



CIVIL AVIATION REGULATIONS  
AIR NAVIGATION SERVICES

**Part 10**

**REGULATORY REQUIREMENTS on the  
Operation and Maintenance of  
Communications, Navigation,  
Surveillance, Airfield Lighting and  
Power Systems Services**

**CIVIL AVIATION AUTHORITY OF THE PHILIPPINES**  
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Metro Manila

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# Republic of the Philippines

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

### Part 10

#### REGULATORY REQUIREMENTS on the Operation and Maintenance of Communications, Navigation, Surveillance, Airfield Lighting and Power Systems Services

11 JULY 2016

#### 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.

#### APPROVED BY:

  
\_\_\_\_\_  
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17 AUG 2016

\_\_\_\_\_  
DATE

## FOREWORD

Pursuant to the pertinent provisions of Republic Act No. 9497, 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 Air navigation Service Provider
- General obligations and responsibilities of Air Navigation Service Provider
- Facility Operations Manuals (FOM)
- Documentations
- Safety Management System

This CAR-ANS shall be known as REGULATORY REQUIREMENTS on the Operation and Maintenance of Communications, Navigation and Surveillance (CNS), Airfield Ground Lighting and Power Systems Services.



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## INTRODUCTION

The Civil Aviation Authority of the Philippines (CAAP) is responsible under Republic Act No. 9497 or known as the Civil Aviation Authority Act of 2008, to formulate and establish rules and regulations governing the civil aviation in the Philippines. The CAAP exercises regulatory oversight by developing and promulgating appropriate, clear and enforceable aviation safety standards.

This CAR-ANS Part 10, Regulatory Requirements for CNS Services, Airfield Ground Lighting and Power systems, is one mechanism that CAAP uses to meet the requirements of the Republic Act No. 9497 in ensuring the safety regulation of air navigation services. This CAR-ANS prescribes the detailed regulatory requirements and standards that have been determined to be necessary for promoting and supporting aviation safety in general.

The responsibility for matters within these regulations is with the Aerodrome and ANS Safety Oversight Office (AANSOO), CAAP.



## 10.1 GENERAL

### 10.1.1 Scope of CAR-ANS

This CAR-ANS specifies the standards and basic regulatory framework for all CNS Service Providers (CNSSP) including Airfield Ground lighting and power systems service providers on the following matters:

1. Prescribed Standards and required Practices on the establishment, dissolution, operation, and maintenance of CNS Service/ air navigation facilities to provide allied services.
2. Organization
3. General obligations and responsibilities of CNS Service Provider
4. General obligations and responsibilities of AFL Service Providers
5. Approved Facility Operations Manual
6. Records and documentations
7. Safety Management System (Reserved)

### 10.1.2 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;
- b) Establishment, operation and Maintenance of Airfield Lighting and Power facilities on airports and/or air navigation facilities.
- c) Establishment, operation and maintenance of flight inspection service and CNS signals-in space calibration systems.

### 10.1.3 Definitions for this Part

In this regulation, the terms listed below have the following meanings whenever they appear. The definitions are consistent with those definitions used in R.A. 9497, ICAO Annex 10, Annex 14 and Doc 8071.

**AANSOO** means Aerodrome and Air Navigation Safety Oversight Office.

**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 standard values.

**Air Navigation Facility** refers to any facility used in, available for

use in, or designed for use in aid of air navigation, including airports, landing areas, lights, any apparatus or equipment for disseminating weather information, for signalling, for radio directional finding, or for radio or other electromagnetic communication, and any other structure or mechanism having a similar purpose for guiding or controlling flight in the air or the landing and take-off of aircraft.

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

**Air Navigation Services** refers to and includes information, directions and other facilities furnished, issued or provided in connection with the navigation or movement of aircraft, and the control of movement of vehicles in any part of an airport used for the movement of aircraft (as defined in Republic Act 9497)..

These include services provided to all air traffic during all phases of operations including air traffic management (ATM), communication, navigation, surveillance (CNS), meteorological services for air navigation (MET), search and rescue (SAR) and aeronautical information services (AIS) [as defined in ICAO document 9734 Part A, Safety Oversight Manual].

