, Vol. 1 FPD QA System**

6.2 Output of the quality process

- conceptual design, including planned implementation dates, and resources needed to achieve the task;
- the FPD, including the procedure layout, the relevant calculation outputs, coordinates and a textual description of the intended procedure;
- validation and verification reports for the IFP;
- approval of the procedure by the regulatory authority;
- documentation throughout the various stages from the input through the publication process; and
- the released AIP publication (charts, texts, coordinates, path terminators and any other pertinent information relevant to the procedure).

At the end of the life cycle, a decision to withdraw the procedure will be issued (and documented). All changes permitting the withdrawal will be included in the quality documentation but will also be part of the replacement procedures' (if any) documentation.

Reference Documents

- **Doc 9906 QA Manual for Flight Procedure Design, Vol. 1**

7.10 Approve IFP (Step 10)

The IFP must be approved by the State or by an authority designated by the State, prior to publication. This approval process must ensure that all the appropriate steps within the IFP process have been completed documented and signed off by the competent authority.

Step	*Description*	*Input*	*Output*	*Parties involved*	*Quality records*	*References*
8	**CONDUCT VALIDATION AND CRITERIA VERIFICATION** See Doc 9906, Volume 5, "Validation of Instrument Flight Procedures" for detailed guidance.	• FPD package. • Safety case.	• Validation report.	• Validation personnel as per Doc 8168 (PANS-OPS), Volume 2, Part 1, Section 2, Chapter 4, 4.6.	• Results of validation.	• Doc 8168 (or applicable criteria). • Doc 9905 (or applicable criteria). • Annexes 4 and 15. • Doc 9905, Volume 5. • Doc 9613.
9	**CONSULT WITH STAKEHOLDERS** • Submit all pertinent information to all relevant stakeholders for consultation.	• Validated IFP.	• Stakeholder endorsement.	• Designer. • Relevant stakeholders.	• Stakeholder endorsement.	• National regulations as appropriate.
10	**APPROVE IFP** • Provide IFP documentation to the designated authority for approval.	• Validated IFP. • Stakeholder endorsement.	• Approved IFP.	• Designer. • Designated authority.	• Formal approval of the FPD for new procedures (or for relevant changes on existing procedures).	• National regulations as appropriate.
11	**CREATE DRAFT PUBLICATION** • Provide FPD package, including a graphical depiction, to the AIS to create a draft publication.	• Approved IFP.	• Draft publication.	• Designer. • AIS.		• Annexes 4 and 15. • ISO 9001:2000 section 4.2 "Documentation requirements" section 7.3.5 "Design and development verification".

Who will approve IFPs?

- **Instrument Flight Procedure Design Service Provider**
  - **State where IFPs exist**
  - **One or more other Contracting State(s) with agreement with the State where IFPs exist on a joint service provision**
  - **Non-governmental agency(s) delegated the provision of the service or a part of the service by the State where IFPs exist**
  - **In case IFPDS is provided by other than State itself, this should be considered the delegation of function, not the delegation of responsibility**

Who will approve IFPs?

