



**CIVIL AVIATION REGULATIONS
AIR NAVIGATION SERVICES**

Part 10B

Governing

**REGULATORY REQUIREMENTS FOR
ATM SERVICE PROVIDERS**

CIVIL AVIATION AUTHORITY OF THE PHILIPPINES

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Republic of the Philippines

CIVIL AVIATION REGULATIONS- AIR NAVIGATION SERVICES (CAR-ANS)

Part 10

REGULATORY REQUIREMENTS AND STANDARDS for ANS Service Providers Part 10A - CNS Operations Part 10B - ATM Operations

22 JUNE 2009

EFFECTIVITY

Part 10 of the Civil Aviation Regulations-Air Navigation Services is issued under the authority of Republic Act 9497 and shall take effect upon approval of the Board of Directors of the Civil Aviation Authority of the Philippines.

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FOREWORD

Pursuant to the pertinent provisions of Republic Act No. 9497, otherwise known as Civil Aviation Authority Act of 2008, the following provisions are hereby promulgated to provide regulatory requirements dealing with:

- Standards, Practices and Procedures on the establishment, operation, and maintenance of Air Navigation Facilities
- Organization of the Service Provider
- General obligations and responsibilities of Air Navigation Service Provider (ANS)
- Operations Manuals (Facility)
- Documentations
- Safety Management System

This CAR-ANS shall be known as REGULATORY REQUIREMENTS AND STANDARDS on the Operation and Maintenance of Communications, Navigation and Surveillance (CNS) Services and REGULATORY REQUIREMENTS for Air Traffic Management Service Provider (ATM).

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INTRODUCTION

The Civil Aviation Authority of the Philippines (CAAP) is responsible under the Civil Aeronautics Acts (Republic Act No. 776 as amended) and the Act Creating the Civil Aviation Authority of the Philippines (Republic Act No. 9497) for the regulation of civil aviation in the Philippines. The CAAP exercises regulatory oversight by, in part, developing and promulgating appropriate, clear and enforceable aviation safety standards.

CAR-ANS Part 10 prescribes the detailed regulatory requirements and standards that have been determined to be necessary for promoting and supporting aviation safety in Air Navigation Services. CAR-ANS Part 10 is divided into two parts, Part 10A and Part 10B.

Part 10A details the Regulatory Requirements and Standards on the Operation and Maintenance of CNS Services as one mechanism that CAAP uses to meet the responsibilities of the Republic Acts Nos. 776 and 9497 to ensure safety regulation of air navigation services.

Part 10B details the Standards and Safety Requirements for Air Traffic Management service providers in Air Traffic Services, Aeronautical Information Service, Search and Rescue Service and Meteorological service.

10.1 GENERAL

10.1.1 Scope of CAR-ANS

This CAR-ANS specifies the standards and basic regulatory framework for Air Navigation Service (Service Provider) on the following matters:

1. Established Standards and Practices on the establishment, operation, and maintenance of CNS Service/air navigation facilities
2. Organization
3. General obligations and responsibilities of CNS Service Provider (ANS)
4. Facility Operations Manual
5. Documentations
6. Safety Management System (Reserved)

10.1.5 Applicability

This Part sets out the requirements for the service provider or organization involved in the:

- a) Establishment, operation and maintenance of one or more ground-based aeronautical telecommunication, radio navigation or surveillance services that supports air traffic service or IFR flight.
- b) Establishment, operation and Maintenance of Airfield Lighting and Power facilities on airports and/or air navigation facilities.

10.1.10 Interpretation

This section contains the definitions of terminology that have specific meaning in relation to this CAR-ANS. The definitions are consistent with those definitions used in ICAO Annex 10.

Definitions

Accuracy, in relation to a radio navigation service or facility, means the degree to which the value measured or displayed by the service or facility conforms to the true value.

Aeronautical Information Service. A service established within the defined area of coverage responsible for the provision of aeronautical
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information /data necessary for the safety, regularity, and efficiency of air navigation.

Air Navigation Facilities, the types of aeronautical telecommunication, radio navigation or surveillance (CNS) facilities including Airfield Lighting facility that either soloed, or by their interconnection, provide the electronic capability for the delivery of the defined services.

CNS System Specialist (CNSSS) is a technical person authorized to perform the technical tasks concerning the design, installation, operation, maintenance and repair of aeronautical telecommunication and radio navigation services equipment or systems under CAAP.

Airfield Lighting and Power Technician (ALPT) is technical personnel authorized to perform the technical tasks concerning the design, installation, commissioning, operation, maintenance and repair of airfield lightings and power facilities equipment and systems under CAAP.

Availability, for a telecommunication service, radio navigation service or support service, means the percentage of its operating hours that the service is not interrupted.

CNS means Communication, Navigation, and Surveillance.

CNS Service refers to aeronautical telecommunication, radio navigation and surveillance service

Configuration, in relation to:

- a) a CNS service – means the configuration of each facility and any interconnection between facilities that make up the service; and
- b) A facility – means the configuration of equipment, hardware, software and data, and the interconnections between equipment.

Coverage, in relation to a CNS service, means the volume of airspace within which, or the locations between which, the service is nominally provided.

Functional Specification, for a CNS service or a support service, is a general description of the service, its operating principles and its functions.

Hazard means a source of potential harm to aviation safety.

Integrity, of a CNS service or a support service:

- a) means the likelihood that the information supplied by the service at a particular moment is correct; and
- b) Includes the ability of the service to warn users promptly when the service should not be used.

Manual of Standards means the document called “Manual of Standards (MOS). It comprises specifications (standards) prescribed by CAAP, for uniform application, determined to be necessary for the safety of air navigation. MOS are based on applicable provisions of ICAO SARPS.

Operating Hours, for a telecommunication or radio navigation service, means the times during which the service provider must, under its approval, operate the service.

Operation and Maintenance in the context of this regulation means:

- Placing a facility into operational service; or
- Removing a facility from operational service; or
- Undertaking any functions which affect the operability of a facility while the facility remains in operational service; or
- Undertaking periodic performance inspection, or any maintenance on a facility while the facility remains in operational service; or
- Undertaking any flight test on a facility for the purpose of compliance with this CAR-ANS.

Operations Manual means a manual that establishes the standards and procedures under which the services will be delivered.

Performance inspection means one or more test that show the accuracy or integrity of a facility.

Radio navigation Service means an aeronautical radio navigation service intended for the benefit and for the safe operation of aircraft.

Recovery time means the period during which a service is interrupted.

Reliability, of a telecommunication service, a radio navigation service or a support service, means the probability that the service will perform its function or functions without failure for a specified period.

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RISK means risk to aviation industry.