**Air Navigation Service Provider (ANSP)** is a legal entity providing Air Navigation Services. Air navigation service providers are either government departments, state-owned companies, or private organizations. Depending on the specific mandate, an ANSP provides one or more of the following services to airspace users:

- Air Traffic Management (ATM)
- Communications, navigation and surveillance systems (CNS)
- Meteorological services for air navigation (MET)
- Search and rescue (SAR)
- Aeronautical information services/aeronautical information management (AIS/AIM)

These services are provided to air traffic during all phases of operations (approach, aerodrome and en-route).

**Air Traffic Safety Electronics Personnel (ATSEP)** means the technical staff involved with the creation and support of the ground-based electronic hardware and software systems used to support air navigation and Air Traffic Management.

**Audit.** A systematic, independent and documented process for obtaining compliance status of the facility with mandatory regulatory requirements and standards.

**Authority** means the Civil Aviation Authority of the Philippines (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.

**CAAP** means the Civil Aviation Authority of the Philippines.

**CNS** means Communication, Navigation, and Surveillance.

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

**CNS Service Provider (CNSSP)**, means a person, an organization or entity authorized to operate and maintain CNS facilities and/or provide CNS service.

**Commissioning**, an extensive flight inspection following ground proof-of-performance inspection to establish the validity of the signals-in-space. The results of this inspection should be correlated with the results of the ground inspection. Together they form the basis for certification of the facility.

**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.

**Director General** has the meaning defined under R.A. 9497.

**Down Time** means the period during which a service is interrupted.

**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.

In relation to CNS service, it refers to condition, object or activity with the potential of causing injuries to personnel, damage to equipment or structures, loss of material, or reduction to ability to perform a prescribed function.

**Inspection.** The basic activity of an audit, which involves examination of the specific element of the safety oversight programme of the State. It may involve a series of tests carried

out by a state authority or an organization as authorized by a state to establish the operational classification of the facility.

**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 (MOS)** means the document called "Manual of Standards (MOS) that 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
- Any undertaking which may affect the operability of a facility while the facility remains in operational service; or
- Any undertaking involving periodic performance inspection, or maintenance on a facility while the facility remains in standard operational service; or
- Any undertaking related to flight inspection/calibration on a facility for the purpose of compliance with this CAR-ANS.
- Any undertaking for the purpose of restoring the facility into operational service.

**Operations Manual** means a manual that establishes the policies, arrangements standards and procedures under which the services will be delivered. This manual serves as the bases of all undertakings relative to the facility and the service being provided.

**Periodic Performance Inspection** means one or more test in accordance with the manufacturers handbook or facility operations manual performed on a specified interval that show the accuracy or integrity of a facility.

**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.

**Risk** means risk to aviation industry. The predicted probability

and severity of the consequences or outcomes of a hazard.

**Safety** means aviation safety. Freedom from danger or risk.

**Service Provider** means CNS Service Provider (CNSSP).

**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.

#### 10.1.4 Prohibition

10.1.4.1 Any person, organization or entity is prohibited to provide any service defined as CNS service if it is not authorized by CAAP.

10.1.4.2 Any facility within which the flight inspection certification has lapsed shall not be used for air navigation and/or aircraft operation unless certified by authorised technical personnel for its integrity and accuracy as provided for in this regulation.

### 10.2 STANDARDS FOR CNS SERVICES

Any reference in these regulations relative to CNS Services is a reference to the national and international standards and acceptable practices set out in conformance to **ICAO Annex 10**, Annex 14, and the applicable CAR related documents.

#### 10.2.1 GROUND TESTING

##### 10.2.1.1 Ground Tests for Radio Navigation Aids

All Radio Navigation Aids facilities must be subject to periodic ground testing using the procedures provided by the ICAO Doc. 8071, Vol. I (Manual on Testing of Radio Navigation Aids) and/or equipment manufacturer's manual.

