

STATE OF LIBYA
MINISTRY OF TRANSPORT
CIVIL AVIATION AUTHORITY



دولة ليبيا
وزارة المواصلات
مصلحة الطيران المدني

LYCAR Part-CNS

Libyan Civil Aviation Regulation

Part - CNS: Communication, Navigation & Surveillance

Second issue, February 2023

Approved by and published under the authority of the President of LYCAA.

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Abbreviations

ACC	Area control center
ADS-B	Automatic Dependent Surveillance-Broadcast
AFS	Aeronautical Fixed Service
AFTN	Aeronautical Fixed Telecommunication Network
AIP	Aeronautical Information Publication
AIS	Aeronautical Information Service
ATC	Air Traffic Control
ATS	Air Traffic Services
AT/RN	Aeronautical Telecommunication/Radio Navigation
A/G	Air Ground Communication
ATSEP	Air Traffic Safety Electronic Personnel
AWO	All Weather Operation
BRA	Building Restricted Area
CAT II	Category II landing procedure
CNS	Communication, Navigation and Surveillance
DGCAR	Directorate General for Civil Aviation Regulation
DME	Distance Measuring Equipment
EMC	Electromagnetic Compatibility
EMI	Electromagnetic Interference
FDPS	Flight Data Processing System
FIC	Flight Information Center
FIR	Flight Information Region
ICAO	International civil aviation organization
IFR	Instrument Flight Rules
ILS	Instrument Landing System
MLAT	Multilateration
NDB	Non-Directional Radio Beacon
PAR	Precession Approach Radar
PSR	Primary Surveillance Radar
RCC	Rescue Coordination Center
RDPS	Radar Data Processing System
RMU	Remote Monitoring Unit
SSB	Single Side Band
SSR	Secondary Surveillance Radar
UHF	Ultra-High Frequency
UPS	Uninterrupted Power Supply
UTC	Coordinated Universal Time
VDL	VHF Digital Link
VFR	Visual Flight Rules
VHF	Very High Frequency
VOR	Very High Frequency Omni Directional Radio Range
WAM	Wide Area Multilateration

Definitions

Aeronautical telecommunication service:

- (a) Aeronautical radio navigation service, within the meaning given for each in Annex 10, Volume I to the Chicago Convention.
- (b) One or both of the following, within the meaning given for each in Annex 10 Volume II and III to the Chicago Convention:
 - i. an aeronautical broadcasting service; and
 - ii. an aeronautical fixed service;
- (c) an aeronautical mobile service, within the meaning given in Volume III of Annex 10 to the Chicago Convention, that is used to support an air traffic service of a kind mentioned in Annex 11 to the Chicago Convention.
- (d) any system for surveillance and collision avoidance that support air traffic service, within the meaning given for each in Annex 10 Volume IV and ICAO doc. 9924 to the Chicago Convention.
- (e) any automation system that processes or displays air traffic control data to support air traffic service.

Authority. Libyan Civil Aviation Authority (LYCAA).

Building Restricted Area. The volume where buildings have the potential to cause unacceptable interference to the signal-in-space in the service volume of CNS facilities for AWO. All CNS facilities have BRA defined requirements which are not limited to actual site boundaries of the facility, but extend to significant distances from the facility.

BRA Infringement Study. Study which is conducted to assess the potential for causing unacceptable interference by buildings within the BRA around an Aeronautical Telecommunications Facility within the State of Libya.

Certification. A certificate, given by LYCAA, to provide a telecommunication or radionavigation service.

Configuration.

- (a) In relation to a telecommunication or radionavigation service means the configuration of each facility and any interconnection between facilities that make up the service; and
- (b) In relation to a facility - means the configuration of equipment, hardware, software and data and the interconnections between equipment.

Facility availability. The ratio of actual operating time to specified operating time.

Facility failure. Any unanticipated occurrence which gives rise to an operationally significant period during which a facility does not provide service within the specified tolerances.

Facility Performance Category I - ILS. An ILS which provides guidance information from the coverage limit of the ILS to the point at which the localizer course line intersects the ILS glide path at a height of 30 m (100 ft) or less above the horizontal plane containing the threshold.

Note: The lower limit is set to 30 m (100 ft) below the minimum Category I decision height (DH).

Facility Performance Category II - ILS. An ILS which provides guidance information from the coverage limit of the ILS to the point at which the localizer course line intersects the ILS glide path at a height of 15 m (50 ft) or less above the horizontal plane containing the threshold.

Note: The lower limit is set to 15 m (50 ft) below the minimum Category II decision height (DH).

Facility Performance Category III - ILS. An ILS which, with the aid of ancillary equipment where necessary, provides guidance information from the coverage limit of the facility to, and along, the surface of the runway.

Facility reliability. The probability that the ground installation operates within the specified tolerances.

Flight inspection. A test of the accuracy, coverage or any other aspect of the performance of a service or facility conducted by using test equipment on board an aircraft in flight.

Human Factors principles. Principles which apply to design, certification, training, operations and maintenance and which seek safe interface between the human and other system components by proper consideration to human performance.

Key personnel. In relation to a service provider means the person or persons who manage one or more of the following:

- (a) operations;
- (b) maintenance;
- (c) safety.

Maintenance personnel. A person(s) who is engaged by a service provider to do one or more of the following:

- (a) operate a facility;
- (b) maintain a facility; and
- (c) conduct measurements of the performance of and calibration of a facility during a flight inspection.

Mean time between failures (MTBF). The actual operating time of a facility divided by the total number of failures of the facility during that period of time.

Note: The operating time is in general chosen so as to include at least five, and preferably more, facility failures in order to give a reasonable measure of confidence in the figure derived.

Operations Manual. A manual of the kind described in CNS.130, prepared by a service provider or a person applying for approval.

Service provider. An entity certified to operate and maintain an aeronautical telecommunication service and whose certificate is not suspended or revoked.

Signal reliability. The probability that a signal-in-space of specified characteristics is available to the aircraft.

Technical specification. For a telecommunication service or facility or a radionavigation service or facility, is a detailed description, that may use technical terms and concepts, of:

- (a) the way in which the service or facility operates and performs its functions; and
- (b) the technical standards to which the service or facility has been designed and manufactured.

Technical manual. A document, other than the operations manual, that contains technical information related to facility, including design, drawing, installation, operation and maintenance.

Unacceptable interference. An adverse effect on the availability or quality of the radiated signals of an Aeronautical Telecommunications Facility.

Subpart A – General

CNS.005 Applicability

(1) This Regulation prescribes:

- (a) The requirements governing the certification and operation of organizations providing aeronautical telecommunication services within the Tripoli Flight Information Region (FIR);
- (b) The requirements for the operation and maintenance of aeronautical telecommunication facilities; and
- (c) Authority administrative rules for management of aeronautical telecommunication service provider certification.

(2) However, this Regulation does not apply to:

Person or legal entity who is providing an aeronautical telecommunication service for the Military.

CNS.010 Entry into force

This Regulation shall come into force on its date of publishing and the aeronautical telecommunication service provider shall comply with the requirements with it for carrying out operation and maintenance of aeronautical telecommunication facilities, except for the certification requirements specified from [CNS.025](#) to [CNS.065](#) and [CNS.085\(5\)\(C\)](#) and (D), which shall be applicable on 21st of June 2024.