Safety means aviation safety

Service Provider means an organization authorized to operate and maintain a CNS service. In this case, ANS is mandated by law (RA 9497) to operate and maintain air navigation facilities.

Technical Specification, for a CNS service or facility, is a detailed description that may use technical terms and concepts, of:

1. The way in which the service or facility operates and performs its functions, and
2. The technical standards to which the service or facility has been designed and manufactured.

10.1.15 Standards for CNS Services

1. Any reference in these regulations relative to CNS Services is a reference to the national and international standards and practices of these services set out in conformance to **ICAO Annex 10** and related documents.
2. The service provider shall comply with the standards, practices and procedures stipulated in the **Manual of Standards (MOS)** for CNS Services, appropriate to the operation and maintenance of such services

10.1.20 Related Documents

1. CAR-ANS Part 6 (Manual of Standards for Radio Navigational Aids)
2. CAR-ANS Part 7 (Manual of Standards for Aeronautical Telecommunications- Digital Data Communications Systems)
3. CAR-ANS Part 8 (Manual of Standards for Aeronautical Telecommunications- Voice Communications Systems)
4. CAR-ANS Part 9 (Manual of Standards for Surveillance)
5. CAR-ANS Part 14 (Flight Check Manual)
6. Manual of Standards for Aerodrome

10.1.25 Provision of Service without CAAP/ANS Approval

1. Any person or organization disallows the provision of any service defined as CNS service if it is not authorized by CAAP/ANS.

10.1.30 Flight Check Inspection

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All visual and radio navigation aids facilities must be subjected to periodic flight check to verify the performance of the facility.

For navigational aids in particular, periodic flight inspections not only entail ground tests on site but also flight inspections at defined time intervals. The time intervals, procedures, standards and equipment used for flight inspections are to provide the final assurance that the signal in space accuracy, integrity, and coverage of the facilities are within tolerances defined in the operational specifications.

10.1.35 Safety Inspection/Audit

Section 35 (g), Chapter 7 of RA 9497 (Powers and functions of the Director General), through Aerodrome and Air Navigation Safety Oversight Office (AANSOO), all CNS Services/Air Navigation Facilities are subject to CAAP/Aerodrome and Air Navigation Safety Oversight Office (AANSOO) Audit.

Safety Oversight Auditors/Inspectors shall have full access to all facilities to verify the safety level of the facility. Other airport authorities must provide full access pass to CAAP/AANSOO Auditors for such purpose.

10.1.40 Resolution of Identified Deficiencies

Deficiencies/Findings affecting aviation safety identified by CAAP/AANSOO Auditor shall be resolved on a predetermined time acceptable to both the service provider and AANSOO. Should necessary corrective action not be accomplished within a reasonable time to be specified by the Auditor/Inspector, the matter must be reported to the Director General for a decision regarding possible restriction on operation.

10.1.45 LICENSING (RESERVED)

The following Licenses are issued by CAAP to qualified applicants who satisfactorily accomplished the requirements for the license sought:

1. CNS System Specialist License
2. Airfield Lighting and Power Technician (ALPT) License

10.1.47 AIR NAVIGATION FACILITY CERTIFICATION/RATING (RESERVED)

Pursuant to Section 35 (g), Chapter 7 of RA 9497, as promulgated in Section 27 (The Responsibility and Powers of the Director General) of the IRR, the Director General shall issue an Air Navigation Facility

Certification/Rating to air navigation facilities operating within the Philippines to determine the compliance of its operation based on prescribed standards and required practices to assure safety in air navigation.

10.2 OBLIGATIONS AND RESPONSIBILITIES OF THE SERVICE PROVIDER

10.2.1 Administration

Pursuant to Section 33, Chapter VI (Organizational Structure of the Authority), the Air Navigation Service is one of the permanent offices established by the Board under the Aviation Operations Service Group. The Administration of Air Navigation Service shall be the responsibility of the Director of ANS.

10.2.5 Technical Personnel

Technical personnel authorized to operate and maintain CNS services/facilities are the following:

1. CNS System Specialists (CNSSS)/ANS System Specialists
2. *Airfield Lighting and Power Technicians (for Facilities under CAAP)*

The Service Provider must ensure that the technical personnel involved in the operation and maintenance of air navigation facility holds necessary qualification as required. In particular, the service provider must ensure that each CNSS/APT has been appropriately trained.

10.2.10 Qualification Standards and Job Description

Refer to the approved Qualification Standards and Job Description of ANS technical personnel attached in the Implementing Rules and Regulations of RA 9497.

10.2.15 (RESERVED) TECHNICAL COMPETENCE CERTIFICATE (TCC) PROGRAM

The service provider must adopt a system for assessing the competency of technical personnel. The service provider must have an internal certification scheme for technical personnel that establish the technical authorization granted to each personnel.

The certification must be in the form of controlled document provided to each technical personnel that identifies the personnel and the types of aeronautical telecommunication and air navigation facilities for which the personnel has been ^{Attested by:} granted authorization, the operation

and maintenance functions authorized in relation to each facility, the date on which each authorization was granted and the date on which the authorization expires or the date on which revalidation or reassessment is due.

10.2.20 Facility-In-Charge

All CNS Services/Facilities shall have a designated Facility-In-Charge as the person responsible for the management and administration of the facility/ies and personnel.

10.2.25 Training Plans and Programs

The service provider must have a training plan and comprehensive program designed to develop skills and knowledge of technical personnel to attain competence and efficiency in the performance of the assigned task.

Technical personnel who carryout functions associated with the operation and maintenance of facilities must be given appropriate, specialized training on the facility type, followed by an on-the-job training and evaluation of their competence.

10.2.30 Distribution of Guidance Material/Information

The service provider must have a procedure for the formulation and distribution of guidance material especially safety critical information to technical personnel to enable them to perform their functions in accordance with the established requirements and in standardized manner.

10.2.35 Post Accident Facility Performance Inspection

1. In this regulation:

Director General has the meaning defined under RA 9497.

Performance inspection means one or more test that show the accuracy or integrity of a facility.

2. This regulation applies if the Director General tells the Service Provider that an air navigation facility may have contributed to an aviation accident or incident.

3. As soon as practicable time, and before any action is taken that could change the facility's performance, a performance inspection must be done.

4. The performance inspection must be:

a) Done by a qualified technical personnel in accordance with any instructions given by the Director General; and

- b) Witnessed by any representative assigned by the Director General.
5. A report of the performance inspection must be prepared by the technical personnel and signed by him and the witness.
6. If the performance inspection shows that the facility contributes to a hazard, the facility must not be used until it is operating within its technical specifications.

