



**CIVIL AVIATION RULES AND STANDARDS**

**FEDERAL DEMOCRATIC REPUBLIC OF ETHIOPIA**

**PART 16 — COMMUNICATION, NAVIGATION AND SURVEILLANCE  
MAINTENANCE**

**February 2019**

---



PREAMBLE

WHEREAS, it is desirable to consolidate and modernize the aviation rules and standards to bring them to international standards,

WHEREAS, it is important to set the rules and standards as to how the regulatory, administrative, technical and supervisory activities of the Authority shall be performed in the one hand and setting the duties, obligations and standards that shall be respected by service providers and aviation personnel,

WHEREAS, it is necessary, to provide detailed rules and standards for the administration , certification, investigation and enforcement of aviation laws.

NOW THEREBY, The Authority under its power given by Article 92/2 of the Civil Aviation Proclamation No. 616/2008 issued the following directives.

1. SHORT TITLE

These rules and standards may be cited as "Civil Aviation Rules and Standards of the Federal Democratic Republic of Ethiopia"

2. DUTY TO COOPERATE

Any person shall have the duty to cooperate in the implementation of these rules and standards.

3. EFFECTIVE DATE

This amended Rules and Standards shall come into force as of 28<sup>th</sup> day of February 2019.

Done at Addis Ababa, this 28<sup>th</sup> day of February, 2019



*[Signature]*  
Wosayotah Huregnaw (Col.)  
Director General

**TABLE OF CONTENTS**

AMENDMENTS .....	i
TABLE OF CONTENTS.....	ii
1 GENERAL .....	1
1.1 APPLICABILITY .....	1
1.2 DEFINITIONS AND ACRONYMS.....	2
2 CERTIFICATION PROCESS.....	3
2.1 REQUIREMENTS TO HOLD CNS MAINTENANCE CERTIFICATE .....	3
2.3 GRANT OF A CNS MAINTENANCE CERTIFICATE.....	4
2.4 PRIVILEGES OF CERTIFICATE .....	4
2.5 DURATION OF A CNS MAINTENANCE CERTIFICATE .....	5
2.6 RENEWAL OF CERTIFICATE.....	5
2.7 CHANGES TO A CNS MAINTENANCE CERTIFICATE HOLDER'S ORGANIZATION	5
2.8 DOCUMENTATION.....	6
2.9 WITHDRAWAL OR TRANSFER OF SERVICE .....	7
2.10 PERSONNEL REQUIREMENTS .....	7
2.11 CNS MAINTENANCE TRAINING .....	8
2.13 PERIODIC INSPECTION AND TESTING.....	9
2.14 PROVISION OF APPROPRIATE INFRASTRUCTURE, FACILITIES AND SERVICES....	9
2.15 OPERATING APPROVAL.....	12
2.16 IDENTIFICATION CODES AND CALL SIGNS .....	12
2.17 NOTIFICATION OF AERONAUTICAL FACILITY INFORMATION.....	12
2.18 NOTIFYING AND REPORTING INFORMATION TO AIR TRAFFIC SERVICES .....	13
2.19 AERONAUTICAL FACILITY CHECK AFTER ACCIDENT OR INCIDENT .....	13
2.20 FACILITY MALFUNCTION INCIDENTS .....	14
2.21 RECORDS .....	14
2.22 PROTECTION OF ELECTRONIC AERONAUTICAL DATA .....	15
2.23 QUALITY ASSURANCE SYSTEM (QAS) REQUIREMENTS.....	15
2.24 SAFETY MANAGEMENT SYSTEM (SMS) REQUIREMENTS .....	16
2.25 SAFETY INSPECTIONS AND AUDITS.....	17
2.26 CNS MAINTENANCE ORGANIZATION'S EXPOSITION .....	18
3 MAINTENANCE MANUAL .....	19
3.1 CNS MAINTENANCE ORGANIZATION'S MANUAL .....	19

## Part 16 – Communication, Navigation and Surveillance Maintenance

---

### 1 GENERAL

#### 1.1 Applicability

- 1.1.1 Civil Aviation Rules and Standards is issued by the Civil Aviation Authority in pursuit of its obligations to ensure enforcement of accepted international regulations and standards in operation within Ethiopia.
- 1.1.2 E-CAR has been framed in such a way that the specifications for CNS technology can be adopted for use by CNS Maintenance service providers. The specifications contained herein are considered to be minimum acceptable standards.
- 1.1.2 This part details:
- a) Operating and technical standards for CNS services and facilities; and
  - b) Rules governing the certification and operation of organizations providing CNS services in support of civil IFR flight or an air traffic service.
  - c) The circulars, guidance materials issued by ECAA and ICAO SARPs amendment which is accepted by the Ethiopian Civil Aviation Authority are part of this Rules and Standards.
- 1.1.3 This Civil Aviation Rules and Standards applies to the Maintenance arrangements of ANS Service providers. These Rules and Standards govern the certification and operation of organizations providing a Maintenance service to ANS providers and aerodromes serving IFR flights, relating to any or all of the following safety related equipment.
- 1.1.5 Communication Facilities:
- a. HF Air/Ground voice communication facilities;
  - b. VHF Air/Ground voice communication facilities;
  - c. Voice switching and control facilities;
  - d. ATS point to point communication facilities;
  - e. Voice and Data Recording facilities;
  - f. Controller Pilot Data Link Communication (CPDLC);
- 1.1.6 Flight Information Facilities:
- a. Electronic briefing and flight plan lodgment service for the use of pilots
  - b. Aeronautical databases used in or by a facility.
- 1.1.7 Aeronautical Fixed Telecommunication Network (AFTN/CIDIN) –AMHS
- 1.1.8 Dedicated Satellite Communication Network (DSCN).
- 1.1.9 Navigation Facilities:
- a. Instrument Landing System (ILS);
  - b. Distance Measuring Equipment (DME);

---

## Part 16 – Communication, Navigation and Surveillance Maintenance

---

- c. VHF Omni-range (VOR);
- d. Non-directional beacons (NDB) / Locators;
- e. VHF Markers.
- f. GNSS related facilities.