CNS.015 Classification of aeronautical telecommunication services

(1) Classification of communication services:

Communication services are the ground-based stations of those services defined hereunder supporting an Air Traffic Service provided under Part-ATS. Airborne stations are not included:

- (a) Aeronautical Broadcasting Service. A broadcasting service intended for the transmission of information relating to air navigation.
- (b) Aeronautical Fixed Service. A telecommunication service between specified fixed points provided primarily for the safety of air navigation and for the regular, efficient and economical operation of air services.
- (c) Aeronautical Fixed Telecommunication Network Service. A worldwide system of aeronautical fixed circuits provided, as part of the aeronautical fixed service, for the exchange of messages and/or digital data between aeronautical fixed stations having the same or compatible communication characteristics.

- (d) Aeronautical Telecommunication Network Service. An inter-network that allows ground, air-ground and avionics data sub-networks to inter-operate by adopting common interface services and protocols based on the International Organization for Standardization (ISO) Open Systems Interconnect (OSI) reference model.
- (e) Aeronautical Mobile Service. A mobile service between aeronautical ground stations and aircraft stations, in which survival craft stations may participate; emergency position-indicating radio-beacon stations may also participate in this service on distress and emergency frequencies. This service does not include ground stations that are provided for other than ATS purposes.
- (f) Any communication service which processes or displays air traffic control data (including aviation meteorological data) for use by an ATS provider under Part-ATS.
- (g) Electronic briefing and flight plan lodgment service for the use of pilots.

(2) Classification of Radio Navigation services:

- (a) A radio navigation service intended for the benefit and for the safe operation of aircraft;
- (b) Radio navigation services include radio determination (radar surveillance services) supporting ATS; and
- (c) Airborne stations are not included in this Part.

CNS.020 Classification of facilities

The following list classifies the types of facilities used for the provision of aeronautical telecommunication service:

(1) Types of Radio Navigation Aids:

- (a) Instrument Landing System (ILS);
- (b) VHF Omni-Directional Range (VOR);
- (c) Distance Measuring Equipment (DME);
- (d) VHF Marker Beacon;
- (e) Non-Directional Beacon (NDB);
- (f) Precision Approach Radar System;
- (g) Microwave Landing System; and
- (h) Global Navigation Satellite System (GNSS) and its augmentations system.

- (2) Types of Voice communication systems for Aeronautical Mobile Service:
 - (a) VHF air/ground voice communication facilities; and
 - (b) HF air/ground voice communication facilities.
- (3) Types of Communication system for aeronautical broadcast service:
 - (a) Meteorological information for aircraft in flight (VOLMET); and
 - (b) Automatic Terminal Information Service (ATIS).
- (4) Types of Communication system for aeronautical fixed service:
 - (a) ATS Direct speech circuit and network;
 - (b) meteorological operation circuits, networks and broadcast system;
 - (c) Common ICAO data Interchange network (CIDIN);
 - (d) Aeronautical Fixed Telecommunication Network (AFTN);
 - (e) Aeronautical Message Handling System (AMHS); and
 - (f) the inter-center Communication (ICC).
- (5) Types of Communication systems:
 - (a) Voice Communication Switching System (VCCS); and
 - (b) Central Exchange and Telephony System.
- (6) Types of Surveillance and collision avoidance system:
 - (a) Primary Surveillance Radar (PSR);
 - (b) Secondary Surveillance Radar (SSR);
 - (c) Secondary Surveillance Radar Enhanced mode-S (SSR-S);
 - (d) Monopulse Secondary Surveillance Radar (MSSR);
 - (e) Monopulse Secondary Surveillance Radar Enhanced mode-S (MSSR-S);
 - (f) Advanced – Surface Movement Guidance and Control System (A-SMGCS);
 - (g) Automatic Dependent Surveillance Broadcast (ADS-B);
 - (h) Automatic Dependent Surveillance – Contract (ADS-C);
 - (i) Multilateration (MLAT);

- (j) Wide Area Multilateration (WAM);
 - (k) Surface Movement Radar (SMR); and
 - (l) Mode-s Squitter (1090 MHZ).
- (7) Types of Automation System that support an Air Traffic Service:
- (a) Flight Data Processing System (FDPS);
 - (b) Surveillance Data Processing System (SDPS);
 - (c) Radar Data Processing System (RDPS); and
 - (d) Voice and data recording facilities.
- (8) Transmission System:
- (a) VSAT;
 - (b) Fiber optic; and
 - (c) Radio Link.
- (9) Any environmental facility to support the above facilities could have one or more of the following systems:
- (a) Main power supply system;
 - (b) Uninterrupted Power Supply (UPS);
 - (c) Generator Set (Genset);
 - (d) Air Conditioning System and Cooling system; and
 - (e) Fire Fighting System.

Subpart B - Certification of service providers

CNS.025 Requirement for certificate

- (1) No person shall provide an Aeronautical telecommunication service for the Tripoli FIR; except under the Authority of and in accordance with the provisions of, an Aeronautical Telecommunication Service Certificate issued under this Regulation.
- (2) A person who is to provide an aeronautical telecommunication service as mentioned in [CNS.085](#) (1) shall be in cooperation or by arrangement with a legal entity.

CNS.030 Application for certificate

Each applicant for the grant of an Aeronautical telecommunication navigation service certificate shall submit an application to the Authority with:

- (1) Cover letter for the application;
- (2) Applicant's operation manual required by CNS.130; and
- (3) Payment of the appropriate application fee prescribed by regulations.

CNS.035 Grant of certificate

- (1) An applicant is granted an Aeronautical telecommunication service certificate if the Authority is satisfied that:
 - (a) the applicant meets the requirements of [Subpart C](#);
 - (b) the applicant and the applicant's senior person or persons required by [CNS.085\(1\)\(a\), \(b\) and \(c\)](#) are fit and proper persons as per requirement;
 - (c) the applicant's operation manual is approved by Authority; and
 - (d) the granting of the certificate is not contrary to the interests of aviation safety.
- (2) The Authority may not grant an aeronautical telecommunication service certificate unless the Authority is satisfied that the applicant's operation manual complies with this Regulation.

CNS.040 Commencement of certificate

A certificate of Aeronautical telecommunication service provider comes into effect:

- (1) on a day stated for that purpose in a document that is evidence of the holding of the authorization, or
- (2) if no day is so stated, on the date of the document or notice.

CNS.045 Duration of certificate

- (1) An Aeronautical telecommunication service certificate may be granted or renewed for a period of up to three (3) years.
- (2) An Aeronautical telecommunication service certificate remains in force until it expires or is suspended or revoked.
- (3) The holder of an Aeronautical telecommunication service certificate that expires or is revoked shall forthwith surrender the certificate to the Authority.
- (4) The holder of an Aeronautical telecommunication service certificate that is suspended, shall forthwith surrender the certificate to the Authority for appropriate endorsement.

CNS.050 Obligations and privileges of service provider

- (1) Service by provider

An Aeronautical telecommunication service shall be provided in accordance with:

- (a) Aeronautical telecommunication service certificate that specifies the service that the certificate holder is authorized to provide; and
- (b) the service provider's operations manual.