10.2.40 Interruption to service

This regulation applies if a CNS service is interrupted or if the Service Provider knows that the service is to be interrupted.

1. If the service is published in an AIP, the Service Provider must tell AIS about the interruption. It requires the service provider to advise AIS (for purpose of issue of a NOTAM) and other users (e.g. ATS) of planned or unplanned interruptions to any service.
2. If it is practicable to do so, the Service Provider must tell the users of the service about the interruption.

10.2.45 Test Equipment

Air Navigation Facility/ies must be tested and maintained using test equipment that is maintained and calibrated in accordance with the accepted standards required.

Service providers must have available the necessary test and measuring equipment for the operation, performance inspection and maintenance of all its facilities. The operating and maintenance instructions for each facility should specify the test equipment requirements for all levels of operation and maintenance undertaken by the service provider.

Standards for the control, calibration and maintenance of test equipment are as follows:

- Service providers are to use documented procedures to control, calibrate and maintain test equipment.
- Calibrated test equipment is use in the maintenance of a service or facility.
- Calibration is carried out at prescribed intervals for each type of test equipment and the calibration is traceable to national measurement standards.
- Records of calibration status of each item of test equipment are retained.

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- Each item of test equipment carries a visual identification of its calibration status, the date that the equipment was last calibrated and the prescribed calibration periodicity.
- The validity of previous results is assessed when any item of test equipment is found to be out of calibration.

10.2.50 Allocation of Frequencies, Identification codes/call signs

Those services that radiate electromagnetic signals-in-space must operate on an assigned aeronautical frequency in the relevant aeronautical frequency band. It is the responsibility of the CNS service provider to arrange for their frequency and identification codes/call signs of CNS service equipment before making any transmission, in close coordination with the Air Traffic Service.

10.2.55 Conformance to Flight Check Standard Procedures

Reference to CAR-ANS Part 14 (Flight Inspection Manual) as standard procedure to be adopted during the conduct of Flight Check Inspections.

10.2.60 Request for Commissioning/Special Flight Check

Request for commissioning/special flight check on visual and radio navigation aids shall be initiated by the CNS service provider (Director of ANS), Project Contractor recognized by CAAP or by other airport authority duly approved by the Director General.

10.2.65 Changes/Amendments to Operational Procedures and Standards

The service provider must have an established procedure to assess and authorize any changes/amendments to operational procedures in accordance with the approved document on procedures for the amendments of enabling regulations and standards.

10.2.70 Agreements/Contracts with other Organizations

Any support services agreement must be in writing and must include the terms about:

1. The functional specification of the support service; and
2. Each of the following that relates to the support service and is relevant to the service provided by the service provider:
 - a. Reliability
 - b. Availability
 - c. Accuracy

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d. Integrity

3. A way in which the service provider is to be notified of any interruption to the service.
4. A way in which the other organization will notify the service provider of any scheduled service interruptions.

10.3 DOCUMENTATIONS**10.3.1 Standard Documents to be maintained**

Documents required are the following:

1. Approved Facility Operations Manual
2. ICAO Annex 10 Volumes I to V, (those volumes actually held will depend upon the services provided);
3. ICAO Annex 11 (if the services are in support of ATS)
4. ICAO Annex 14 (for Airfield Lighting and Power Plant Facilities in support of Aeronautical telecommunications and radio navigational aids services)
5. Doc 8071, Volume 1, Manual on Testing of Radio Navigation Aids (if the services are in support of radio navigation aids);
6. Doc 9684 (if the service is in support of Radar Surveillance)
7. CAR-ANS Part 10 and relative MOS.
8. Administrative Order 139 and relative MOS (for ANF with Airports)
9. Manufacturer's equipment handbooks, in particular those volumes that contain the Operation and Maintenance Instructions, the logistics support and spare parts listings, as relevant to each facility, and for each associated item of test equipment used for maintenance.

10.3.5 Records

Records to keep are the following:

1. Records of as-built drawings, manufacturing, procurement, installation, testing, and commissioning, maintenance, routine operation, modification, and decommissioning;
2. Records of hazard analysis and risk management (RESERVED);

3. Records of facility performance and facility maintenance history including performance parameters values, test facilities utilized, identity of authorized technical personnel conducting the operation and maintenance.
4. Records of facility failures and faults;
5. Records of defect reports and associated defect investigations;
6. Records of each technical personnel including details of the personnel's qualification, experience, specialized trainings and Personnel Evaluation.
7. Flight Inspection Data/Commissioning Data

10.3.10 Personnel Evaluation System (PES)

The Service Provider shall adopt a Personnel Evaluation System enunciated under CSC Resolution No. 991792 and CSC MC No. 13 s. 1999 (Revised Policies on Performance Evaluation System).

10.4 FACILITY OPERATIONS MANUAL

10.4.1 Contents of Operations Manual

An operations manual must contain the information in this administrative order that applies to each CNS service and the kind of facility of the service provider (ANS) installed.

10.4.5 Organization Structure of Service Provider

An operations manual must include an approved organization structure of the service provider that shows:

1. Different divisions/sections
2. Functions
3. Actual Duties and Responsibilities of personnel
4. Job Description and Qualification Standards (approved by CSC)

10.4.10 Facility Organizational Chart

The Operations Manual must include a chart of the facility's organizational structure that shows:

1. The names, relevant qualifications, relevant experience and positions of key personnel.
2. Number of technical personnel who will provide each service
3. Hours of Operation
4. Manpower Shifting schedule

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10.4.15 **Functional Specification and Performance Values of the Services**

The operations manual must include the functional specification of each of the service provider's CNS Services. This is a general description of the service, its operating principles and its functions. The values for each of the following that apply to the service are:

1. availability
2. reliability
3. accuracy
4. integrity

The values mentioned must be derived or measured from either or both of the configuration of each service, and the known performance of each service.

For a radio navigation service, the integrity values must be given for each kind of navigational aid facility that forms part of the service.

Refer to MOS Part xx to determine the above-cited values.

10.4.20 **Facility Technical Description**

An operations manual must describe, for each CNS service, provided:

1. *The type and location of each facility.* The type of facility should be described and the location is the geographic name of the place at which the facility is installed.
2. *The technical specification of each kind of facility.* The technical specification of a facility should include, in technical terms, all inputs and outputs to the facility, and the specification and standards to which the facility has been designed. The technical specification must cover both the hardware and software of the facility. This information is normally provided by the equipment manufacturer. (If that is the case, reference to the relevant content in the manufacturer's documentation is all that is necessary in the Operation Manual)
3. *The interconnection of each facility making up the service; or to any other service to be provided under the Operations Manual.* This should be in the form of a block diagram, each facility representing one of the blocks should be identified and the major signal or data inputs and outputs between facilities or to or from other services shown.
4. *The monitoring system relevant to each facility.* The monitoring system for each facility, or group of facilities, should also be included in the ~~block diagram~~ ^{Attested by:} form, conveying the

method of monitoring, parameters monitored, monitoring outputs and the location at which the outputs are presented.