##### 10.2.1.2 Earth Ground Test for CNS Facilities, Airfield Lighting and Power Systems

All CNS facilities, airfield lighting installations and power systems must be subject to earth ground testing at least once every year using the procedures as provided in CAAP MOS for Aerodromes and Test Equipment Manual.

##### 10.2.1.3 Ground Tests for Visual Approach Slope Indicators

All Visual Approach Slope Indicators (VASI) must be subject to periodic ground test using the procedures specified in the equipment manufacturer's handbook/manual.

## 10.2.2 COMMISSIONING

### 10.2.2.1 Radio Navigation Aids

As specified under Sub-part, 10.1.4.1, a newly established radio navigation aids must be authorized before it can be placed into operational service. As such, all newly installed radio navigation aids must be subject to commissioning in accordance with the Flight Inspection Manual of Procedures approved by CAAP and/or ICAO Doc. 8071, Vol. 1 (Manual on Testing of Radio Navigation Aids).

### 10.2.2.2 Visual Aids and Associated power system

All newly installed visual aids with the associated power systems must be subject to commissioning before it can be placed into operation using the procedures and standards specified in the flight inspection manual of procedures approved by CAAP and/or ICAO Doc. 8071 (Manual on Testing of Radio Navigation Aids, ICAO Doc. 9157 (Aerodrome Design Manual - Part 4).

### 10.2.2.3 Aeronautical Surveillance System

All newly installed Aeronautical Surveillance Systems must be subject to commissioning using the procedures and standards specified in the Flight Inspection Manual of procedures approved by CAAP and/or ICAO Doc 8071, Vol. 3 (Testing of Radio Navigation Aids).

### 10.2.2.4 Satellite augmentation and communication systems

All satellite augmentation and communication systems must be subject to commissioning flight Inspection in accordance to the standards and procedures specified in ICAO Doc. 8071, Vol. 2. (Manual on Testing of Radio Navigation Aids)

## 10.3 FLIGHT CHECK INSPECTION

10.3.1 All visual and radio navigation aids facilities must be subject to periodic flight inspection to verify the signal-in-space performance of the facility.

10.3.1.1 Flight inspection must provide a comprehensive report of the accuracy, coverage or any other aspect of the performance of a service or facility conducted by using calibrated test equipment on board an aircraft in flight.

10.3.1.2 Flight inspection of instrument flight procedures is required to assure that the appropriate radio navigation aids adequately support the procedure.

10.3.2 Periodic Performance Inspection

- 10.3.2.1 For navigational aids in particular,
- Periodic performance 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.
- 10.3.3 Flight Inspection Standard and Procedures
- 10.3.3.1 Flight Inspection must be carried using an appropriately equipped aircraft and performed by a qualified flight inspection pilot and appropriately trained flight inspector.
- 10.3.3.2 Standard and procedures to be adopted during the conduct of Flight Inspections shall conform to the ICAO Doc. 8071 (Testing of Radio Navigation Aids) and Flight Inspection Manual of Standards and Procedures approved by CAAP.
- 10.3.3.3 Flight inspection interval and periodicity shall conform to the Flight Inspection Manual of Standards as approved by CAAP (Refer to Doc 8071):
- a. Instrument Landing system (ILS) must undergo flight inspection at least twice (2) in a 360-day period following the last flight inspection certificate validity;
  - b. Very High Frequency Omni-Directional Radio Range(VOR), Distance Measuring Equipment (DME), Non-Directional Beacon(NDB) must undergo flight inspection at least once every 360-day period following the last flight inspection certificate validity;
  - c. Visual Ground Slope Indicators (VGSI) must undergo flight inspection at least once in a 360-day period following the last valid flight inspection certificate;
  - d. Instrument Approach Procedure must be inspected at the same interval as the ground based system supporting the procedure i.e. VOR, DME, NDB;
  - e. Approach Lighting and Communications Systems must undergo flight inspection to coincide with the interval of the most critical system supporting aircraft operation;
  - f. Surveillance systems must undergo flight inspection at least once every 720-day period following its commissioning as mentioned in this regulations;
  - g. Satellite augmentation systems must undergo flight check for signal strength and interference to coincide with the flight inspection of ILS systems.