- (2) Changes by service provider to service:

- (a) this regulation applies if a service provider wants to make a change to its aeronautical telecommunication service (including by providing an additional service):
 - i. the effect of which would be that the provider's aeronautical telecommunication service would no longer be in accordance with the certificate issued to the provider under [CNS.035](#); or
 - ii. that requires prior notification to the Authority because of a requirement to do so in the safety management system prepared in accordance with [CNS.130](#).
- (b) Before making the change, the service provider shall:
 - i. prepare a draft amendment of the operations manual that reflects the proposed change; and
 - ii. send the draft amendment to Authority to get approval of the proposed change.

- (c) If Authority approves the draft amendment of the manual, the service provider shall:
 - i. incorporate the amendment into the operation manual; and
 - ii. put change into effect in accordance with [CNS.040](#).

(3) Change by Service Provider to Operation Manual

A service provider may change its operations manual without changing its service provided, a copy of the amendment to the operations manual is sent to the Authority for subsequent approval.

CNS.055 Renewal of certificate

- (1) An application for the renewal of an Aeronautical telecommunication service certificate shall be made to the LYCAA.
- (2) The application shall be submitted to the Authority before the application renewal date specified on the certificate or, if no such date is specified, not less than thirty (30) days before the certificate expires.

CNS.060 Suspension and revocation of certificate

- (1) The Authority may state that a certificate is suspended if the Authority reasonably considers that not suspending the certificate would be likely to have an adverse effect on the safety of air navigation.
- (2) Suspension of aeronautical telecommunication service provider certificate may be imposed if:
 - (a) the service provider does not comply with the requirements stated in the certificate;
 - (b) the service provider failed to perform the corrective action plan stated in the certificate in the exact period of time if so stated; and
 - (c) The investigation, in case of an accident, proves that it was caused due to the faulty procedures and/or the malfunction or failure of equipment or system.
- (3) When a suspension is imposed, the Authority will state the reasons for such action and furnish them to the service provider.
- (4) The service provider may appeal against such notice within thirty (30) days of receipt.
- (5) The service provider shall furnish to the Authority any documents, records or other pertinent information supporting the appeal.
- (6) The Authority may confirm, modify or set aside the proposed suspension based on the appeal.

- (7) The Authority may permanently revoke aeronautical telecommunication service provider certificate as a subsequent procedure to suspension if:
- (a) The Service provider carries out an action in violation of the Civil Aviation Law or the regulation; or
 - (b) It is verified that the certificate holder will not be able to remedy non-compliant areas; or
 - (c) The certificate holder stops providing the facility concerned without a convincing argument; or
 - (d) The Authority has decided for the interest of safety to terminate facilities provided at this aerodrome.
- (8) The revoked certificate cannot be renewed; it has to be reissued not less than one year after the revocation date.
- (9) The amendment as referred in paragraphs (2) and (7) shall take effect at the time the decision is made.

CNS.065 Revocation of certificate based on request of service provider

- (1) Authority may revoke the certificate based on a written request from the holder of the permit certificate.
- (2) Revocation shall come into force since the request has been approved by the Authority.

CNS.070 Safety inspections and audits

- (1) The Authority shall conduct an initial certification audit and thereafter audits at intervals not exceeding two (2) years at the certificate holder's unit and/or facility.
- (2) The Authority may require the applicant or certificate holder to provide such documentation and information as the Authority considers relevant to the audit or inspection.
- (3) The Authority shall be granted, by the applicant or certificate holder, unrestricted access to the applicant's or certificate holder's facilities and shall be permitted to carry its own equipment (e.g., computers, cameras and recording devices) under all conditions while carrying out its oversight functions.

CNS.075 Resolution of safety issues

- (1) When objective evidence is found showing regulatory non-compliance by an aeronautical telecommunication service provider, the finding shall be classified as follows:
 - (a) level one finding is any significant non-compliance which reduces the level of safety.
 - (b) level two finding is any non-compliance that does not result in an immediate risk to safety.
 - (c) level three finding is any item where it has been identified, by objective evidence, to contain potential problems that could lead to a non-compliance. These are considered as observations only and will not impact a certificate.
- (2) After service provider receives notification of a finding:
 - (a) level one finding shall be rectified immediately or within the timescale specified by the Authority.
 - (b) level two finding shall be addressed in a corrective action plan with a resolution period specified by the Authority and shall be appropriate to the nature of the finding, but in any circumstance shall not be more than ninety (90) days. In certain circumstances, the Authority may extend the ninety (90) day period subject to justification that is acceptable to the Authority.
 - (c) the service provider's corrective action plan shall:
 - i. be submitted by the date specified by the Authority;
 - ii. identify the root cause of the non-compliance;
 - iii. indicate the person, position, department or entity responsible for the corrective action;
 - iv. indicate the corrective action required including any multiple steps; and
 - v. be acceptable to the Authority.
- (3) Upon the completion and/or implementation of a corrective action, the service provider shall notify the Authority and provide evidence of its resolution.
- (4) In the event of level one or level two findings, an enforcement action shall be applied to the service provider. the certificate may be subject to revocation or a partial or full suspension or restriction.

CNS.080 Authority's power to direct variation of operation manual

- (1) If necessary, in the interests of the safety of air navigation, Authority may direct a service provider in writing to vary its operations manual, within a reasonable period specified in the direction and in a way specified in the direction;
- (2) Authority may extend the period by written notice before or after the end of the period mentioned in paragraph (1);
- (3) If the service provider does not comply with the direction within the period (including any extension of it), the manual is taken to cease to be approved at the end of the period;
- (4) After complying with the direction, the holder shall give Authority a copy of the manual as so varied.

Subpart C – Certification requirements

CNS.085 Personnel requirements

- (1) An aeronautical telecommunication service provider shall employ, contract or otherwise engage:
 - (a) a senior person identified as the chief executive who:
 - i. has the Authority within the service provider's organization to ensure that all activities undertaken by the organization can be financed and carried out to meet applicable operational requirements;
 - ii. is responsible for ensuring that the organization complies with the requirements of this Regulation;
 - (b) a senior person or persons responsible to the chief executive for ensuring that the service provider's organization complies with its operation manual; and
 - (c) Sufficient Personnel to operate and maintain the facilities listed in the service provider's operation manual.
- (2) An aeronautical telecommunication service provider shall ensure that each authorized personnel responsible to place into operational service any of the facilities listed in the Operation Manual is competent and qualified.
- (3) An aeronautical telecommunication service provider shall ensure that no facility listed in their operation manual is placed into operational service unless the person placing the facility into operational service is authorized and assessed as competent.
- (4) An aeronautical telecommunication service provider shall provide those personnel with written evidence of the scope of their authorization according to the approved training program.
- (5) In particular, the service provider shall ensure that:
 - (a) Each maintenance person has been appropriately trained according to the training types as part of the training program approved by the Authority.
 - (b) Each training type mentioned in the approved training program shall fulfil the defined training standards requirements.
 - (c) Assessors are accepted by Authority to conduct assessments for their ATSEP, to ensure that competency standards and safety are maintained.
 - (d) Each maintenance person needs to be accepted as a competent and qualified person by the Authority.
- (6) An aeronautical telecommunication service provider shall establish a procedure to maintain the competence of those authorized personnel.