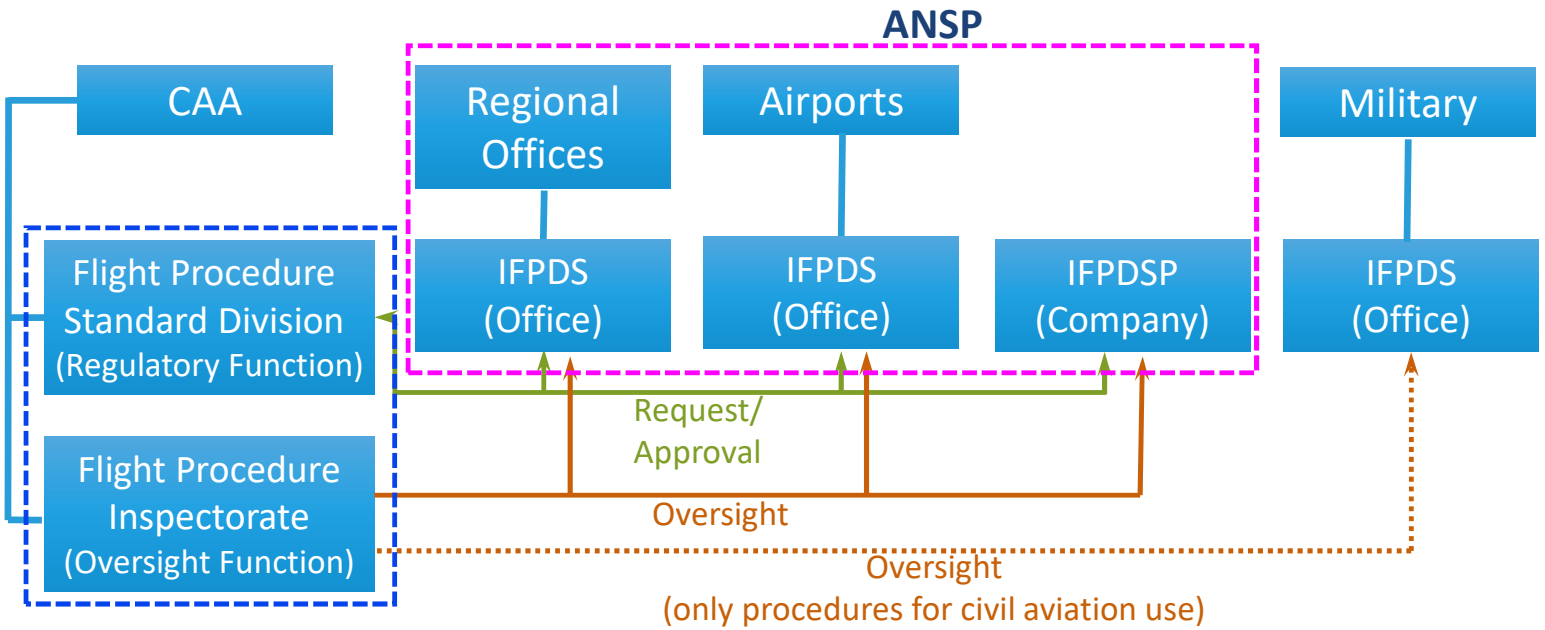
- **IFP Approval**
  - State responsible for all IFPs for aerodromes and airspace under the authority of the State
  - Authority designated by the State. The State just delegates function, not responsibility.
  - Approval process must ensure that all the appropriate steps within the IFP process have been completed, documented and signed off by the competent authority
  - Approval process of a State will be documented in that State's regulatory framework
  - Even though IFPs are only available to operators with special authorization for use, the State concerned remains responsible for such IFPs

Who will approve IFPs?

- **Functional Separation of IFP approval (Doc 10068)**
  - **IFPs shall be approved by the regulatory authority of a State**
  - **Where a State conducts IFPDS itself, a separate regulatory/safety oversight function should be established to oversee State's service provision function**
  - **A State should establish the requirements of IFP approval in the State's regulatory framework**
  - **Regulator/Safety inspector should look into that all IFP processes have been completed, documented and signed off by the competent authority**
  - **The reason for separation is to ensure safety and integrity of the developed flight procedures.**