## 10.3.4 Flight Inspection Requirements

Flight inspection organizations certifying air navigation facilities must comply with the following requirements, as:

## 10.3.4.1 Aircraft

Must be capable of providing the required inspection procedures and conforms to the flight inspection aircraft requirements as provided in the Flight Inspection Manual of Standards and Procedures approved by CAAP and/or ICAO DOC. 8168.

## 10.3.4.2 Flight Inspection Crew

Personnel performing flight inspection must;

- a. Have the credentials and authentic certification issued by competent authorities which clearly states the responsibilities of ensuring the satisfactory operation of air navigation facilities, instrument flight procedures, and VFR Aeronautical Chart verification.
- b. Have been granted authorization by the State to conduct flight inspection functions and procedures as specified in this regulation, and related ICAO documents.

## 10.3.4.3 Aerodrome and Ground Support equipment

- a. Airborne and ground support flight inspection equipment must be calibrated to a standard traceable to the national and international standards and technology or equivalent.
- b. Automated Flight Inspection System (AFIS) must be the primary airborne instrument for conducting flight inspections.
- c. Other Approved Systems (Portable/Utility Class) and Methods (Theodolite, RTT, or Manual) may be used unless prohibited by other guidance for flight inspection. These systems/methods must not be used solely to bypass the need for facility data of sufficient accuracy.
- d. Portable/Utility class equipment appropriate installed in aircraft having the required parameters in accordance with approved procedures maybe utilized for the purpose of conducting flight inspections, subject to clearance and approval of the Director General.

## | 10.3.5 Special Flight Inspection

- 10.3.5.1 Special Flight inspection must be conducted before an air navigation facility can be put into operational service following a major repair, alteration, modification or changes that may affect its required performance are made.



- 10.3.5.2 Special flight check on visual and radio navigation aids shall be requested by the CNS service provider or Project Contractor recognized by CAAP or by other airport authority duly approved by the Director General.

#### **10.4 SAFETY INSPECTION AUDIT**

- 10.4.1 Periodic safety inspection/audit
- a. Safety Audits and inspection of all Air Navigation facility shall be periodically conducted to ensure compliance to regulations and conformance to prescribed standards and required practices.
  - b. Authorized Safety Oversight Auditors/Inspectors shall have full access to all facilities, equipment and procedures when conducting safety inspection/audit to verify the safety level of the facility. Other airport authorities and authorized service providers must provide full access pass to CAAP/AANSOO Auditors for such purpose.

#### **10.5 RESOLUTION OF IDENTIFIED DEFICIENCIES**

- 10.5.1 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.
- 10.5.2 If and when necessary corrective action are not accomplished within a reasonable time as agreed between the service provider and AANSOO, the matter must be reported to the Director General for a decision regarding possible restriction on operation and/or enforcement action.

#### **10.6 LICENSING**

- 10.6.1 The Authority shall issue license to qualified technical personnel performing operation and maintenance of air navigation facilities as defined under this regulation.
- 10.6.2 The license is an authorization granted to qualified applicants relative to the requirements of this regulation.
- 10.6.3 The following Licenses are issued by CAAP to qualified applicants who satisfactorily accomplished the requirements for the license sought:
- a. Air Traffic Safety Electronics Personnel (ATSEP) License

#### **10.7 AIR NAVIGATION FACILITY CERTIFICATION**

Pursuant to the provisions of RA 9497, and its Implementing Rules and Regulations (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.

10.7.1 The AANSOO, shall implement the Air Navigation Facilities Certification in accordance with the requirements of CAR-ANS.

10.7.2 Certification shall be applicable to all Air Navigation Facilities as defined in R.A.9497 and this regulation.

## 10.8 OBLIGATIONS AND RESPONSIBILITIES OF THE CNS SERVICE PROVIDER

10.8.1 The service provider must comply with the required standards, practices and procedures stipulated in this regulation as reference to applicable ICAO annexes and relevant Manual of Standards (MOS) for CNS Services, appropriate to the operation and maintenance of such service.