10.4.25 Compliance to Standards

An operations manual must contain a listings of each standard that relates to the design, installation, testing, operation or maintenance that are applicable to each service, and to each facility, which make up the service, and explain how each standard is met.

10.4.30 Safe Operation and Maintenance Procedures

Under this regulation, the service provider is required to document in its operations manual the in-house technical and operational procedures under which the organization shall carry out its service provision functions.

An operations manual must describe the following:

1. The procedures use for the conduct of daily and scheduled preventive maintenance including procedures for repair;
2. The method to be used to specify any changes to a service or facility, and to design, test and implement those changes;
3. The system to be used to maintain a record of the operational performance of a service;
4. The procedure to be used to monitor the performance of each service and facility, and to compare the results with the appropriate technical specification;
5. The procedure to be used if a service fails or a facility fault occurs, including the way in which the failure or fault is to be reported and rectified;
6. The procedure to be used to report deviations from standards any found during operation and maintenance of the facility;
7. The procedure to be used to:
 - a) Detect and correct any latent defects in equipment;
 - b) Change software to adapt to any changes to the configuration of hardware; and
 - c) Change the design of equipment or facilities to adapt to any change to the functional or technical specification.

10.4.35 Safety Standard Procedures on Emergency Situations

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The operations manual must contain the approved safety standard procedures on emergency situations in cases such as, natural calamities, terroristic attacks, fire, aircraft accidents, etc. which shall serve as safety reventive measures to protect the personnel and the CNS service facilities and equipment.

10.4.40 Human Factors Considerations

Human Factors principle must be observed in the operation and maintenance of air navigation facilities.

Note: guidance material on Human factors principles can be found in Human Factors training manual (Doc 9863) and Circular 249 (Human Factors Digest No. 11 – Human Factors in CNS/ATM Systems).

10.5 SAFETY MANAGEMENT SYSTEM

10.5.1 Safety Management System

1. A service provider must have, and put into effect, a safety management system that includes the policies, procedures, and practices necessary to safely provide the CNS services.
2. The safety management system must be in accordance with the standards set out in the approved CAAP State Safety Programme.
3. The service provider must keep its safety management system under review and take such corrective action as is necessary to ensure that it operates properly.

10.6 REPEALING PROVISIONS

CAR-ANS Part 10 repeals:

Any previous Administrative Orders, Circulars, Rules and Regulations which are inconsistent with the provisions hereof.

**PART 10B
REGULATORY REQUIREMENTS
FOR ATM SERVICE PROVIDERS**

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Issue 1

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Director General

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10.7 STANDARDS FOR AIR TRAFFIC MANAGEMENT

Air Traffic Management providers in the Philippines shall subscribe to the standards set out in the Civil Aviation Regulations –Air Navigation Services (CAR-ANS). The CAR-ANS are based on relevant ICAO annexes for air traffic services, aeronautical information, search and rescue service and meteorological service. Air Traffic Management in this context involves the following components; air traffic service, aeronautical information service, search and rescue service, and meteorological service.

Regulatory standards for ATM service providers.

ATM Component	CAAP Regulation/Standard
Air Traffic Services	CAR-ANS Part 11 CAR-ANS Part 2 & 13 PCAR Part 2 & Part 8
Aeronautical Information Service a) Aeronautical charts	CAR-ANS Part 15 CAR-ANS Part 4
Search and Rescue	CAR-ANS Part 12
Aeronautical Meteorological Service	CAR-ANS Part 3

The CAAP relevant regulatory body in ensuring the implementation of CAAP standards and regulations shall develop specific regulations and/or guidance materials whenever necessary or may as appropriate, adopt standards and recommended practices, procedures, and guidance materials from International Civil Aviation Organization's (ICAO) or other aviation organizations.

Related ICAO documents:

Annex 1 - Personnel Licensing
 Annex 2 - Rules of the Air
 Annex 3 - Meteorology
 Annex 4 - Aeronautical Charts
 Annex 5 – Units of Measurement
 Annex 10 Vol. 2 - Aeronautical Telecommunications -
 Annex 10 Vol. 5 - Aeronautical Telecommunications -
 Annex 11 - Air Traffic Services
 Annex 12 - Search and Rescue
 Annex 14 Vol. 1 - Aerodromes
 Annex 15 - Aeronautical Information Services

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10.8 GENERAL REQUIREMENTS FOR ATM PROVIDERS**10.8.1 Manual of Operations**

ATM service providers shall develop and provide its facilities with the approved operations manual in conformance with CAAP relevant regulatory standards.

10.8.2 Compliance to standards

In the event where service providers cannot meet CAAP regulatory standards and safety requirements despite best efforts, service providers shall file for exemption in accordance with *Chapter 7 of Manual of Aerodrome Regulatory Procedures*.

10.8.3 Service Providers' issuance of exemptions

Service providers shall establish policies and procedures on issuance of exemption/s to its clients. The policies shall cover those areas where safety is critical to ensure that procedures, processes or systems safety requirements are in place (*refer to SMS requirements in 10.9.7*).

10.8.4 Staffing and Training

10.8.4.1 Service providers shall develop policies and procedures in the selection, hiring and retention of qualified and experienced technical staff.

10.8.4.2 Service providers shall ensure that relevant regulatory standards/publications, operation manuals and ICAO documents are readily available to technical staff

10.8.4.3 Service providers shall ensure that technical personnel involved ATM operation holds necessary qualification and license (when applicable) provided for under CAR Part 2 and relevant Civil Service rules and regulations.

10.8.4.4 Service providers shall ensure that its technical staff are appropriately trained by establishing training programmes including refresher trainings and when applicable initial, recurrent or specialized training.

10.8.4.5 Service providers shall adopt a system for assessing the competency/proficiency of its technical personnel not only in the performance of their regular duties but also during abnormal

conditions, and whenever new equipment, procedures, and updated communications are implemented.

10.8.5 Record keeping and documentation

10.8.5.1 Service providers shall establish a system for the recording and retention of data. Records shall include but not limited to:

- a) ATS data;
- b) procedure design documentation;

10.8.5.2 Service providers shall establish mechanism that ensures reports and personnel records are maintained and updated and shall include:

- a) details of personnel qualification and experience;
- b) job descriptions;
- c) training reports and training records of all members of the organization, including management;
- d) internal and external audit reports; and
- e) management review meetings and reports.