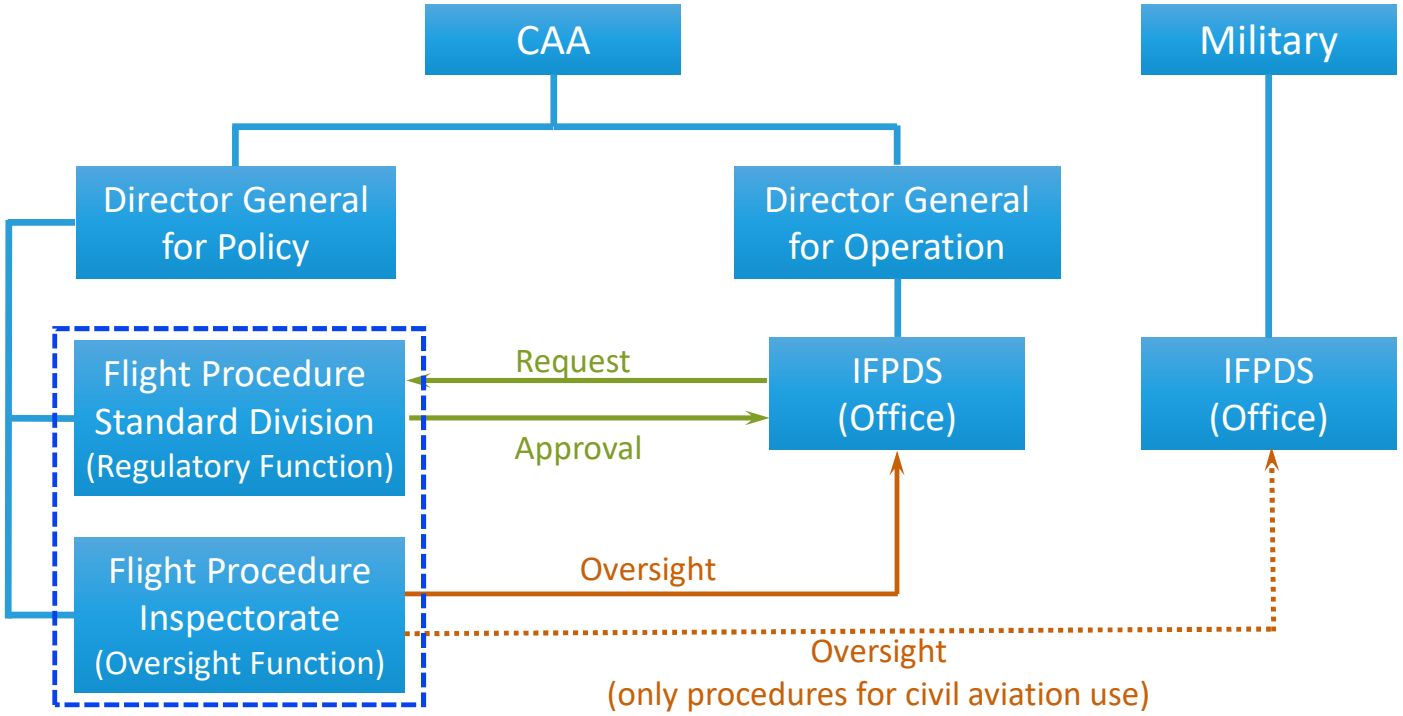
Who will approve IFPs?

❖ **Functional Separation of IFP approval - Separation Example**



Who will approve IFPs?

❖ **Functional Separation of IFP approval – Separation Example**



ICAO

Documents required

- **Regulator should consider all documents related to IFP development process**
  (refer Doc 8168 Vol.2 Part.1, Sec. 2, Ch. 4 QA)
  - **Procedure design data**
    - Require proper surveys
    - Conform to ICAO Annex 11, 14 and 15
    - Coordinates for ARP, Nav-aids & terrain, elevation data, etc.
  - **Procedure design document**
    - Controlling obstacle for each segment of the procedure
    - Effect of environmental considerations on the design of the procedures
    - Infrastructure assessment, i.e. runway classification, lighting, communications, runway markings, availability of local altimeter setting, etc.
    - Airspace constraints
    - Results of the periodic review and, for modifications and amendment to existing procedures, the reason for any changes