10.8.2 The Service Provider must ensure that the technical personnel involved in the operation and maintenance of air navigation facility are competent to perform the responsibility and holds necessary qualification as required.

10.8.3 In particular, the service provider must ensure that each CNS Technical personnel has been appropriately trained.

10.8.4 The CNS service provider must provide the necessary tools and equipment considered to be necessary in the delivery of service being provided.

10.8.5 After exhausting all possible effort and the required standards cannot be met, the service provider must provide a mechanism in the context of aeronautical study utilizing the SMS process so as to comply with the requirement for certification.

10.8.6 The service provider shall ensure the integrity by assuring that flight inspection certificate of the CNS equipment are current.

## 10.9 TECHNICAL PERSONNEL

Technical personnel authorized to operate and maintain CNS services/facilities must be:

1. Duly authorized individual holding the necessary license and rating as required from this regulation.
2. Properly trained and with comprehensive records and proof of competence.

## 10.10 ADMINISTRATION

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

**10.11 TRAINING PLANS AND PROGRAMS**

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

10.11.2 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 on-the-job training (OJT) and periodic evaluation of their competence.

**10.12 DISTRIBUTION OF GUIDANCE MATERIAL AND OPERATIONAL INFORMATION**

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

**10.13 TECHNICAL COMPETENCE CERTIFICATE PROGRAM**

10.13.1 The service provider must adopt a system for assessing the competency of technical personnel and provide for a periodic evaluation as mentioned in paragraph 10.11.2.

10.13.2 The service provider must have an internal competency certification scheme for technical personnel that establish the basis for authorization granted to each personnel.

10.13.3 The competency certification must be in the form of controlled document that identifies the personnel and the types of aeronautical telecommunication and air navigation facilities for which the personnel has been granted authorization/rating, 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.

**10.14 POST-ACCIDENT FACILITY PERFORMANCE INSPECTION**

This regulation applies if an air navigation facility may have contributed to an aviation accident or incident. The service provider must have a mechanism to ensure that the facility that may have contributed to any aviation accident or incident are secured to subject such facility to performance inspection.

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

- 10.14.2 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.
- 10.14.3 A report of the performance inspection must be prepared by the technical personnel attested by the witness.
- 10.14.4 If the performance inspection shows that the facility contributes to a hazard, the facility must not be used until it is cleared and operating within its technical specifications.
- 10.14.5 Corresponding notification to the users must be promulgated following the procedures as a responsibility of the service provider mentioned in this regulation.

## **10.15 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.

- 10.15.1 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.
- 10.15.2 The Service Provider must tell the users of the service about the interruption in accordance with the requirement of this regulation.
- 10.15.3 The Service provider shall provide report for any incident that has the potential to cause significant effect to safety as provided by the service.

## **10.16 TEST EQUIPMENT**

- 10.16.1 Air Navigation Facility/ies must be tested and maintained using test equipment that is maintained and calibrated in accordance with the accepted standards required.
- 10.16.2 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.
- 10.16.3 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.
- 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.

## **10.17 ALLOCATION OF FREQUENCIES, IDENTIFICATION CODES/CALL SIGNS**

- 10.17.1 No Radio electromagnetic equipment shall radiate without certification allocation of frequencies and identification codes/call signs from proper authorities.
- 10.17.2 Those services that radiate electromagnetic signals-in-space must operate on an assigned aeronautical frequency in the relevant aeronautical frequency band.
- 10.17.3 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.

## **10.18 CHANGES/AMENDMENTS TO OPERATIONAL PROCEDURES AND STANDARDS**

- 10.18.1 The service provider must have an established procedure to assess and authorize any changes/amendments to operational procedures in operations manual.
- 10.18.2 The service provider must have a mechanism to effect changes/amendments to standards that is required in this regulation.
- 10.18.3 The mechanism must be in accordance with the approved document on procedures for the amendments/revision of enabling regulations and standards including filing of difference.

## **10.19 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
  - d. Integrity
3. An arrangement in which CAAP is to be notified of any interruption of the service.
  4. A way in which the other organization will notify the service provider of any scheduled service interruptions.