### 1.1.10 Surveillance Facilities:

- a. Primary surveillance radar (PSR);
- b. Secondary surveillance radar (SSR);
- c. Airport Surface Movement and Guidance Control System (ASMGCS);
- d. Automatic dependent surveillance Broadcast (ADS -B);
- e. Multilateration systems

### 1.1.11 Human Machine Interface systems, including Tower Consoles, ATS:

### 1.1.12 Other CNS facilities:

- a. ATC Automation system consisting of;
- b. Flight Data Processing system
- c. Radar Data Processing system
- d. Repetitive Flight Plan (RPL) System

### 1.1.13 Airport Terminal Information Service (ATIS);

### 1.1.14 Master / Slave clock system;

### 1.1.15 Uninterruptible and Emergency Power Supplies;

### 1.1.16 Meteorological Display Systems used for ATS;

### 1.1.17 Meteorological Sensor Systems

1.1.18 These Rules and Standards represent the minimum requirements to achieve an Acceptable level of safety.

## 1.2 Definitions and Acronyms

1.2.1 Definitions and acronyms are contained in the Annex 10 Volume III.

## 1.3 Common Reference Systems

1.3.1 Horizontal reference system: World Geodetic System - 1984 (WGS-84) shall be used as the horizontal (geodetic) reference system. Reported aeronautical geographical coordinates (indicating latitude and longitude) shall be expressed in terms of the WGS-84 geodetic reference datum. Vertical reference system: Mean sea level (MSL) datum, which gives the relationship of gravity-

---

## Part 16 – Communication, Navigation and Surveillance Maintenance

---

related height (elevation) to a surface known as the geoid, shall be used as the vertical reference system.

Temporal reference system: The Gregorian calendar and Coordinated Universal Time (UTC) shall be used as the temporary reference system.

### 16.1.4 Standards and Recommended Practices

1.4.1 The CNS Maintenance unit shall comply with the standards and practices contained in the applicable Civil Aviation Rules and Standards, Civil Aviation Advisory Publications, and Information Bulletins published by the Authority. The CNS Maintenance unit shall also comply with any Conditions that may be endorsed in the CNS Maintenance Services Certificate.

The specifications contained herein are based upon the Standards and Recommended Practices of Annex 10 Volumes 1 - 5, to the Convention, which shall be applicable as contents of the Authority. Directives having full legal status and enforcement on International Civil Aviation.

1.4.2 Guidance materials applicable to these Rules and Standards are contained in the following documents:

- a. Manual on Testing Radio Navigation Aids (Doc 8071)
- b. Volume I - Testing of Ground-Based Radio Navigation Systems
- c. Volume II - Testing of Satellite-Based Radio Navigation Systems
- d. Volume III - Testing of Surveillance Radar Systems
- e. Manual of Surface Movement Guidance and Control Systems (SMGCS) (Doc 9476)
- f. Advanced Surface Movement Guidance and Control Systems (A-SMGCS) Manual (Doc 9830)

1.4.3 The methodologies and specifications contained in the above Manuals shall be considered to represent an acceptable form of compliance unless otherwise indicated by the Authority.

## 2 CERTIFICATION PROCESS

### 2.1 Requirements to Hold CNS Maintenance Certificate

2.1.1 No person or organization shall provide a CNS Maintenance service used for supporting an ANSP unit providing air navigation services or operate an aeronautical facility supporting IFR flight except under the Authority of, and in accordance with the provisions of, a CNS Maintenance Certificate issued under this Part.

### 2.2 Application for Certificate

2.2.1 Each applicant for a CNS Maintenance Certificate shall complete CNS 01 form provided in Attachment 1, and submit it to the Director of Aviation Regulation, AUTHORITY.

2.2.2 In the interests of aviation safety, only one certificate relating to the provision of a CNS Maintenance service for the same equipment at the same location shall be current at any time.

---

## Part 16 – Communication, Navigation and Surveillance Maintenance

---

- 2.2.3 The submission shall include the exposition and manual required by paragraphs 2.26 and 3.1 and payment of the appropriate application fee specified by the AUTHORITY under paragraph 10.7 of the AUTHORITY Law.

### 2.3 Grant of a CNS Maintenance Certificate

- 2.3.1 Each applicant is entitled to a CNS Maintenance service certificate if;
- a. The applicant meets the requirements of paragraph 2 of the part; and
  - b. The applicant and persons holding positions listed in paragraphs 2.10.1.a to 2.10.1.c inclusive are acceptable to the Authority; and
  - c. The organization's exposition as required by paragraph 16.3.1 is acceptable to the Authority; and
  - d. The organization's CNS Maintenance manual,
  - e. The Authority is satisfied that the granting of the certificate is not contrary to the interests of aviation safety.
- 2.3.2 Before granting a CNS Maintenance Certificate, the Authority must be satisfied that:
- a. The unit facilities, services and equipment are in accordance with these Rules and Standards and other relevant ICAO standards and recommended practices; and
  - b. The CNS Manual prepared for the applicant's unit and submitted with the application along with any applicable fee contains all the relevant information; and
  - c. The unit's operating procedures make satisfactory provision for the safety of aircraft; and
  - d. The applicant will be able to competently operate and maintain the unit properly.
- 2.3.3 The Authority may refuse to grant a CNS Maintenance Certificate to an applicant.