Documents required

- Regulator should consider all documents related to IFP development process
  - Procedure design document (Cont')
    - Any deviation from existing standards, the reasons for such a deviation, and details of the mitigation applied to assure continued safe operations
    - Results of the final verification for accuracy and completeness (quality validation checks) prior to validation and then prior to publication
    - Results of safety assessment and details of the mitigation applied to
  - Results of ground validation and flight validation or flight inspection
  - Qualification/competency of procedure designers
  - Other documents related to IFP design, i.e. aeronautical study results, procedure design calculation sheets, Flight Inspection report of Nav-aid, etc.
- All documentation should be retained in accordance with States' procedures to assist in recreating the procedure in the future, i.e. incidents, periodic review, maintenance
  - The period of retention shall not be less than the operational lifetime of the procedure

Flight Validation vs. Flight Inspection

- **Validation (ref. Doc 8168 Vol.2 Part.1, Sec. 2, Ch. 4 QA)**
  - the necessary final quality assurance step in the procedure design process, prior to publication
  - the verification of all obstacle and navigation data, and assessment of flyability of the procedure
  - consists of ground validation and flight validation and ground validation shall always be undertaken.
    - When the accuracy and completeness of all obstacle and navigation data considered in the procedure design, and flight validation are verified during ground validation, then the flight validation requirement may be dispensed with.
    - The process for the validation of flight procedures is in the Quality Assurance Manual for Flight Procedure Design, Volume 5 — Validation of Instrument Flight Procedures (Doc 9906).

Flight Validation vs. Flight Inspection

- **Ground Validation**
  - a review of the entire instrument flight procedure package by a person(s) trained in procedure design and with appropriate knowledge of flight validation issues.
  - catch errors in criteria and documentation, and evaluate flight validation elements on the ground.
  - Issues identified in the ground validation should be addressed prior to any flight validation.
  - determine if flight validation is needed for modifications and amendments to previously published procedures.