10.8.6 Safety Audits and Inspections

10.8.6.1 Section 35 (g), Chapter 7 of RA 9497 (Powers and functions of the Director General), through Aerodrome and Air Navigation Safety Oversight Office (AANSOO), all ATM Services/Air Navigation Facilities are subject to CAAP/Aerodrome and Air Navigation Safety Oversight Office (AANSOO) Audit.

10.8.7 Access to ATM, CNS and Aerodrome facilities

10.8.7.1 Safety Oversight Auditors/Inspectors in the exercise of their functions shall have full access to ATM ,CNS and Aerodrome facilities to:

- a) Verify the safety level of the service/operation/facility.
- b) Inspect and conduct tests on their facilities, equipment, services or operating procedures, inspect their documents and records, and verify their Safety Management System as applicable for the purpose of aviation safety; and
- c) Any part of their facilities, equipment, records, and documentation for the purpose referred to in paragraph (a) and (b) above.

10.8.7.2 CAAP must give reasonable notice to the operator or service provider about the tests to be conducted and carry out the tests at a reasonable time.

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10.8.8 Resolution of Safety Deficiencies

10.8.8.1 Deficiencies/Findings affecting aviation safety identified by CAAP/AANSOO Auditor shall be resolved on a predetermined time acceptable to both the service provider and AANSOO. Should necessary corrective actions were not accomplished within reasonable time, the matter shall be reported to the Director General for a decision.

10.8.10 Air Navigation (ATM) Facility Certification/Rating (Reserved)

Pursuant to Section 35 (g), Chapter 7 of RA 9497, as promulgated in Section 27 (The Responsibility and Powers of the Director General) of the IRR, the Director General shall issue an Air Navigation Facility Certification/Rating to air navigation facilities operating within the Philippines to determine the compliance of its operation based on prescribed standards and required practices to assure safety in air transport.

10.8.11 Distribution of Guidance Material/Information

The service provider must have a procedure for the formulation and distribution of guidance material especially safety critical information to technical personnel to enable them to perform their functions in accordance with the established requirements and in standardized manner.

10.8.12 Human Factors Considerations

Human Factors principle shall be observed in the design and operation of air traffic management i.e., ATS, SAR, AIS and MET (refer to CAAP policy on human factors MC 08-09 dated August 6, 2009)

Note: Additional guidance material on Human factors principles can be found in Human Factors training manual (Doc 9863) and Circular 249 (Human Factors Digest No. 11 – Human Factors in CNS/ATM Systems).

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10.9 SAFETY REQUIREMENTS FOR ATS PROVIDER**10.9.1 Requirement for read-back of safety related parts and relevant information of ATC clearances and instructions**

ATS service provider shall ensure that read-back requirements in accordance with 11.3.7.3 of CAR-ANS Part 11 are adhered to.

10.9.2 Requirements for the control of movement of persons or vehicles on the maneuvering area of the aerodrome

ATS service provider shall ensure that the procedures for the control of persons or vehicles on the maneuvering area of the aerodrome are established and implemented in accordance with the provisions of 11.6.3 of CAR-ANS Part 11.

10.9.3 Requirements for coordination, communication and information for service providers.

10.9.3.1 Service providers shall ensure that policies and procedures are established and implemented for coordination with;

- a) Air operators, refer to 11.2.16, CAR-ANS Part 11
- b) Military authorities, refer to 11.2.17, CAR-ANS Part 11
- c) Meteorological services, refer to 11.2.20, CAR-ANS Part 11
- d) Aeronautical information services, 11.2.21, CAR-ANS Part 11

10.9.3.2 Service providers shall ensure that communication requirements for operations are established and implemented in accordance with 11.6, CAR-ANS Part 11.

10.9.3.3 Service providers shall ensure that policies and procedures are established and implemented for the prompt supply of meteorological information, information on aerodrome condition, operational status of associated facilities and navigational aids are in accordance with 11.7, CAR-ANS Part 11.

10.9.4 Requirements for emergency events and contingency planning

10.9.4.1 Service providers shall ensure policies and procedures are established and implemented for providing service to aircraft in the event of emergency specified in 11.2.23 of CAR-ANS Part 11.

10.9.4.2 Service providers shall develop and establish contingency plans and/or arrangements in the event of disruption or potential disruption

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of ATS or related supporting services in accordance with 11.2.30, CARA-ANS Part 11.

10.9.4.3 Service providers shall establish procedures to assist and to safeguard strayed unidentified aircraft in accordance with 11.2.24 of CAR-ANS Part 11.

10.9.4.4 Service providers shall ensure that ATC contingency procedures are established for ;

- a) Radio communication contingencies
- b) Emergency separation
- c) Short-term conflict alert (STCA)
- d) Minimum safe altitude (MSAW)

10.9.5 Requirement for ATS system capacity

10.9.5.1 ATS provider/s shall establish and implement policy and procedures in determining the capacity of ATS system including the required number of ATS staff to ensure the provision of adequate ATS system.

10.9.5.2 Service providers shall ensure that their facilities and operations are provided with adequate qualified technical staff. The adequacy of technical staff shall be based on the system capacity determined in item 10.8.8.1.

10.9.6 Regulatory criteria for procedure design

10.9.6.1 Service provider shall ensure that construction of visual and instrument flight procedures and applicable procedures for air navigation services and operations (PANS-OPS) shall be in accordance with PANS Doc. 8168 Vol. II.

10.9.6.2 Service provider shall carry out flight inspections of instrument flight procedures, including obstacle checks in accordance with CAR-ANS Part 14 (*Flight Inspections Regulatory Requirements and Procedures*).

10.9.7 Safety Management System

10.9.7.1 A service provider shall have, and put into effect, a safety management system acceptable to CAAP that includes the policies, procedures, and practices necessary in the safe provision of air traffic services in accordance with Appendix 1 to CAR-ANS Part 10 B.