### 2.4 Privileges of Certificate

- 2.4.1 A CNS Maintenance Certificate shall specify the aeronautical facilities that the certificate holder is authorized to provide in support of IFR flight or an ANSP unit.
- 2.4.2 The holder of a CNS Maintenance Certificate may operate any of the aeronautical facility types specified on the holder's certificate provided:
- a. Each aeronautical facility operated is listed in the certificate as holder's exposition; or
  - b. If the aeronautical facility is not listed in the exposition, its operation is for site test purposes controlled by the procedures required under paragraph 2.14.2; and
  - c. Where necessary for the safety of aircraft operations, the holder of a CNS Maintenance Certificate establishes and appropriately promulgates any limitations on the use of the system or



---

## Part 16 – Communication, Navigation and Surveillance Maintenance

---

services maintained by the holder's organization. These limitations shall be documented in the CNS Maintenance Manual.

### 2.5 Duration of a CNS Maintenance Certificate

- 2.5.1 A CNS Maintenance Certificate may be granted or renewed for a period of up to five years. A CNS Maintenance Certificate remains in force until it expires, or is suspended or revoked.
- a. The holder of a CNS Maintenance Certificate that expires or is revoked shall surrender the certificate to the Authority immediately.
  - b. The holder of a CNS Maintenance Certificate that is suspended shall produce the certificate to the Authority for appropriate endorsement immediately.
  - c. The validity of the Certificate is based upon the continued operation in accordance with Civil Aviation Rules and Standards, Civil Aviation Advisory Publications, and Information Bulletins as published by the Authority.

### 2.6 Renewal of Certificate

- 2.6.1 The holder of a CNS Maintenance Certificate may apply for the renewal of a CNS Maintenance Certificate using CNS Form 01. The renewal application shall be made before the renewal date specified on the Certificate, or if no such date is specified, at least 60 days before the Certificate expires.
- 2.6.2 The CNS Maintenance Certificate shall remain valid subject to periodic surveillance audits conducted at the discretion of the Director Air Navigation Regulation confirming ongoing compliance with the Civil Aviation Rules and Standards. The Authority shall undertake a complete CNS Maintenance Certificate renewal inspection at least once in every five years period following the issue of a CNS Maintenance Certificate.

### 2.7 Changes to a CNS Maintenance Certificate Holder's Organization

- 2.7.1 Each holder of a CNS Maintenance certificate shall:
- a. Ensure that their exposition is amended so as to remain a current description of the holder's organization and services.
  - b. Ensure that any amendments made to the holder's exposition meet the applicable requirements of this part; and
  - c. Comply with the amendment procedures contained in the holder's exposition; and
  - d. Provide the Director, Aviation Regulation of the Authority, with a copy of each amendment to its exposition, prior to its incorporation into the exposition; and
  - e. Make such amendments to its exposition as the Authority may consider necessary in the interests of aviation safety.

---

## Part 16 – Communication, Navigation and Surveillance Maintenance

---

- 2.7.2 The certificate holder shall provide the Aviation Regulation of the Authority, with a copy of each amendment to the holder's CNS manual as soon as practicable after its incorporation into the CNS Maintenance Manual.
- 2.7.3 Where the certificate holder proposes to make a change to any of the following, prior notification to and acceptance by the Director of Aviation Regulation is required:
- a. The persons listed in paragraph 2.10.1 a, b, c inclusive; or
  - b. The CNS maintenance service provided by the certificate holder; or
  - c. The organization's security programme.
- 2.7.4 An application to make any of the changes under paragraph 2.7.3 shall be made on form CNS 01.
- 2.7.5 The Director of Aviation Regulation may prescribe conditions under which a certificate holder may operate during or following any of the changes specified in paragraph 2.7.3.
- 2.7.6 A certificate holder shall comply with any conditions prescribed in paragraph 2.7.5.
- 2.7.7 Where any of the changes referred to in paragraph 2.7.3 requires an amendment to the certificate, the certificate holder shall forward the certificate to the Director, Aviation Regulation as soon as practicable.
- 2.7.8 The certificate holder shall make such amendments to the holder's CNS Maintenance Manual as the Director, Aviation Regulation may consider necessary in the interests of aviation safety.
- 2.8 Documentation**
- 2.8.1 The applicant for a CNS Maintenance Service certificate shall hold copies of the CNS Maintenance Service Manual, relevant technical manuals and all other documents necessary for the provision and operation of the services listed in its exposition.
- 2.8.2 The applicant shall establish a procedure to control all the documentation required by paragraph 2.8.1, and any other applicable Rule Part. The procedure shall ensure that:
- a. Appropriate arrangements are in place to ensure receipt of amendments to documents held by the unit; and
  - b. All incoming documentation is reviewed and actioned as required by authorized personnel;
  - c. All documentation is reviewed and authorized before issue; and
  - d. Current issues of all relevant documentation are available to personnel at all locations where they need access to such documentation for the provision and operation of CNS Maintenance services; and
  - e. All obsolete documentation is promptly removed from all points of issue or use; and
  - f. Any obsolete documents retained as archives are suitably identified as obsolete; and

---

## Part 16 – Communication, Navigation and Surveillance Maintenance

---

- g. The current version of each item of documentation can be identified to preclude the use of out of date documents; and
- h. A regular document audit is made of the amendment status of controlled documents held on the unit.