- (7) An aeronautical telecommunication service provider, for the grant of an aeronautical telecommunication certificate, shall establish procedures to ensure that their maintenance personnel are not subject to fatigue by ensuring that:
- (a) Maintenance personnel does not serve for more than eight (8) consecutive hours or does not serve for more than twelve (12) hours during a period of twenty-four (24) consecutive hours, unless a rest period of at least eight (8) hours at or before the end of the twelve (12) hours of duty have been attained;
 - (b) At any time, minimum two maintenance personnel shall be present in a shift; and
 - (c) in an emergency, maintenance personnel refrain from performing any duties for at least twenty-four (24) consecutive hours at least once during each 7 consecutive days.

CNS.090 Aeronautical facility requirements

- (1) An aeronautical telecommunication service provider shall establish and put into effect a procedure, to ensure that:
- (a) each aeronautical telecommunication facility listed in the operation manual:
 - i. is designed (including the siting), installed and commissioned in accordance with approved technical document by Authority to meet the applicable operational specification for that facility;
 - ii. conforms with the applicable system characteristics and specification standards prescribed in ICAO Annex 10, Volumes I, II, III, IV, V and other related documents;
 - iii. conforms with the applicable specifications and requirements of [Subpart D](#); and
 - iv. has been allocated an identification code or call sign, if a code or call sign is required.
 - (b) information on the operational status of each radio navigation aid listed in the service provider's operation manual, that is essential for the approach, landing, and takeoff at an aerodrome, is provided to meet the operational needs of:
 - i. the air traffic control unit providing an aerodrome control service for that aerodrome while that service is being provided; and
 - ii. the air traffic control unit providing an approach control service for that aerodrome while that service is being provided.
 - (c) each aeronautical facility listed in the service provider's operation manual is installed with suitable power supplies and means to ensure continuity of

operation appropriate to the needs of the air traffic service or radio navigation service being supported;

- (d) each aeronautical facility listed in the service provider's operation manual is installed in accordance with the security programmed required under [CNS.120](#) to minimize any risk of destruction, damage or interference with the operation of the facility; and
- (e) any critical site area of any aeronautical facility listed in the service provider's operation manual is:
 - i. clearly identified on the site drawings for the aeronautical facility;
 - ii. physically protected by suitable signposts on the site; and
 - iii. protected by written agreements with the site owner, aerodrome operator and air traffic control unit, as appropriate, to ensure that site restrictions are not infringed by buildings, fences, vehicles, machinery or aircraft.

(2) No facility shall be put into operation except:

- (a) The person placing the facility into operational service is authorized and accepted by the Authority;
- (b) For initial operation, the appropriate checks, i.e., Factory Acceptance Test (FAT), Site Acceptance Test (SAT) and Flight test (for Navigation Aids and Surveillance facility including its Instrument flight procedure) have been carried out to verify the performance of the facility;
- (c) The appropriate checks as required in paragraph (b) may be witnessed and accepted by Authority;
- (d) Periodic maintenance has been developed and implemented for each facility listed in the operation manual; and
- (e) Ground and flight testing for radio navigation aids have been implemented as required in Annex 10 Volume I, Chapter 2.2 for ground and flight testing and Document 8071 Volume 1, from chapter 1 to chapter 7.

CNS.095 Protection of facilities from radio interference and structural obstacles

- (1) An aeronautical telecommunication service provider shall ensure that:
 - (a) All radio navigation aids are protected from radio frequency interference in accordance with ICAO Annex 10 Volume I, paragraph 3.1.4;
 - (b) All aeronautical telecommunications facilities are protected from radio frequency interference in accordance to the following procedures:
 - i. Where the protection heights determined are less than that operationally desirable, separation between facilities operating on the same frequency shall not be less than that necessary to ensure that an aircraft at the limit of the functional service range and the operationally desirable protection height of one facility does not come above the radio horizon with respect to adjacent facilities.
 - ii. The problem of inter-State interference on frequencies allotted worldwide or on a regional basis to national services, shall be resolved by consultation between the administrations concerned.
 - (c) No radio interfering devices which transmit unnecessary or anonymous signals, message or data shall be established in the proximity of the Aeronautical Telecommunication facilities utilizing radio reception without prior approval from the Authority.
- (2) An aeronautical telecommunication service provider shall ensure that all radio navigation aids systems, radio telecommunication systems and radar systems that are using transmit or receive antennas shall not be obstructed by buildings, tower and structures that would impact their performance; and that the material concerning its installation have been implemented as required by Annex 10 volume 1 – chapter 2.
- (3) Identified infringement of the BRA shall be screened initially by the Authority in order to ascertain approval can be given directly if the in-depth analysis is not required.
- (4) In-depth CNS engineering analysis or BRA infringement study conducted to assess the buildings within BRA that have potential for causing unacceptable interference with Aeronautical facilities shall be conducted by approved organization.

CNS.100 Hours of service

- (1) An aeronautical telecommunication service provider shall provide twenty-four (24) hours' service of station of aeronautical telecommunication facilities to support the availability and continuity of Air Navigation Service. Whilst normal hours for administration and office will be in accordance with administrative service provider working hours.

- (2) Whenever necessary and practicable, the service provider shall give notification of any change needed in the normal hours of service to the Authority.
- (3) If a station of the international aeronautical telecommunication service or an aircraft operating agency requests a change in the hours of service of another station, such change shall be requested as soon as possible after the need for change is known. The station or aircraft operating agency requesting the change shall be informed of the result of its request as soon as possible.
- (4) Any changes to the published hours of service of Aeronautical Telecommunication Facilities shall be promulgated in a NOTAM and if permanent, published in the Libyan AIP.
- (5) Extensions of service and closing down of stations:
 - (a) Stations of the international aeronautical telecommunication service shall extend their normal hours of service as required to provide for traffic necessary for flight operation.
 - (b) Before closing down, a station shall notify its intention to all other stations with which it is in direct communication, confirm that an extension of service is not required and advise the time of re-opening if other than its normal hours of service.
 - (c) When it is working regularly in a network on a common circuit, a station shall notify its intention of closing down either to the control station, if any, or to all stations in the network. It shall continue watch for two minutes and may then close down if it has received no call during this period.
 - (d) Stations with other than continuous hours of operation, engaged in or expected to become engaged in distress, urgency, unlawful interference or interception traffic, shall extend their normal hours of service to provide the required support to those communications.

CNS.105 Time system

- (1) Coordinated Universal Time (UTC) shall be used by all stations in the aeronautical telecommunication service. Midnight shall be designated as 2400 for the end of the day and 0000 for the beginning of the day.
- (2) A date-time group shall consist of six figures, the first two figures representing the date of the month and the last four figures the hours and minutes in UTC.
- (3) Facility is checked as necessary to ensure the correct time within 5 seconds of the UTC as determined by reference to a standard time station or GPS time standard.
- (4) Wherever data link communication is utilized, the service provider shall ensure that all clocks and time-recording devices be checked as necessary to ensure correct time to within 1 second of UTC.

- (5) The service provider shall ensure that the correct time, to the nearest half minute, is provided:
 - (a) In respect of any aerodrome control service or aerodrome AIS to IFR aircraft prior to taxiing for take-off; and
 - (b) To any aircraft on request.