## 10.20 DOCUMENTATION

Standard Documents required to be maintained applicable to the service being provided of the ANF are the following:

1. Duly approved Facility Operations Manual
2. CAR-ANS Part 10 and relative MOS
3. ICAO Annex 10 Volumes I to V, (those volumes actually held will depend upon the services provided)
4. ICAO Annex 11 (if the services are in support of ATS)
5. ICAO Annex 14 (for Airfield Lighting and Power Plant facilities in support of aeronautical telecommunications and radio navigational aids services)
6. Doc. 8071, Volume I, Manual on Testing of Radio Navigational Aids (if the services are in support of radio navigation aids)
7. Doc. 9684, Manual on Secondary Surveillance Radar (SSR) and Doc. 9924, Aeronautical Surveillance Manual (if the service is in support of Radar Surveillance)
8. CAR-Aerodromes 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

## 10.21 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;
3. Records of facility performance and facility maintenance history including performance parameter 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 analysis and associated corrective actions and/or mitigation;
6. Records of each technical personnel including details of the personnel's qualification, experience, specialized trainings and/or equipment ration as applicable;
7. Flight Inspection Data/Commissioning

## **10.22 FACILITY OPERATIONS MANUAL**

### **10.22.1 Contents of Operations Manual**

An operations manual must contain the information that applies to each CNS service commensurate to the operation and the kind of facility of that the service provider installed.

### **| 10.22.2 Organization Structure of CNS Service Provider**

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

- a. Different divisions/sections
- b. Functions
- c. Actual duties and responsibilities of personnel

### **10.22.3 Facility Organizational Chart**

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

- a. The names, relevant qualifications, relevant experience and positions of key personnel
- b. Number of technical personnel who will provide each service
- c. Hours of operation
- d. Manpower shifting schedule

### **10.22.4 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:

- a. Availability
- b. Reliability
- c. Accuracy
- d. 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 Attachment F of CAR-ANS Part 6 for computation to determine the above-cited values.

#### 10.22.5 Facility Technical Description

For each CNS service provided, an operations manual must describe the following:

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

#### 10.22.6 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.

#### 10.22.7 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 used 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 procedures 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 any deviations from standards 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

10.22.8

#### Safety Standard Procedures on Emergency Situations

- a. 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 preventive measures to protect the personnel and the CNS service facilities and equipment.
- b. The approved safety standard procedures on emergency situation must be in conformity with the aerodrome emergency plan (AEP) for CNS facilities providing services to aerodromes.

10.23

#### HUMAN FACTORS CONSIDERATIONS

- a. Human Factors principle must be observed in the air navigation facilities. The consequences of human performance could affect the operation and maintenance of facilities and should be taken into consideration.
- b. 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).

## **10.24 SAFETY MANAGEMENT SYSTEM**

- 10.24.1 A service provider must have, and put into effect, a safety management system.
- 10.24.2 In compliance to this regulation, the service provider must have an acceptable SMS Manual that includes the policies, procedures, and practices necessary to safely provide the CNS services.
- 10.24.3 The safety management system must be in accordance with the standards set out in the approved CAAP State Safety Programme.
- 10.24.4 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.

## **10.25 SURVEILLANCE PROGRAM**

- 10.25.1 Surveillance program shall be undertaken at a regular interval to ensure that Air Navigation (CNS) facility certificate holder continue to meet the established requirements and function at the level of safety and technical personnel competency required by CAAP.
- 10.25.2 These requirements shall be the subject of the surveillance audit to ascertain that service provider maintains an acceptable level of conformance at the level for which they had been granted certification, license and or authorization.
- 10.25.3 Surveillance audit shall be carried out in accordance with the established process and procedures in the approved CNS inspector's handbook.
- 10.25.4 Surveillance audit, in accordance with paragraph 10.25.1 shall be conducted once every twelve months thereafter following the issuance of the certification as appropriate.

## **10.26 REPEALING PROVISIONS**

Any previous Administrative Orders, Circulars, Rules and Regulations which are inconsistent with the provisions hereof are repealed, modified and/or superseded accordingly.