### 2.9 Withdrawal or Transfer of Service

- 2.9.1 A CNS Maintenance Certificate holder shall give the Director Aviation Regulation not less than 3 months written notice of the date on which the Certificate is to be surrendered, and include in that notice a summary of factors considered in arriving at the decision to withdraw the service, in order that suitable promulgation action can be taken. The Director Aviation Regulation will cancel the Certificate on the date specified in the notice.
- 2.9.2 The Director of Aviation Regulation may approve, and issue an instrument of transfer of a CNS Maintenance Certificate to a transferee where:
  - a. The current holder of the CNS Maintenance Certificate notifies the Director Aviation Regulation in writing at least 3 months before ceasing to operate the unit, that the current holder will cease to operate the unit as of the date specified in the notice;
  - b. The current holder of the CNS Maintenance Certificate notifies the Director Aviation Regulation in writing, the name of the transferee; The transferee applies to the Director Aviation Regulation on form CNS 01, at least 3 months before the current holder of the CNS Maintenance Certificate ceases to operate the unit, for the issuance of a CNS Maintenance Certificate; The application required in paragraph 16.2.9.2 meets the requirements of paragraph 16.2.21
- 2.9.3 The holder of a CNS Maintenance service certificate who is the outgoing provider of a CNS service shall not hinder the preparation and execution of the transitional arrangements required by article 16.2.9.4
- 2.9.4 The applicant for a CNS Maintenance service certificate intending to assume responsibility for providing any CNS maintenance service from an existing certificate holder, shall include with its application, full details of transitional arrangements endorsed by the Heads of CNS of both organizations.

### 2.10 Personnel Requirements

- 2.10.1 The applicant for a CNS Maintenance Service certificate shall engage, employ or contract:
  - a) A Head of CNS Maintenance who;
    - i) has the Authority within the applicant's organization to ensure that each CNS Maintenance service listed in its exposition can be financed and provided in accordance with the requirements of this Part; and

## Part 16 – Communication, Navigation and Surveillance Maintenance

---

- ii) is responsible for ensuring that the organization complies with the requirements of this part; and
- b) Aviation Training Center responsible for ensuring that the organization complies with the training requirements of this Section; and
- c) An accountable manager responsible for the provision of a safety management system according to the requirements of this part, and
- d) Sufficient personnel to manage, supervise, provide and support the CNS Maintenance service and any associated training or assessment listed in the applicant's exposition, plus meet the requirements of this part to develop and maintain an effective SMS. Qualifications and experience details for the persons nominated by the applicant for the positions listed in paragraphs 2.10.1.a to 2.10.1.c inclusive shall be forwarded to the Authority for acceptance prior to the person being named in that position by the applicant. The persons listed in paragraphs 2.10.1.b to 2.10.1.d inclusive above shall ultimately be responsible to the Head of CNS Maintenance.

2.10.2 An applicant for a CNS Maintenance Service certificate shall establish procedures to:

- a. Ensure the competence of those personnel who –
  - i) provide the CNS Maintenance services listed in the applicant's exposition; and
  - ii) supervise personnel providing CNS Maintenance Services listed in the exposition; and
  - iii) provide training and assessment for those staff providing the CNS Maintenance services listed in the exposition; and
- b. Provide personnel listed in paragraph 2.10.2a with written evidence of the scope of their authorization; and
- c. Ensure that no person whose function is critical to the safety of aviation (safety sensitive personnel) shall undertake that function while under the influence of any psychoactive substance, by reason of which human performance is impaired and that they shall not engage in any problematic use of substances.

### 2.11 CNS Maintenance Training

2.11.1 An applicant for a CNS Maintenance Certificate shall establish procedures and programmes for the training and assessment of those staff that provide the CNS Maintenance services.

### 2.12 Security Programme

2.12.1 An applicant for a CNS Maintenance service certificate shall establish a security programme for the facilities listed in the applicant's exposition.

2.12.2 The security programme required under paragraph 2.12.1 shall specify the physical security requirements, practices, and procedures to be followed to:

## **Part 16 – Communication, Navigation and Surveillance Maintenance**

---

- a) Minimize the risk of destruction of, damage to, or interference with the operation of any aeronautical facility operated under the Authority of the CNS Maintenance Service certificate; and
- b) Protect personnel on duty. Where relevant, signs warning of hazardous radiation shall be erected at appropriate locations. The security programme required under paragraph 2.12.2 shall include such physical security requirements, practices and procedures as may be considered necessary by the applicant.

### **2.13 Periodic Inspection and Testing**

- 13.1 An applicant for a CNS Maintenance Service certificate shall establish a procedure for the periodic inspection and testing of the aeronautical facilities listed in the applicant's exposition to verify that each aeronautical facility meets the applicable operational requirements and performance specifications for that facility.
- a) Under article 2.13.1 that periodic ground tests can replace the periodic flight tests for the particular aeronautical facility without affecting the safety of air navigation.
  - b) The programmes required by paragraphs 2.13.1a and 2.13.1b shall be based on the criteria required under paragraph 2.13.1 and shall specify the maximum interval between the tests for each aeronautical facility.
  - c) The design and application of the Maintenance programme should observe Human Factors principles.
  - d) A holder of a CNS Maintenance Service certificate shall notify the Director, Aviation Regulation and Infrastructure, of any radio navigation aid that is not subjected to periodic flight tests.

### **2.14 Provision of Appropriate Infrastructure, Facilities and Services**

- 2.14.1 The CNS Maintenance unit shall ensure that the systems, equipment, installations and services required for the ANS service provider or the airport are commensurate with the level of service and appropriate to meet agreed target levels of safety as determined in the safety management system. The requirements shall comply with the minimum specifications outlined in paragraph 2.14.2 and or ICAO Annex 10 as applicable.
- 2.14.2 An applicant for a CNS Maintenance Service certificate shall establish a procedure to ensure that no aeronautical facility listed in the applicant's exposition is placed into operational service unless:
- a. The person placing the aeronautical facility into operational service is assessed as competent and authorized according to the procedures required under paragraph 2.10.2 and
  - b. The appropriate checks detailed in the operating and maintenance instructions required under paragraph 3.1 have been carried out to verify the performance of the aeronautical facility; and

## Part 16 – Communication, Navigation and Surveillance Maintenance

---

- c. The aeronautical facility record has been completed according to the procedures required under paragraph 2.22.1.