CNS.110 Use of abbreviations and codes

An aeronautical telecommunication service provider shall ensure that:

- (1) Abbreviations and codes shall be used in the international aeronautical telecommunication service whenever they are appropriate and their use will shorten or otherwise facilitate communication.
- (2) Where abbreviations and codes other than those approved by ICAO are contained in the text of messages, the originator shall, if so required by the aeronautical telecommunication station accepting the message for transmission, make available to that station a decode for the abbreviations and codes used.

CNS.115 Operations Manual

An aeronautical telecommunication service provider shall provide the Authority with an Operation Manual containing:

- (1) A statement signed by the chief executive, on behalf of the service provider's organization confirming that:
 - (a) the operation manual defines the organization and demonstrates its means and methods for ensuring ongoing compliance with this Regulation; and
 - (b) the operation manual and all associated document, operating and maintenance instructions shall be complied by the organization's personnel at all times;
- (2) Organization and management of service provider:

An operation manual shall include an organization chart of the service provider that shows:

- (a) the titles and names of the senior person or persons required under [CNS.085 \(1\)\(a\) and \(b\) and \(c\)](#);
- (b) job descriptions of the senior person or persons in paragraph (2)(a), including matters for which they have responsibility to deal directly with the Authority on behalf of the organization; and
- (c) lines of responsibility between the personnel specified in paragraph (2)(b);

- (d) the relevant qualifications, relevant experience and positions of the personnel specified in paragraph (2)(b).

(3) Compliance with the standards

An operations manual shall:

- (a) contain each standard that relates to the design, installation, testing, operation or maintenance of the service provider's services and facilities;
- (b) explain how any of the following standards that apply to the service or facility are fulfilled:
 - i. standard set out in Annex 10 Volume I, II, III, IV and V;
 - ii. related ICAO Documents to Annex 10 Volume I, II, III, IV and V;
 - iii. standard and requirement under this Regulation;
 - iv. any other standard included in the operations manual.

(4) Functional specification and performance values of services:

An operation manual shall include:

- (a) the functional specification of each of the service provider's telecommunication or radio navigation services; and
- (b) the values or characteristics for each of the following that apply to the service:
 - i. availability;
 - ii. reliability;
 - iii. accuracy; and
 - iv. integrity.
- (c) The values mentioned in paragraph (b) shall be derived or measured from either or both of:
 - i. the configuration of each service; and
 - ii. the known performance of each service.
- (d) An operation manual shall also describe the method used to calculate each of the values mentioned in paragraph (b).
- (e) For a radio navigation service, the integrity values or characteristics shall be given for each kind of navigation aid facility that forms part of the service.

(5) Service provided:

An operation manual shall describe, for each telecommunication or radio navigation service provided:

- (a) the kind and location of each facility;
- (b) the technical specification of each kind of facility;
- (c) interconnection of each type of service with other facilities or service; and
- (d) the way in which the service provider monitors each facility to ensure that it is operating in accordance with its technical specification.

(6) Hours of service:

(a) Service provider shall provide information of normal hours of stations and office of aeronautical telecommunication service as per required under [CNS.100](#).

(b) Shift Administration:

- i. An operation manual shall describe information about shift administration to ensure that adequate time is provided before start of the shift and after end of each shift; and
- ii. A minimum of ten (10) minutes is provided for each transfer of duties at an operational facility.

(7) List of facilities: a list of each type of aeronautical facility to be operated under the authority of the aeronautical telecommunication service certificate completed with the summary of the operational details of each aeronautical facility;

(8) Facility operation and maintenance plan:

An operation manual shall contain, for each kind of facility, an operation and maintenance plan that includes the following:

- (a) the maintenance procedures and maintenance schedule for each facility; and
- (b) an analysis of the workload of maintenance personnel and key personnel that takes into account the numbers of these people and their qualifications;

(9) Operating and maintenance instructions:

An operation manual shall contain the operating and maintenance instructions of the manufacturer for each facility listed in their Operation manual, for the use and guidance of their personnel, operating and maintenance instructions of the manufacture for each facility listed in their operation manual. The instructions shall set out the requirements for operating and maintaining each facility.

The instructions shall include a list of:

- (a) the critical performance parameters;
- (b) the test equipment required for the measurement of those parameters;
- (c) the check procedures for placing the facility into operational service and terminate the service (On-Off procedure); and
- (d) Trouble shooting procedures in accordance with manufacture’s equipment manual.

(10) Periodic performance check and testing:

An operation manual shall describe procedures to conduct periodic performance check and testing of the CNS facilities to verify that they meet the applicable operational requirements and performance specifications, including:

- (a) Periodization of ground inspection is as follows:

- i. Periodic inspection shall be conducted with the following conditions:

	Name of facility	Facility function	Ground inspection period
1	ILS	LANDING	2 weeks
2	VOR	HOMING ENROUTE	2 weeks 4 weeks
3	DME	HOMING ENROUTE CO-LOCATED GP-ILS	2 weeks 4 weeks 2 weeks
4	NDB	LOCATOR	2 weeks
5	NDB	HOMING/CHECK POINT	4 weeks
6	RADAR	APPROACH ENROUTE	2 weeks 4 weeks
7	COMMUNICATION (VHF)	TOWER, APP, ACC	4 weeks
8	PAPI WITH ILS	APPROACH	2 weeks
9	PAPI WITHOUT ILS	APPROACH	4 weeks
10	VASI	APPROACH	4 weeks

- ii. Special test, shall be conducted in accordance with Flight Inspection periodization.

- (b) procedure to conduct ground inspection as required in ICAO Doc 8071 and where if it is necessary according to the manufacturer technical manual; and

- (c) procedure to adjust ground facility to support flight inspection where if it necessary according to the manufacturer technical manual.

(11) Flight Inspection:

An operations manual shall contain an approved Flight Inspection program for Radio Navigation Aids to assure the accuracy, coverage or any other aspect of the performance of service meet the standards and requirements.

The flight inspection program shall cover:

- (a) The interval between flight inspection for each radio navigation aids complying with the following periodicities:

	Name of facility	Facility function	Flight inspection period
1	ILS	LANDING	24 months
2	VOR	HOMING ENROUTE	24 months
3	DVOR	HOMING ENROUTE	3 years
4	DME	HOMING ENROUTE CO-LOCATED GP-ILS	24 months 3 years 24 months
5	NDB	LOCATOR	12 months
6	NDB	HOMING/CHECK POINT	12 months
7	RADAR	APPROACH ENROUTE	If required If required
8	COMMUNICATION (VHF)	TOWER, APP, ACC	If required
9	PAPI WITH ILS	APPROACH	12 months
10	PAPI WITHOUT ILS	APPROACH	24 months
11	VASI	APPROACH	24 months

- (b) Procedure to conduct flight inspection for each facility mentioned in paragraph (a).
- (c) Flight Inspection for Radio Navigation Aids shall be conducted by Flight Inspection service provider certified or approved by the Authority.
- (d) The service provider shall notify the Authority of any radio navigation aid that is not subject to be flight inspected.