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- 10.9.7.2 The service provider shall conduct regular reviews of its safety management system and shall take corrective action/s as necessary to ensure that it operates properly.
- 10.9.7.3 The service provider's SMS shall ensure that safety assessment is carried out for any significant safety-related change to ATM system..
- 10.9.7.4 The service provider's SMS shall ensure that safety reviews are being conducted regularly by appropriately qualified personnel.
- 10.9.7.5 The Service provider shall ensure that a system for reporting air traffic incidents is established and implemented.
- 10.9.1.6 Service providers shall establish and implement a runway safety programme commensurate to the size and complexity of its organization (*Guidance material in establishing a runway safety programme is contained in AANSOO memorandum circular xxx...*)

10.10 REQUIREMENTS FOR AERONAUTICAL INFORMATION SERVICE

- 10.10.1 AIS provider shall develop and implement a recognized quality system.
- 10.10.2 The quality system shall address the data quality requirements for publication resolution and data integrity in accordance with the provisions of CAR-ANS Part 15.
- 10.10.3 AIS provider shall published an aeronautical information publication (AIP) in accordance with Appendix 15A of CAR-ANS Part 15.
- 10.10.4 AIS provider shall ensure that the aeronautical information regulation and control (AIRAC) system is being used to notify the establishment, withdrawal and premeditated significant changes of circumstances listed in Appendix 15C of CAR-ANS Part 15.
- 10.10.5 AIS provider where appropriate shall coordinate with the unit/office responsible for PANS-OPS in the formulation of aeronautical charts and ensure that aeronautical data quality requirements on data integrity and charting resolution are in accordance with the provisions in Tables 1 to 5, Appendix 6, CAR-ANS Part 4.

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10.11 REQUIREMENTS FOR METEOROLOGICAL SERVICE

- 10.11.1 Meteorological services provider shall ensure that a properly organized quality system is established and implemented.
- 10.11.2 Meteorological services provider shall ensure that wind sensors are sited and located to give the best practicable indication of wind conditions along the runway/touchdown zone as provided in 3.4.6.1 of CAR-ANS Part 3.
- 10.11.3 Meteorological services provider in coordination with ATS providers and/or aerodrome operators shall establish mechanism on the issuance of wind shear warnings to aerodromes where wind shear is considered a safety factor.
- 10.11.4 Meteorological service provider in coordination with ATS provider shall ensure that regulatory criteria for special observation are promulgated.

10.12 REQUIREMENTS FOR SEARCH AND RESCUE SERVICE (SAR)

- 10.12.1 SAR provider shall ensure that the established Rescue Coordination Center (RCC) is staffed 24 hours a day by trained and qualified personnel proficient in the use of the language used for radiotelephony.
- 10.12.2 The Rescue Coordination Center shall ensure:
- a) detailed plans of operation are prepared for the conduct of SAR operations within its Search and Rescue Region (SRR).
 - b) That means of plotting are provided and charts which apply to the SRR (aeronautical, nautical, topographic and hydrographic) are available;
 - c) it has the ability to receive distress alerts;
 - d) immediate communications with associated ATS units, and when available with associated rescue sub centers, direction finding (DF) and position fixing stations and associated crash and rescue services (CRSs); and
 - e) rapid and available communications with search and rescue units (SRUs), adjacent SRRs, designated MET offices, and alerting posts.

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10. 13 REPEALING PROVISIONS

CAR-ANS Part 10B repeals:

Any previous Administrative Orders, Circulars, Rules and Regulations which are inconsistent with the provisions hereof.

Appendix 1 to CAR-ANS Part 10B

CAAP REGULATION ON SMS

1. STATUTORY BASIS

This regulation is promulgated under the statutory authority in CAR-ANS Part 10B as part of safety regulatory requirements for ATS service providers.

2. SCOPE AND APPLICABILITY

2.1 Scope

- 2.1.1 This regulation specifies the requirements for a service provider's safety management system (SMS) operating in accordance with Annex 11 — *Air Traffic Services*.
- 2.1.2 Within the context of this regulation the term "service provider" refers to air traffic service provider (ATS) providing air traffic services within the Philippines airspace.
- 2.1.3 This regulation addresses aviation safety-related processes, procedures and activities rather than occupational safety, environmental protection, or customer service or product quality.
- 2.1.4 The service provider is responsible for the safety of services or products contracted or subcontracted to, or purchased from, other organizations.
- 2.1.5 This regulation establishes the minimum acceptable requirements; the service provider can establish more stringent requirements.

2.2 Applicability and acceptance

- 2.2.1 The service provider shall have in place a safety management system (SMS) acceptable to CAAP that, as a minimum:
 - 2.2.1.1 identifies safety hazards;
 - 2.2.1.2 ensures the implementation of remedial action necessary to maintain agreed safety performance;
 - 2.2.1.3 provides for continuous monitoring and regular assessment of safety performance; and

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- 2.2.1.4 aims at a continuous improvement of the overall performance of the safety management system.
- 2.2.2 In order to be acceptable to the CAAP, a service provider's SMS shall meet the requirements set forth in this regulation.

3. REFERENCES

- 3.1 This regulation is in accordance with Annex 11 — *Air Traffic Services*;
- 3.2 This regulation is in accordance with the provision on SMS for service provider in CAR-ANS Part 11.
- 3.3 Guidance on the implementation of SMS is provided in Advisory Circular – *AC139 & CAR-ANS – 009 -01 -0 Implementation of SMS for Aerodrome and ANS Providers*.
- 3.4 Safety Management Manual, ICAO Doc. 9859, 2nd Ed. 2009.

4. GENERAL

A service provider shall develop, establish, maintain and adhere to a safety management system (SMS) that is appropriate to the size, nature and complexity of the operations authorized to be conducted under its operations certificate, and the hazards and safety risks related to the operations.

5. SAFETY POLICY AND OBJECTIVES

5.1 General requirements

- 5.1.1 A service provider shall define the organization's safety policy.
- 5.1.2 The safety policy shall be signed by the Accountable Executive of the organization.
- 5.1.3 The safety policy shall include the responsibilities of management and employees with respect to the safety performance of the SMS.
- 5.1.4 The safety policy shall include a clear statement about the provision of the necessary resources for its implementation.
- 5.1.5 The safety policy shall be communicated, with visible endorsement, throughout the organization.
- 5.1.6 The safety policy shall also include, *inter alia*:
- 5.1.6.1 A commitment to continual improvement in the level of safety;
- 5.1.6.2 The hazard reporting procedure ~~attested~~ by:

- 5.1.6.3 The conditions under which disciplinary action would be not be applicable following hazard reporting by employees.
- 5.1.7 The safety policy shall be in accordance with all applicable legal requirements and international standards, best industry practices and shall reflect organizational commitments regarding safety.
- 5.1.8 The safety policy shall be reviewed periodically to ensure it remains relevant and appropriate to the organization.
- 5.1.9 A service provider shall establish safety objectives for the SMS.
- 5.1.10 the safety objectives should be linked to the safety performance indicators, safety performance targets and action plans of the service provider's SMS.