2.14.3 The CNS Maintenance unit shall establish procedures to ensure that:

- a. The systems, equipment, installations and services required for the ANS service provider or aerodrome operator are commensurate with the level of service and appropriate to meet agreed target levels of safety as determined in the safety management system; and
- b. Each aeronautical facility listed in the applicant's exposition
  - i. is designed, installed and commissioned to meet the applicable operational specification for that facility; and
  - ii. conforms with the applicable system characteristics and specification standards prescribed in ICAO Annex 10, Volumes I, III and IV; and
  - iii. conforms with the applicable specifications and requirements of paragraph 16.1.4; and
  - iv. Has been allocated an identification code or call sign, if a code or call sign is required under paragraph 2.16.
- c. Information on the operational status of each radio navigation aid listed in the applicant's exposition, that is essential for the take-off, approach and landing at an aerodrome, is provided to Meet the operational requirements of –
  - i. The ATC unit providing an aerodrome control service for that aerodrome while that service is being provided; and
  - ii. The ATC unit providing an approach control service for that aerodrome while that service is being provided;
  - iii. The aerodrome operator where no ATC unit is involved or the ATC unit is no longer on duty.
- d. Each aeronautical facility listed in the applicant's exposition is installed with suitable power supplies and means to ensure continuity of operation appropriate to the needs of the ATC unit or radio navigation service being supported; and
- e. Each aeronautical facility listed in the applicant's exposition is installed in accordance with the security programme required under paragraph article 2.12 to minimize any risk of destruction, damage or interference with the operation of the facility; and
- f. When necessary to ensure the integrity of the signal in space of all radio navigation aids, protected by written agreements with the site owner, aerodrome operator and ATC unit, as appropriate, to ensure that site restrictions are not infringed by buildings, fences, vehicles, machinery or aircraft; and

## Part 16 – Communication, Navigation and Surveillance Maintenance

---

- g. Any critical site area of any aeronautical facility listed in the applicant's exposition is –
    - i. clearly identified on the site drawings for the aeronautical facility; and
    - ii. Physically protected by suitable signposts on the site; and
  - h. A list of which facilities and systems shown in paragraph 1.1.1 of this part is maintained by the applicant's organization is provided to the Director of Aviation safety, and to maintain this list.
  - i. An applicant for a CNS Maintenance Service certificate who intends to operate a temporary aeronautical facility to carry out on site tests shall establish a procedure for carrying out these tests.
  - j. The procedure required under paragraph 2.14.3. i shall require that:
    - i) The operation of the temporary facility does not cause any interference with any other operating aeronautical facility; and
    - ii) Appropriate information regarding the operation of the temporary facility is forwarded to the provider of the AIS for the issue of a NOTAM, and if appropriate, the publication of a Supplement to the AIP; and
    - iii) An appropriate NOTAM has been issued.
- 2.14.4 An applicant for a CNS Maintenance Service certificate shall ensure that appropriate inspection, measuring and test equipment is available for personnel to maintain the operation of each aeronautical facility listed in the applicant's exposition.
- 2.14.5 An applicant for a CNS Maintenance Service certificate shall establish a procedure to control, calibrate and maintain all the inspection, measuring and test equipment required under paragraph 2.14.9 to ensure that each item of equipment has the precision and accuracy that is necessary for the measurement and tests to be performed.
- 2.14.6 The procedure required under paragraph 2.14.10 shall require that each item of test equipment required for the measurement of critical performance parameters is:
- a. Calibrated before use and at prescribed intervals with the calibration traceable to an appropriate international standard or manufacturers recommended interval; and
  - b. Identified with a suitable indicator to show its calibration status; and
- 2.14.7 Controlled to:
- a. safeguard against adjustments that would invalidate the calibration setting; and
  - b. ensure that the handling, preservation and storage of the test equipment are such that its accuracy and fitness for use is maintained.

---

## Part 16 – Communication, Navigation and Surveillance Maintenance

---

- 2.14.8 If hardware and software systems are used for the performance testing of any aeronautical facility, the procedures under paragraph 2.14.10 shall require the functions of those testing systems to be checked before being released for use and at prescribed intervals, to establish that those testing systems are capable of verifying the true performance of the aeronautical facility.
- 2.14.9 An applicant for a CNS Maintenance Service certificate shall establish a procedure to ensure that equipment spares shall be:
- a) Maintained at a level appropriate to the level of service desired; and
  - b) Be stored under suitable environmental conditions. Spares having a lifetime, or requiring regular Maintenance or calibration shall be suitably identified to that effect.
- 2.14.10 An applicant for a CNS Maintenance Service certificate shall establish procedures for the control, repair and return to service of equipment or modules. The procedures shall show which modules may be repaired on-site and which should be returned to the manufacturer or recognized repair facility.

### 2.15 Operating Approval

- 2.15.1 An applicant for a CNS Maintenance Service certificate shall establish a procedure to ensure that, in addition to the requirements of paragraph 2.25 with respect to the SMS, approval for changes to equipment and systems is received from the Director, Aviation Regulation prior to introduction into service, according to the approval process.

### 2.16 Identification Codes and Call signs

- 2.16.1 An applicant for a CNS Maintenance Service certificate shall establish procedures to ensure that no person associated with facilities maintained by the applicant's organisation shall operate:
- a. A radio navigation aid unless it has been allocated an identification code by the Authority under paragraph 16.2.16; or
  - b. A radio communication transmitter on an aeronautical radio frequency unless it has been allocated authorized by the Telecommunication Regulation Authority (TRA). The Authority may allocate an identification code for a radio navigation aid or a call sign for a radio communication transmitting aeronautical facility if the Director, Aviation Regulation is satisfied that the allocation of a code or call sign is not contrary to the interests of aviation safety. Codes and Call signs in place at the date this section becomes effective, shall remain enforce.