- (e) The periodicities of the flight inspection specified in paragraph 11(a) shall not be extended unless other periodicities have been specifically submitted and approved by the Authority.
- (12) Security Program: An operation manual shall include the information and details about the security program as required under [CNS.120](#).
- (13) Quality Management Program: An Operation Manual shall describe details of internal quality management program as required under [CNS.125](#).
- (14) Safety Management system: An operation manual shall describe details of safety management system as required under CNS.145.
- (15) Safe Operation:

An operation manual shall describe the following detailed procedures or an outline of the procedures including information that identifies the documentation that contains the detailed procedures:

- (a) the procedure used to design, install and conduct commissioning of each facility and each item of equipment so that it provides a safe service and ensures that the design of or changes to, a service or facility are authorized by a person who is qualified and competent to do so;
- (b) the procedure used to assess the competence of the maintenance personnel as stipulated in [CNS.085 \(3\) and \(5\)\(c\)](#);
- (c) the method to be used to specify any changes to a service or facility and to design, test and implement those changes as required in [CNS.050 \(2\)](#);
- (d) the procedure to be used to monitor the performance of each service and facility and to compare the results with the appropriate technical specification;
- (e) the procedure to be used to receive and forward the information of the facility status as required under [CNS.135](#);
- (f) the procedure to be used if a service fails or a facility fault occurs during operation and maintenance of the facility, including the way in which the failure or fault is to be reported and rectified, as required under [CNS.140](#);
- (g) the procedure to be used to check the facility after accident or incident as required under [CNS.145](#);
- (h) the procedure to operate a temporary aeronautical facility and carry out site tests as required under [CNS.150](#);
- (i) the procedure to be used to:
 - i. change software to adapt to any changes to the configuration of hardware; and

- ii. change the design of equipment or facilities to adapt to any change to the functional or technical specification.

(16) Contingency Plan:

- (a) An operation manual shall contain an approved contingency plan providing for the safe and orderly continuation of service in the event of a disruption, interruption or temporary malfunction of facility equipment or related supporting service; and
- (b) The plan shall be made on the equipment level, system level and operational level.

(17) Coordination: An operation manual shall describe the system and procedure for coordination required under [CNS.155](#).

(18) Documentation: An operation manual shall describe a documentation system required under [CNS.160](#).

(19) Record: An Operation Manual shall describe a system and procedure to record as required under [CNS.165](#).

CNS.120 Security program

- (1) An aeronautical telecommunication service provider shall prepare and put into effect a security program under the National Security Plan;
- (2) Each security program shall specify the physical security requirements, practices and procedures to be followed for the purposes of minimizing the risk of destruction of, damage to or interference with the operation of, any facility operated by the service provider where such destruction, damage or interference is likely to endanger the safety of aircraft; and
- (3) Without limiting the generality of paragraph (2), the security program shall specify such physical security requirements, practices and procedures as may be necessary:
 - (a) All aeronautical telecommunication stations, including end systems and intermediate systems of the aeronautical telecommunication network (ATN), shall be protected from unauthorized direct or remote access;
 - (b) To ensure that entrances to permanent facilities operated by the service provider are subject to positive access control at all times, so as to prevent unauthorized entry; to protect personnel on duty;
 - (c) To be followed in the event of a bomb threat or other threat of violence against a facility; and
 - (d) To monitor unattended facility buildings to ensure that any intrusion or interference is detected.

CNS.125 Quality assurance

- (1) An aeronautical telecommunication service provider shall establish and put into effect a quality assurance process to ensure compliance with and the adequacy of the procedures required by this Regulation as approved by the Authority;
- (2) The quality assurance process shall include:
 - (a) Performance check procedures that are understood, implemented and maintained at all levels of the organization;
 - (b) A procedure to ensure quality control indicators, including maintenance records, defect, interference and incident reports and personnel and customer feedback are monitored to implement required performance standards and to identify existing problems or potential causes of problems within the system;
 - (c) An internal audit program to ensure conformity with the procedures in the operation manual and maintain a desired level of facility performance. The internal audit program shall:
 - i. Specify the frequency of the audits taking into account the nature of the activity to be audited;
 - ii. Measure the effectiveness of any preventative or corrective action taken by the personnel responsible for the activity being audited.
 - (d) A procedure for corrective action specifying how to:
 - i. Correct an existing problem;
 - ii. Follow up a corrective action to ensure the action is effective;
 - iii. Measure the effectiveness of any corrective action taken;
 - (e) A procedure for preventive action specifying how to manage a potential problem.

CNS.130 Safety Management System

- (1) An aeronautical telecommunication service provider of an aeronautical telecommunication shall establish, implement and maintain a system for safety management.
- (2) A safety management system processes shall cover as a minimum:
 - (a) identify safety hazards;
 - (b) ensure that remedial action necessary to maintain an acceptable level of safety is implemented;

- (c) provide for continuous monitoring and regular assessment of the safety level achieved;
 - (d) aim to make continuous improvement to the overall level of safety; and
 - (e) clearly define lines of safety accountability including a direct accountability for safety on the part of senior management for those services with direct air traffic services operational implications.
- (3) A service provider of an aeronautical telecommunication shall ensure that their safety management system provides hazard analyses and safety assessments for any significant safety-related change to the ATS system.
- (4) The results of this system related audits and corrective actions shall be made available to the Authority upon request.

CNS.135 Information flow requirements

- (1) An aeronautical telecommunication service provider shall establish procedures for the receipt of information on the following activities when the activity could affect air traffic services within the area of responsibility:
- (a) Designated personnel shall be available to monitor the status of all En-route facilities or receive them either through the air traffic control supervisor or through the facility technical staff;
 - (b) Designated personnel shall be available to receive all status of all radio navigation aids facility and report the status to the AIS or the air traffic control supervisor depending on the particular case; and
 - (c) Designated personnel shall be available to receive all status reported at the airdromes and take necessary actions including reporting the status to the appropriate authorities.
- (2) An aeronautical telecommunication service provider shall establish systems and procedures to ensure that each facility, appropriate to the intended area of responsibility, is kept informed of the operational status and the existence of temporary hazards of:
- (a) All navigation aids in the system;
 - (b) All surveillance radar in the system;
 - (c) All air/ground and ground/ground communication facilities in the system;
 - (d) All automation facilities in the system; and
 - (e) All environmental facilities in the system.

CNS.140 Facility malfunctions

- (1) An aeronautical telecommunication service provider shall establish a procedure to record, investigate and rectify any detected or reported malfunction of any facility listed in operation manual;
- (2) The procedure shall ensure that a report is forwarded to the Authority whenever a facility malfunction investigation reveals that:
 - (a) The facility has been operating outside the allowable tolerances; or
 - (b) The facility had the potential to operate outside the allowable tolerance; or
 - (c) There appears to be a recurring cause for the facility malfunction reports.
- (3) The report required in paragraph (2) shall be forwarded within seven (7) days of malfunction being detected or reported and shall include full details of the malfunction, the findings of the investigation and the corrective action taken to prevent a re-occurrence.

CNS.145 Facility check after accident or incident

- (1) An aeronautical telecommunication service provider shall establish a procedure to check and record the operating condition of any facility listed in their operation manual that may have been used by an aircraft or an air traffic service involved in an accident or incident.
- (2) The procedure shall ensure that:
 - (a) The checks are carried out as soon as practicable after notification to the service provider of such an accident or incident; and
 - (b) The record of the facility's operating condition as checked and the past recorded history are kept in a secure place for possible use by any subsequent investigation.