5.2 SMS organizational arrangements

and Safety accountabilities and responsibilities

- 5.2.1 A service provider shall identify an Accountable Executive to be responsible and accountable on behalf of the service provider for meeting the requirements of this regulation, and shall notify *[State]* the name of the person.
- 5.2.2 The Accountable Executive shall be a single, identifiable person who, irrespective of other functions, shall have ultimate responsibility and accountability, on behalf of the *[organization]*, for the implementation and maintenance of the SMS.
- 5.2.3 The Accountable Executive shall have:
- 5.2.3.1 Full control of the human resources required for the operations authorized to be conducted under the operations certificate;
 - 5.2.3.2 Full control of the financial resources required for the operations authorized to be conducted under the operations certificate;
 - 5.2.3.3 Final authority over operations authorized to be conducted under the operations certificate;
 - 5.2.3.4 Direct responsibility for the conduct of the organization's affairs; and
 - 5.2.3.5 Final responsibility for all safety issues.
- 5.2.4 A service provider shall establish the necessary organizational arrangements for the implementation of, adherence to and maintenance of the organization's SMS.

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- 5.2.5 A service provider shall identify the safety accountabilities, responsibilities and authorities of all members of management as well as of all employees, irrespective of other responsibilities.
- 5.2.6 Safety-related accountabilities, responsibilities and authorities shall be defined, documented and communicated throughout the organization.
- 5.2.7 A service provider shall identify someone from management to be the safety manager, the individual and focal point responsible for the implementation and maintenance of an effective SMS.
- 5.2.8 The safety manager shall *inter alia*:
- 5.2.8.1 Ensure that processes needed for the SMS are developed, implemented adhered to and maintained;
- 5.2.8.2 Report to the Accountable Executive on the performance of the SMS and on any need for improvement; and
- 5.2.8.3 Ensure safety promotion throughout the organization.

5.3 Coordination of emergency response planning

- 5.3.1 A service provider shall ensure its emergency response plan is properly coordinated with the emergency response plans of those organizations it must interface with during the provision of its services.
- 5.3.2 The coordination of the emergency response plan shall ensure the orderly and efficient transition from normal to emergency operations and the return to normal operations.
- 5.3.3 The coordination of the emergency response plan shall include, *inter alia*, the:
- 5.3.3.1 delegation of emergency authority;
- 5.3.3.2 assignment of emergency responsibilities during the coordinated activities;
- 5.3.3.3 coordination of efforts to cope with the emergency; and
- 5.3.3.4 compatibility with other emergency response plans of other organizations.

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5.4 Documentation

- 5.4.1 A service provider shall develop and maintain SMS documentation to describe:
- 5.4.1.1 the safety policy and objectives;
 - 5.4.1.2 the SMS requirements;
 - 5.4.1.3 the SMS processes and procedures;
 - 5.4.1.4 the accountabilities, responsibilities and authorities for processes and procedures;
and
 - 5.4.1.5 the SMS outputs.
- 5.4.2 A service provider shall, as part of the SMS documentation, complete a system description.
- 5.4.3 The system description shall include the following:
- 5.4.3.1 the system interactions with other systems in the air transportation system;
 - 5.4.3.2 the system functions;
 - 5.4.3.3 required human performance considerations of the system operation;
 - 5.4.3.4 hardware components of the system;
 - 5.4.3.5 software components of the system;
 - 5.4.3.6 related procedures that define guidance for the operation and use of the system;
 - 5.4.3.7 operational environment; and
 - 5.4.3.8 contracted, subcontracted and purchased products and/or services.
- 5.4.4 A service provider shall, as part of the SMS documentation, complete a gap analysis, in order to:
- 5.4.4.1 identify the safety arrangements and structures that may already exist in its organization; and
 - 5.4.4.2 determine additional safety arrangements required to implement and maintain the organization's SMS.
- 5.4.5 A service provider shall, as part of the SMS documentation, develop, adhere to and maintain an SMS implementation plan.
- 5.4.6 The SMS implementation plan shall be the definition of the approach the organization will adopt for managing safety in a manner that will meet the organization's safety objectives.
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- 5.4.7 The SMS implementation plan shall explicitly address the coordination between the SMS of the service provider and the SMS of other organizations the service provider must interface with during the provision of services.
- 5.4.8 The SMS implementation plan shall include the following:
- 5.4.8.1 safety policy and objectives;
 - 5.4.8.2 system description;
 - 5.4.8.3 gap analysis;
 - 5.4.8.4 SMS components;
 - 5.4.8.5 safety roles and responsibilities;
 - 5.4.8.6 hazard reporting policy;
 - 5.4.8.7 means of employee involvement;
 - 5.4.8.8 safety performance measurement;
 - 5.4.8.9 safety training;
 - 5.4.8.10 safety communication; and
 - 5.4.8.11 management review of safety performance.
- 5.4.9 The SMS implementation plan shall be endorsed by senior management of the organization.
- 5.4.10 A service provider shall, as part of the SMS documentation, develop and maintain a safety management systems manual (SMSM), to communicate the organization's approach to safety throughout the organization.
- 5.4.11 The SMSM shall document all aspects of the SMS, and its contents shall include the following:
- 5.4.11.1 scope of the safety management system;
 - 5.4.11.2 safety policy and objectives;
 - 5.4.11.3 safety accountabilities;
 - 5.4.11.4 key safety personnel;
 - 5.4.11.5 documentation control procedures;
 - 5.4.11.6 coordination of emergency response planning;
 - 5.4.11.7 hazard identification and safety risk management schemes;
 - 5.4.11.8 safety performance monitoring;
 - 5.4.11.9 safety auditing;

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5.4.11.10 procedures for the management of change;

5.4.11.11 safety promotion; and

5.4.11.12 control of contracted activities.

6. SAFETY RISK MANAGEMENT

6.1 General

6.1.1 A service provider shall develop and maintain a formal process that ensures that hazards in operations are identified.

6.1.2 A service provider shall develop and maintain safety data collection and processing systems (SDCPS) that provide for the identification of hazards and the analysis, assessment and mitigation of safety risks.

6.1.3 A service provider's SDCPS shall include reactive, proactive and predictive methods of safety data collection.

6.2 Hazard identification

6.2.1 A service provider shall develop and maintain formal means for effectively collecting, recording, acting on and generating feedback about hazards in operations, which combine reactive, proactive and predictive methods of safety data collection. Formal means of safety data collection shall include mandatory, voluntary and confidential reporting systems.

6.2.2 The hazard identification process shall include the following steps:

6.2.2.1 reporting of hazards, events or safety concerns;

6.2.2.2 collection and storage of safety data;

6.2.2.3 analysis of the safety data; and

6.2.2.4 distribution of the safety information distilled from the safety data.

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6.3 Safety risk assessment and mitigation

- 6.3.1 A service provider shall develop and maintain a formal process that ensures analysis, assessment and control of the safety risks of the consequences of hazards during the provision of its services.
- 6.3.2 The safety risks of the consequences of each hazard identified through the hazard identification processes described in section 7.2 of this regulation shall be analyzed in terms of probability and severity of occurrence, and assessed for their tolerability.
- 6.3.3 The organization shall define the levels of management with authority to make safety risk tolerability decisions.
- 6.3.4 The organization shall define safety controls for each safety risk assessed as tolerable.