### 2.17 Notification of Aeronautical Facility Information

- 2.17.1 A person operating an aeronautical facility must establish procedures to ensure that:
- a. Information concerning any change in the operational status of the aeronautical facility and information on the operational details of the aeronautical facility, is forwarded to the operator of the aeronautical facility; and
  - b. The Director, Aviation Regulation is notified if incorrect information has been published.



## **Part 16 – Communication, Navigation and Surveillance Maintenance**

---

- 2.17.2 An applicant for a CNS Maintenance Service certificate shall establish a procedure to ensure that the requirements of paragraph 2.17.1 are met for each applicable aeronautical facility listed in the applicant's exposition.
- 2.17.3 Validation and verification procedures required under paragraphs 2.17.1 and 2.17.2 shall include a means to confirm that –
- a. Information to be issued as part of the integrated AIP shall be thoroughly checked and coordinated with the appropriate services before it is submitted to the AIS, in order to ensure that all necessary information has been included and that it is correct prior to distribution; and
  - b. Any change of a temporary nature to the operational status of the aeronautical facility has been promulgated by NOTAM.
- 2.17.4 Information provided by the CNS Maintenance organisation shall meet the requirements of the Ethiopian AIP sections: GEN 2.5, ENR 4.1, 4.2, 4.3 AD 2.18, 2.19, 3.17, 3.18 as detailed in Appendix 1 to ICAO Annex 15.

### **2.18 Notifying and Reporting Information to Air Traffic Services**

- 2.18.1 A CNS Maintenance unit shall establish procedures to report significant information relating to the operational status of any facility or service that may affect the safety of air navigation to the relevant Air Traffic Service Unit.
- 2.18.2 Information requiring immediate notification to the Air Traffic Service unit includes:
- a. Failure or irregular operation of part or all of the CNS systems; and
  - b. Failure of the normal or secondary power supply.

### **2.19 Aeronautical Facility Check after Accident or Incident**

- 2.19.1 An applicant for a CNS Maintenance Service certificate must establish a procedure to check and accurately record the operating condition of any aeronautical facility operated under the Authority of the certificate that may have been used by an aircraft, or an air traffic service, that is involved in an accident or incident.
- 2.19.2 The procedure required by paragraph 2.19.1 shall require that:
- a. The check of the aeronautical facility's operating condition is carried out as soon as practicable after notification to the holder of the CNS Maintenance service certificate of the accident or incident; and
  - b. The record of that check, and the recorded history of the aeronautical facility, is kept secure for possible use by any subsequent accident or incident investigation; and
  - c. The records required to be secured under paragraph 2.19.2 are retained for a period of 3 years from the date of the last entry made on that record.

---

## Part 16 – Communication, Navigation and Surveillance Maintenance

---

### 2.20 Facility Malfunction Incidents

2.20.1 An applicant for a CNS Maintenance Service certificate shall establish procedures to :

- a) Notify, investigate and report facility malfunction incidents in accordance with the requirements of paragraph 2.23; and
- b. Implement corrective actions to eliminate the cause of a facility malfunction incident and prevent its recurrence.

### 12.21 Records

2.21.1 An applicant for a CNS Maintenance Service certificate shall establish procedures to identify, collect, index, store, maintain and dispose of the records that are necessary to record the

- a. Safe provision of the CNS Maintenance Services; and
- b. Safe operation of each aeronautical facility listed in the applicant's exposition.

2.21.2 The procedures required under paragraph 2.21.1 shall require that accurate records of the following are maintained:

2.21.3 For each aeronautical facility, a record

- a. Documenting the operating performance of the aeronautical facility; and
- b. Providing a history of the maintenance and the periodic inspections and tests of the aeronautical facility that are traceable to the person or persons responsible for each of the recorded activities; and

2.21.4 The establishment of, or change in, the periodic tests required under paragraph 2.13.1; and

2.21.5 For each item of test equipment required under paragraph 2.14.4 that is used for the measurement of an aeronautical facility's critical performance parameters, a record that includes a traceable history of the location, maintenance and the calibration checks for the item of test equipment ; and

2.21.6 For each aeronautical facility and item of test equipment, a record of the build and configuration state, updated whenever changes or modifications are made. All modifications shall be accurately documented and cross referenced to modification strikes or numbers on the equipment.

12.21.7 For each facility malfunction incident a record that includes:

- a. details of the nature of the malfunction; and
- b. the findings of the investigation; and
- c. the corrective actions taken; and
- d. if applicable, a copy of the report submitted to the Authority; and

## Part 16 – Communication, Navigation and Surveillance Maintenance

---

- e. a record of each internal audit required under paragraph 2.23.1.f and of each management review required under paragraph 2.23.1.g and
- 2.21.8 For each person who is authorized in accordance with paragraph 2.10.2 to place aeronautical facility into operational service, a record that includes details of the person's experience, qualifications, training, competency assessments and current authorizations.
- 2.21.9 The procedures required under paragraph 2.21.1 shall require:
  - a) All written records to be legible and of a permanent nature; and
  - b) All aeronautical facility records required under article paragraph to be retained for a period of at least 3 years unless a longer period is required:
    - i. by the Authority; or
    - ii. To establish a performance history for the aeronautical facility.
- 2.21.12 A CNS Maintenance unit shall provide statistical information to the Director Aviation Regulation to ensure monitoring of SMS performance over time.

### 2.22 Protection of Electronic Aeronautical Data

- 2.22.1 An applicant for a CNS Maintenance Service certificate shall establish procedures to ensure that the protection of electronic aeronautical data while stored or in transit shall be totally monitored by the cyclic redundancy check (CRC). To achieve protection of the integrity level of critical and essential aeronautical data as specified below, a 32 or 24 bit CRC algorithm shall apply respectively.