Flight Validation vs. Flight Inspection

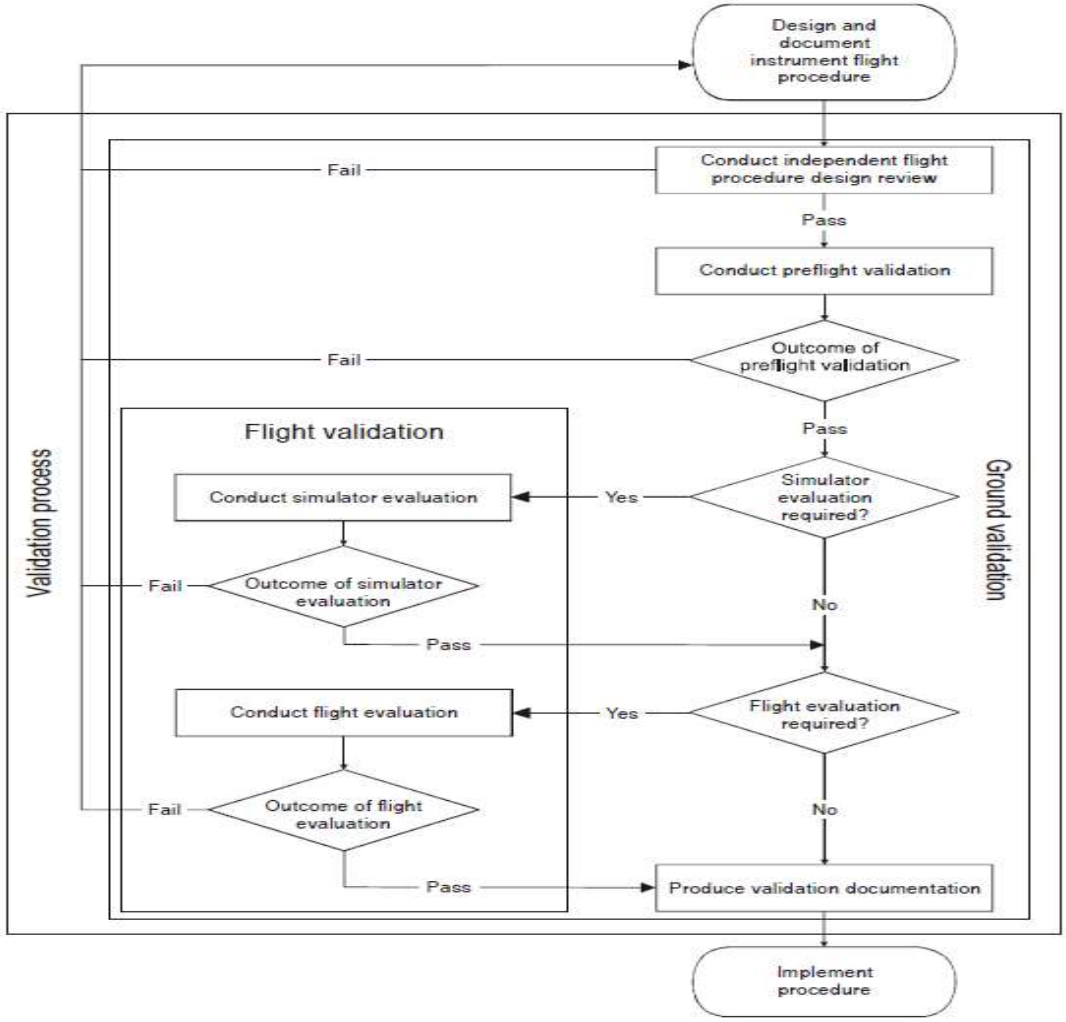
- **Flight Validation**
  - carried out as part of the initial certification and included as part of the periodic quality assurance programme to ensure that the procedure design process and its output meet the requirements of Annex 15.
  - accomplished by a qualified and experienced FVP, certified or approved by the State.
  - The flight validation pilot (FVP) shall occupy a seat in the cockpit with a field of view adequate to conduct the flight validation.
  - The objectives of the flight validation are to:
    - provide assurance that adequate obstacle clearance has been provided
    - verify that the navigation data to be published and used in the procedure design is correct
    - verify that all required infrastructure, such as runway markings, lighting, and communications and navigation sources, are in place and operative
    - conduct an assessment of flyability to determine that the procedure can be safely flown
    - evaluate the charting, required infrastructure, visibility and other operational factors

Flight Validation vs. Flight Inspection

- **Flight Validation**
  - **Roles of the procedure designer in flight validation**
    - **shall be the originator of all data applicable to conducting a flight validation provided to the flight validation or flight inspection operations activity.**
    - **should be prepared to provide briefings to the flight validation or flight inspection crews in those cases where flight procedures have unique application or special features.**
    - **may participate in the initial validation flight to assist in its evaluation and obtain direct knowledge of issues related to the procedure design from the flight inspection or validation pilot and/or inspector.**

Flight Validation vs. Flight Inspection

- **Validation process**



Flight Validation vs. Flight Inspection

- **Flight Inspection (Ref. Doc 9906 QA Manual Vol 5)**
  - **conducted with the purpose of confirming the ability of the navigation aids/system upon which the procedure is based to support the procedure, in accordance with the Standards in Annex 10 and the guidance in Doc 8071.**
    - **radio navigation aid/navigation sensor (ILS/MLS, VOR, DME, PAR, NDB, Marker Beacon, GNSS), GBAS data broadcast and/or FAS data**
  - **carried out as part of a formal flight inspection programme and is performed by a qualified flight inspector using an appropriately equipped aircraft.**
  - **Personnel performing flight inspection duties should be qualified and certified in accordance with Doc 8071, Volume I.**
  - **Recommended inspection periods (Doc 8071)**
    - **12 month : VOR, DME, NDB**
    - **180 days : ILS (LLZ, GP, Marker)**
    - **270 days : PAR**

Thank You!

ICAO