7. SAFETY ASSURANCE

7.1 General

- 7.1.1 A service provider shall develop and maintain safety assurance processes to ensure that the safety risk controls developed as a consequence of the hazard identification and safety risk management activities in paragraph 7 achieve their intended objectives.
- 7.1.2 Safety assurance processes shall apply to an SMS whether the activities and/or operations are accomplished internally or are outsourced.

7.2 Safety performance monitoring and measurement

- 7.2.1 A service provider shall, as part of the SMS safety assurance activities, develop and maintain them necessary means to verify the safety performance of the organization in reference to the safety performance indicators and safety performance targets of the SMS, and to validate the effectiveness of safety risk controls.
- 7.2.2 Safety performance monitoring and measurement means shall include the following:
- 7.2.2.1 hazard reporting systems;
 - 7.2.2.2 safety audits;
 - 7.2.2.3 safety surveys;
 - 7.2.2.4 safety reviews;

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7.2.2.5 safety studies; and

7.2.2.6 internal safety investigations.

7.2.3 The hazard reporting procedures shall set out the conditions to ensure effective reporting, including the conditions under which disciplinary/administrative action shall not apply.

7.3 Management of change

7.3.1 A service provider shall, as part of the SMS safety assurance activities, develop and maintain a formal process for the management of change.

7.3.2 The formal process for the management of change shall:

7.3.2.1 identify changes within the organization which may affect established processes and services;

7.3.2.2 establish arrangements to ensure safety performance prior to implementing changes; and

7.3.2.3 eliminate or modify safety risk controls that are no longer needed due to changes in them operational environment.

7.4 Continuous improvement of the safety system

7.4.1 A service provider shall, as part of the SMS safety assurance activities, develop and maintain formal processes to identify the causes of substandard performance of the SMS, determine the implications on its operations, and rectify situations involving substandard performance in order to ensure continuous improvement of the SMS.

7.4.2 Continuous improvement of the service provider's SMS shall include:

7.4.2.1 proactive and reactive evaluations of facilities, equipment, documentation and procedures, to verify the effectiveness of strategies for control of safety risks; and

7.4.2.2 proactive evaluation of the individual's performance, to verify the fulfillment of safety responsibilities.

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8. SAFETY PROMOTION

8.1 General

Service providers shall develop and maintain formal safety training and safety communication activities to create an environment where the safety objectives of the organization can be achieved.

8.2 Safety training

- 8.2.1 A service provider shall, as part of its safety promotion activities, develop and maintain a safety training programme that ensures that personnel are trained and competent to perform their SMS duties.
- 8.2.2 The scope of the safety training shall be appropriate to the individual's involvement in the SMS.
- 8.2.3 The Accountable Executive shall receive safety awareness training regarding:
 - 8.2.3.1 safety policy and objectives;
 - 8.2.3.2 SMS roles and responsibilities;
 - 8.2.3.3 SMS standards; and
 - 8.2.3.4 safety assurance.

8.3 Safety communication

- 8.3.1 A service provider shall, as part of its safety promotion activities, develop and maintain formal means for safety communication, to:
 - 8.3.1.1 ensure that all staff are fully aware of the SMS;
 - 8.3.1.2 convey safety-critical information;
 - 8.3.1.3 explain why particular safety actions are taken;
 - 8.3.1.4 explain why safety procedures are introduced or changed; and
 - 8.3.1.5 convey generic safety information.
- 8.3.2 Formal means of safety communication shall include, *inter alia*:

- 8.3.2.1 safety policies and procedures;
- 8.3.2.2 newsletters;
- 8.3.2.3 bulletins; and
- 8.3.2.4 websites.

9. QUALITY POLICY

A service provider shall ensure that the organization's quality policy is consistent with, and supports the fulfillment of, the activities of the SMS.

10. IMPLEMENTATION OF THE SMS

- 10.1 This regulation proposes, but does not mandate, a phased implementation of a service provider's SMS, which encompasses four phases as described in 10.2 through 10.5.
- 10.2 **Phase I** — Planning should provide a blueprint on how the SMS requirements will be met and integrated into the organization's work activities, and an accountability framework for the implementation of the SMS:
 - 10.2.1 Identify the Accountable Executive and the safety accountabilities of managers;
 - 10.2.2 Identify the person (or planning group) within the organization responsible for implementing the SMS;
 - 10.2.3 Describe the system (ATOs, air operators, AMOs, organizations responsible for type design and/or manufacture of aircraft, ATC service providers, certified aerodromes);
 - 10.2.4 Conduct a gap analysis of the organization's existing resources compared with the national and international requirements for establishing an SMS;
 - 10.2.5 Develop an SMS implementation plan that explains how the organization will implement the SMS on the basis of national requirements and international SARPs, the system description and the results of the gap analysis;
 - 10.2.6 Develop documentation relevant to safety policy and objectives; and
 - 10.2.7 Develop and establish means for safety communication.
- 10.3 **Phase II** — Reactive processes should put into practice those elements of the SMS implementation plan that refer to safety risk management based on reactive processes:

- 10.3.1 hazard identification and safety risk management using reactive processes;
- 10.3.2 training relevant to:
 - 10.3.2.1 SMS implementation plan components; and
 - 10.3.2.2 safety risk management (reactive processes).
- 10.3.4 documentation relevant to:
 - 10.3.4.1 SMS implementation plan components; and
 - 10.3.4.2 safety risk management (reactive processes).
- 10.4 **Phase III** — Proactive and predictive processes should put into practice those elements of the SMS implementation plan that refer to safety risk management based on proactive and predictive processes:
 - 10.4.1 hazard identification and safety risk management using proactive and predictive processes;
 - 10.4.2 training relevant to:
 - 10.4.2.1 SMS implementation plan components; and
 - 10.4.2.2 safety risk management (proactive and predictive processes).
 - 10.4.3 documentation relevant to:
 - 10.4.3.1 SMS implementation plan components; and
 - 10.4.3.2 safety risk management (proactive and predictive processes).
- 10.5 **Phase IV** — Operational safety assurance should put into practice operational safety assurance:
 - 10.5.1 development of and agreement on safety performance indicators and safety performance targets;
 - 10.5.2 SMS continuous improvement;
 - 10.5.3 training relevant to operational safety assurance;
 - 10.5.4 documentation relevant to operational safety assurance; and
 - 10.5.5 develop and maintain formal means for safety communication.

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