To achieve protection of the integrity level of routine aeronautical data as specified below and in Appendix 6 of ICAO Annex 4, a 16 bit CRC algorithm shall apply.

- a. Critical data, integrity level  $1 \times 10^{-8}$ : there is a high probability when using corrupted critical data that the continued safe flight and landing of an aircraft would be severely at risk with the potential for catastrophe;
- b. Essential data, integrity level  $1 \times 10^{-5}$ : there is a low probability when using corrupted essential data that the continued safe flight and landing of an aircraft would be severely at risk with the potential for catastrophe; and
- c. Routine data, integrity level  $1 \times 10^{-3}$ : there is a very low probability when using corrupted routine data that the continued safe flight and landing of an aircraft would be severely at risk with the potential for catastrophe.

### 2.23 Quality Assurance System (QAS) Requirements

- 2.23.1 The applicant for a CNS Maintenance Service certificate shall establish an internal quality assurance system (QAS) to ensure compliance with, and the adequacy of, the procedures required by these Rules and Standards. The QAS shall, include:

## Part 16 – Communication, Navigation and Surveillance Maintenance

---

- a. A quality assurance policy and procedures that are relevant to the applicant's organizational goals and the expectations and needs of its customers; and
- b. Procedures to ensure that data at any moment is traceable to its origin so as to allow any data anomalies or errors, detected during maintenance phases or in operational use, to be corrected; and
- c. Procedures to ensure quality indicators, including equipment availabilities, malfunctions, faults, and personnel and customer feedback, are monitored to identify existing problems or potential causes of problems within the system; and
- d. A procedure for corrective action to ensure existing problems that have been identified within the system are corrected; and
- e. A procedure for preventive action to ensure that potential causes of problems that have been identified within the system are remedied; and
- f. An internal quality audit programme to audit the applicant's organization for conformity with its quality assurance system; and
- g. Management review procedures that may, where appropriate, include the use of statistical analysis, to ensure the continuing suitability and effectiveness of the internal quality assurance system in satisfying the requirements of this section.

2.23.2 The internal quality audit programme shall:

- a. Specify the frequency and location of the audits taking into account the nature of the activity to be audited; and
- b. Ensure audits are carried out by trained auditing personnel who are independent of those having direct responsibility for the activity being audited; and
- c. Ensure the results of audits are reported to the personnel responsible for the activity being audited and the manager responsible for internal audits; and
- d. Require preventive or corrective action to be taken by the personnel responsible for the activity being audited if problems are found by the audit; and
- e. Ensure follow up audits to review the effectiveness of any preventive or corrective action taken.
- f. All audit findings and observations shall be evidenced and properly recorded.

### **2.24 Safety Management System (SMS) Requirements**

2.24.1 An applicant for a CNS Maintenance Service certificate shall establish a safety management system acceptable by the Authority that, as a minimum:

---

## Part 16 – Communication, Navigation and Surveillance Maintenance

---

- a. Identifies safety hazards,
- b. Ensures that remedial action necessary to maintain an acceptable level of safety is implemented,
- c. Provides for continuous monitoring and regular assessment of the safety level achieved, and
- d. Aims to make continuous improvements to the overall level of safety.

A safety management system shall clearly define lines of safety accountability throughout the CNS Maintenance Service organization, including a direct responsibility for safety on the part of senior management.

2.24.2 A CNS Maintenance Service provider shall ensure that any significant change to the aeronautical facility system shall be subject to a safety assessment, indicating that an acceptable level of safety shall be met, prior to implementation. User consultation shall form part of the safety assessment. The safety assessment shall be presented to, and accepted by, the Aviation Regulation Directorate of the Ethiopian Civil Aviation Authority prior to implementation of the change

2.24.3 A CNS Maintenance Service provider shall, as part of their SMS, establish target levels of safety / key performance indicators for at least the following safety areas:

- a. Aeronautical facility reliability,
- b. MTBO,
- c. Others (to be determined)

2.24.4 The safety policy procedures shall ensure that the safety policy is understood, implemented, and maintained at all levels of the organization.

2.24.5 The procedure for corrective action shall specify how:

- a. To correct an existing problem; and
- b. To follow up a corrective action to ensure the action is effective; and
- c. Management will measure the effectiveness of any corrective action taken.

2.24.6 The procedure for preventive action shall specify how:

- a. To correct a potential problem; and
- b. To follow up a preventive action to ensure the action is effective; and
- c. To amend any procedure required by this Regulation as a result of a preventive action; and
- d. Management will measure the effectiveness of any preventive action taken.

### 2.25 Safety Inspections and Audits

2.25.1 The Director Aviation Regulation may, in writing, require the holder of CNS Maintenance certificate to undergo or carry out such inspections and audits of the holder's maintenance offices, facilities, documents and records as the Director consider necessary in the interests of civil aviation safety in accordance with the Authority Law.

---

## Part 16 – Communication, Navigation and Surveillance Maintenance

---

- 2.25.2 The Director Aviation Regulation may require from the holder of a CNS maintenance certificate such information as the Director considers relevant to the inspection or audit.
- 2.25.3 A CNS Maintenance Unit shall arrange for the issue of permanent security passes to personnel authorized by the Authority to enable access to any part of the unit, tenant company premises, equipment, records, documents and operator's personnel.
- 2.25.4 Personnel authorized by the Authority may:
- a. Inspect and carry out tests on the facilities, services and equipment; and
  - b. Inspect CNS Maintenance unit's documents and records and verify the CNS Maintenance unit's safety management system before the CNS Maintenance Certificate is granted or renewed, and at any other time, for the purpose of ensuring safety at the unit; and
  - c. Take photographs of the unit facilities and equipment, for certification, audit and approval purposes.
- 2.26 CNS Maintenance Organization's Exposition**
- 2.26.1 The applicant for a CNS Maintenance service certificate shall provide the Authority with an exposition containing:
- 2.26.2 A statement signed by the Head of CNS Maintenance on behalf of the applicant's organization confirming that the exposition and any included manuals:
- a. define the organization and demonstrate its means and methods for ensuring ongoing compliance with this and any other applicable Part; and
  - b. are required to be complied with by its personnel at all times; and
- 2.26.3 A statement signed by the Head of CNS Maintenance on behalf of the applicant's organization confirming that the organization has sufficient financial strength to provide the services contained within the organization's exposition; and
- 2.26.4 The organization has sufficient liability and insurance cover to meet any claims that could be made relating to the services contained within the organization's exposition; and
- 2.26.5 The titles and names of the person or persons required by paragraphs 2.10.1.a,b,c inclusive; and
- 2.26.6 The duties and responsibilities of the person or persons specified in paragraph 2.26.3, including matters for which they have responsibility to deal directly with the Authority on behalf of the organization; and
- 2.26.7 An organization chart showing lines of responsibility of the persons specified in paragraph 2.26.3, and extending to each location listed under paragraph 2.26.6 and
- 2.26.8 In the case of an organization providing CNS Maintenance services from more than one CNS Maintenance unit, a table listing:

## Part 16 – Communication, Navigation and Surveillance Maintenance

---

- a. locations of CNS Maintenance units; and
  - b. the services provided at each location; and
- 2.26.9 Details of the applicant's staffing structure for each CNS Maintenance unit; and
- 2.26.10 A document matrix detailing where the requirements of paragraphs 16.2.7 to 16.2.25 are contained within the organization's operational manuals.
- 2.26.11 Procedures to control amend and distribute the exposition.
- 2.26.12 The applicant's exposition must be acceptable to the Director, Aviation Regulation.

### 3 MAINTENANCE MANUAL

#### 3.1 CNS Maintenance Organization's Manual

##### 3.1.1 The applicant for a CNS Maintenance Certificate shall provide a CNS maintenance manual containing the following:

- a. Part 1: General
- b. Part 2: Documentation
- c. Part 3: Maintenance
- d. Part 4: Maintenance Support
- e. Part 5: Personnel
- f. Part 6: Particulars required for inclusion in the Aeronautical Information Publication (AIP)

The CNS Maintenance Manual is a fundamental requirement of the certification process. It shall contain all the pertinent information concerning the CNS Maintenance unit, facilities, services, equipment, operating procedures, organisation, and management including safety management system. The safety management system may be a component part of the safety management system required by the ANSP or aerodrome. The information presented in the CNS Maintenance Manual shall demonstrate that the CNS Maintenance unit complies with the certification standards and practices and that there are no apparent shortcomings that would adversely affect safety

##### 3.1.2 The CNS Maintenance Manual shall:

- a. Be either an electronic version or printed and signed by the accountable manager responsible for the CNS Maintenance unit;
- b. Be in a format that is easy to revise;
- c. Have a system for recording the currency of pages and amendments, thereto, and should include a page for logging revisions; and
- d. Be organized in a manner that will facilitate the preparation, review and approval process.

## Part 16 – Communication, Navigation and Surveillance Maintenance

---

- 3.1.3 Within the sections referred to in paragraph 3.1.1, the Manual shall contain the following:
- a. The procedures required by paragraph 2.8.1 regarding the control of documentation; and
  - b. The procedures required by paragraph 2.9.2 regarding the transfer process between providers of the CNS Maintenance Service; and
  - c. The procedures required by paragraph 2.10.2 regarding the competence of personnel; and
  - d. The procedures and programmes required by paragraph 2.11.1 regarding the training and assessment of personnel; and
  - e. The programme required by paragraph 2.12.2 regarding security of the facilities; and
  - f. The procedures required by paragraph 2.13.1 regarding the periodic inspection and testing; and
  - g. The programmes required by paragraph 2.13.1.a regarding periodic inspections and tests; and
  - h. The procedures required by paragraph 2.14.2 regarding the placing of equipment into operational service
  - i. The procedures required by paragraph 2.14.3.a; and
  - j. The procedures required by paragraph 2.14.4 regarding the operation of temporary facilities for site tests; and
  - k. The procedures required by paragraph 2.14.4 regarding the control, calibration and maintenance of inspection, measuring and test equipment; and
  - l. The procedures required by paragraph 2.14.9 regarding the provision of equipment spares; and
  - m. The procedures required by paragraph 2.14.5 regarding the control, repair and return to service of equipment or modules; and
  - n. The procedures required by paragraph 2.15.1 regarding the requirement to obtain operational approval for changes to equipment or systems; and
  - o. The procedures required by paragraph 2.16.1 regarding the allocation requirements for codes or Call signs; and
  - p. The procedures required by paragraph 2.17.2 regarding the AIS notification requirements; and
  - q. The procedures required by paragraph 2.18.1 regarding the ATS notification requirements; and
  - r. The procedures required by paragraph 2.23 regarding the validation and verification of information; and
  - s. The procedures required by paragraph 2.18.2 regarding facility checking after an accident or incident; and
  - t. The procedures required by paragraph 2.19.2 regarding the notification, investigation, and reporting of facility malfunctions; and
  - u. The procedures required by paragraph 2.21.1 regarding the identification, collection, indexing, storage, maintenance and disposal of records; and
  - v. The procedures required by paragraph 2.22.1 regarding the protection of electronic aeronautical data; and
  - w. The detailed procedures required under paragraph 2.23.1 regarding the internal quality assurance system; and



## **Part 16 – Communication, Navigation and Surveillance Maintenance**

---

- x. The detailed procedures required under paragraph 2.24.1 regarding the safety management system; and
- y. The detailed procedures required under paragraph 2.26.9 regarding the control amendment and distribution of the exposition.