CNS.150 Conducting temporary tests of facility

- (1) An aeronautical telecommunication service provider shall establish and put into effect a procedure to conduct temporary tests of facility.
- (2) The temporary test of facility shall not cause any interference with any other operating aeronautical facility.
- (3) The procedure for the operation of the facility for conducting temporary test shall include:
 - (a) Advise the Authority of a plan to conduct the temporary test;

- (b) the plan shall indicate the purpose of the test, the time frame for conducting the test and shall include the type and class of the facility that the test will be conducted.
- (4) In order to avoid harmful interference, service provider shall prescribe the taking of all possible precautions, such as the choice of frequency and of time and the reduction or, if possible, the suppression of radiation. Any harmful interference resulting from tests and experiments shall be eliminated as soon as possible.
- (5) Appropriate information regarding the temporary test of 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
- (6) An aeronautical telecommunication service provider shall not conduct the temporary tests unless the Authority approval is obtained and an appropriate NOTAM has been published, if so required.

CNS.155 Coordination

- (1) An aeronautical telecommunication service provider shall establish procedure and letter of agreement, where applicable to co-ordinate with the following agencies in providing the service:
 - (a) Air traffic service provider;
 - (b) Aeronautical Information Service provider;
 - (c) PANS-Ops Service Provider;
 - (d) Meteorology Service Provider;
 - (e) The Libyan Air Force, where applicable;
 - (f) Aerodrome operator;
 - (g) Telecommunication service provider to coordinate:
 - i. National telecommunication facilities; and
 - ii. International telecommunication facilities;
 - (h) the entities providing service for each facility (internal or external).
- (2) In case of occasional infringements of the Procedures contained in Annex 10 Volume II, when not serious, can be dealt with by direct communication between the parties immediately interested either by correspondence or by personal contact. Any serious or repeated infringement shall be reported to the Authority.

- (3) An aeronautical telecommunication service provider shall establish a procedure to coordinate with the Authority related to frequency assignment for aeronautical telecommunication facilities.

CNS.160 Documentation

- (1) The following documents shall be maintained by aeronautical telecommunication service provider:
 - (a) ICAO International standards and recommended practices related to Aeronautical Telecommunication (Annex 10 Vol. I, II, III, IV and V) and its related documents and their amendments, including Document 8071 volumes I, II and III;
 - (b) Libyan Civil Aviation Regulation (LYCAR) related to Aeronautical Telecommunication, including its Acceptable Means of Compliance and Guidance Material;
 - (c) any technical manual and other necessary documents for the provision and maintenance of the facilities listed in the operations manual; and
 - (d) the operations manual.
- (2) An aeronautical telecommunication service provider shall ensure that the operations manual is maintained for:
 - (a) the currency of document includes all amendments;
 - (b) the date of the creation of the document;
 - (c) for a revised document — the most recent revision of the document;
 - (d) the availability to the personnel who shall refer to the document; and
 - (e) identifies the person who authorized the creation and any revision of the document.
- (3) An aeronautical telecommunication service provider shall establish a system and procedure to control all the documentation. The procedure shall ensure that:
 - (a) a master copy of each document mentioned in this regulation is kept safely;
 - (b) all incoming documentation is reviewed by appropriate personnel and directed as required, by authorized personnel;
 - (c) Current copies of the relevant documentation are available to personnel at all locations where they need access to such documentation for the provision and operation of facilities;
 - (d) All obsolete documentation is promptly removed from all points of issue or use;

- (e) Any obsolete documents retained as archives are suitably identified as obsolete; and
- (f) Changes to documentation are reviewed and approved by appropriate personnel who shall have access to pertinent background information upon which to base their review and approval.

CNS.165 Record

- (1) An aeronautical telecommunication service provider shall establish systems and procedures to record the following document to facilitate the safe provision and operation of the facilities listed in their operation manual and assistance with any accident or incident investigation:
 - (a) A record for each facility includes:
 - i. history of installation;
 - ii. record of operational performance of service;
 - iii. record of changes to configuration of a facility;
 - iv. record of its maintenance, periodic inspections and test;
 - v. The record shall be traceable to the person or persons responsible for each of the recorded activities;
 - vi. record of software upgrades;
 - vii. Record of commissioning (Ground Commissioning and Flight Commissioning) includes approved procedures and result; and
 - viii. Record of Factory Acceptance Test (FAT) and Site Acceptance Test (SAT).
 - (b) A record for each item of test equipment required for the measurement of critical performance parameters. The record shall provide a traceable history of the location, maintenance and the calibration checks for such test equipment;
 - (c) A record of each facility malfunction recorded and investigated under the procedures required by [CNS.140](#). The record shall detail the nature of the malfunction, the findings of the investigation, the follow up corrective actions or where applicable include a copy of the report forwarded to the Authority;
 - (d) A record for the current spare parts available on-site;
 - (e) A record of each internal quality assurance review of the service provider's organization carried out under the procedures required by [CNS.125 \(1\)](#); and
 - (f) A record for each technical personnel shall include details of their experience, qualifications, training, competence assessments and current assignment;

- (2) A record procedure shall cover activity to identify, collect, index, file, store, control, secure, maintain, access and dispose of the document;
- (3) The record can be either a paper or computer system or any combination of both and shall be controlled and secured in a safe way with regards to fire, flood and theft;
- (4) Paper system shall use robust material which can withstand normal handling and filling. The record shall legible throughout the required retention period;
- (5) Computer systems used for maintenance records shall have at least one backup system which shall be updated;
- (6) Each terminal is required to contain program safeguards against the ability of authorized personnel to alter the data base;
- (7) All facility records are retained for a period of at least three (3) years unless a longer period is required to establish a performance history for a facility; and
- (8) The maintenance record shall be inspected and stored as required by the Authority.

Subpart D - Operating requirements

CNS.170 Radio navigation aids

An aeronautical telecommunication service provider shall ensure the availability, continuity, accuracy and integrity of the services they are providing and shall demonstrate that:

- (1) Instrument Landing System requirements and system characteristics shall comply with:
 - (a) ICAO International Standards and Recommended Practices of Annex 10 volume I Chapter 2, 2.1 for general provision, Chapter 3, 3.1 for the specification of Instrument Landing System (ILS);
 - (b) The identification signal shall employ the International Morse Code and consist of two letters, preceded by the International Morse Code signal of the letter “I”, followed by a short pause where it is necessary to distinguish the ILS facility from other navigational facilities in the immediate area;
 - (c) ICAO International Standards and Recommended Practices of Annex 10 volume V chapter 4, 4.2 for utilization in the frequency band 108-117.975 MHz.
- (2) Precision Approach Radar System requirements and system characteristics shall comply with ICAO International Standards and Recommended Practices of Annex 10 volume I Chapter 2, 2.1 for general provision, Chapter 3, 3.2 for specification of PAR.
- (3) VHF Omnidirectional Range (VOR) for En-route and terminal radio navigation service requirements and system characteristics shall comply with:
 - (a) the ICAO International Standards and Recommended Practices of Annex 10 volume I chapters 2, 2.1 for general provision, chapter 3, 3.3 for the specification of VHF Omnidirectional Range (VOR);
 - (b) ICAO International Standards and Recommended Practices of Annex 10 volume V chapter 4, 4.2 for utilization in the frequency band 108-117.975 MHz; and
 - (c) VOR sitting selection requirements for check-points:
 - i. the signal strength of the nearby VOR has to be sufficient to ensure satisfactory operation of a typical aircraft VOR installation. In particular, full flag action (no flag showing) shall be ensured. The check-points shall, within the limits of operating convenience, be located away from buildings or other reflecting objects (fixed or moving) which are likely to degrade the accuracy or stability of the VOR signals;
 - ii. the observed VOR bearing at any selected point shall ideally be within plus or minus 1.5 degrees of the bearing accurately determined by survey or chart plotting;
 - iii. the VOR information at a selected point shall be used operationally only if found to be consistently within plus (+) or minus (-) 2 degrees of the

published bearing. The stability of the VOR information at a selected point shall be checked periodically with a calibrated receiver to ensure that the plus or minus 2-degree tolerance is satisfied, irrespective of the orientation of the VOR receiving antenna;

- iv. checkpoints, which can satisfy the foregoing requirements, shall be selected in consultation with the operators concerned. Provision of checkpoints in holding bays, at runway ends and in maintenance and loading areas, is usually desirable; and
- v. each VOR checkpoint shall be distinctively marked. This marking shall include the VOR bearing which a pilot would observe on his aircraft instrument if his VOR installation were operating correctly.

(4) Non-Directional Beacon requirements and system characteristics shall comply with:

- (a) ICAO International Standards and Recommended Practices of Annex 10 volume I Chapter 2, 2.1 for general provision, Chapter 3, 3.4 for the standard and specification of Non-Directional Beacon (NDB); and
- (b) ICAO International Standards and Recommended Practices of Annex 10 volume V Chapter 3, 3.2 for NDB Frequency Management.

(5) Distance Measuring Equipment (DME) requirements and system characteristics shall comply with:

- (a) ICAO International Standards and Recommended Practices of Annex 10 volume I Chapter 2, 2.1 for general provision, Chapter 3, 3.5 for the standard and specification of DME; and
- (b) ICAO International Standards and Recommended Practices of Annex 10 volume V Chapter 4, 4.3 for Utilization in the frequency band 960 –1 215 MHz for DME.

(6) En-route VHF Marker Beacon requirements and system characteristics shall comply with ICAO International Standards and Recommended Practices of Annex 10 volume I, Chapters 2, 2.1 for general provision, Chapter 3, 3.6 for the standard and specification of En-route VHF Marker Beacon;

(7) Global Navigation Satellite System (GNSS) requirements and system characteristics shall comply with:

- (a) ICAO International Standards and Recommended Practices of Annex 10 volume I Chapter 2, 2.1.4 for General provision, Chapter 3, 3.7 for the standard and specification of GNSS; and
- (b) ICAO International Standards and Recommended Practices of Annex 10 volume V Chapter 4, 4.2 for utilization in the frequency band 108-117.975 MHz.

(8) Microwave Landing System requirements and system characteristics shall comply with:

- (a) ICAO International Standards and Recommended Practices of Annex 10 volume I Chapter 2, 2.1 for general provision, Chapter 3, 3.11 for the standard and specification of MLS; and
 - (b) ICAO International Standards and Recommended Practices of Annex 10 volume V Chapter 4, 4.4 for Utilization in the frequency band 5 030.4 – 5 150.0 MHz.
- (9) Alternative means to radio navigation are identified in case of service interruption of the main radio navigation aids services:
- (a) In case of ILS failures, normally an alternative means needed to take effect such as downgrading the service category provided by equipment unless failure is related to equipment. In this case a redundant system and efficient logistic support need to be maintained; and
 - (b) In case of VOR failures, normally an alternative means may involve the use of overlapping VOR coverage or use of other operational means unless failure is related to the equipment. In this case a redundant system and efficient logistics support need to be maintained.
- (10) A list of no redundant (main equipment only) radio navigation aid facilities needs to be prepared and reported to the head of the technical and operational supervisor to take appropriate operational measures in case of their failure;
- (11) In localities and along routes where conditions of traffic density and low visibility necessitate a ground based short–distance radio aid to navigation for the efficient exercises of air traffic control or where such short–distance aid is required for the safe and efficient conduct of aircraft operations, the minimum navigation aid shall be the VHF Omni directional radio range (VOR) of the continuous wave phase;
- (12) It is permissible to replace non-visual aid with an alternative non-visual aid as long as it is approved by Authority; and
- (13) When a radio navigation aid is provided to support precision approach and landing, it should be supplemented, as necessary, by a source or sources of guidance information which, when used in conjunction with appropriate procedures, will provide effective guidance to and efficient coupling (manual or automatic) with, the desired reference path.

CNS.175 Communication facilities

An aeronautical telecommunication service provider shall ensure the availability, continuity, accuracy and integrity of the services they are providing and shall demonstrate that:

- (1) Aeronautical Telecommunication Network (ATN), requirements and system characteristics shall comply with:

- (a) ATN is specifically and exclusively intended to provide digital data communication services to air traffic service provider and aircraft operation agencies in support of:
 - i. air traffic services communications (ATSC) with aircraft;
 - ii. air traffic services communications between ATS units;
 - iii. aeronautical operational control communications (AOC); and
 - iv. aeronautical administrative communications (AAC).
 - (b) ATN communication services shall support ATN applications.
 - (c) Requirements for implementation of the ATN shall be made on the basis of regional air navigation agreements. The agreements shall specify the area in which the communication standards for the ATN/OSI or the ATN/IPS are applicable.
 - (d) ICAO Annex 10 Volume III Part I Chapter 3, 3.4 for General Requirement, Chapter 3, 3.5 for ATN Application Requirements, Chapter 3, 3.6 for ATN Communication Service Requirements, Chapter 3, 3.7 for ATN Naming and Addressing requirements and Chapter 3, 3.8 for ATN Security Requirement.
- (2) Aeronautical Mobile Satellite Route system (AMS(R)S), requirements and system characteristics shall comply with:
- (a) ICAO Annex 10 Volume III, Part 1 Chapter 4.
 - (b) Operation only in frequency bands which are appropriately allocated to AMS(R)S and protected by the ITU Radio Regulations.
- (3) Aeronautical Mobile Airport Communication System (AeroMACS) requirements and system characteristics shall:
- (a) comply with ICAO Annex 10 Volume III, Part I Chapter 7;
 - (b) transmit when on the surface of an aerodrome;
 - (c) support aeronautical mobile (route) service (AM(R)S) communications;
 - (d) process messages according to their associated priority;
 - (e) support multiple levels of message priority;
 - (f) support point to point communication;
 - (g) support multicast and broadcast communication services;
 - (h) support internet protocol (IP) packet data services;

- (i) provide mechanisms to transport ATN/IPS and ATN/OSI (over IP) based messaging;
 - (j) support multiple service flows simultaneously;
 - (k) support adaptive modulation and coding;
 - (l) support handover between different AeroMACS Base Stations during aircraft movement or on degradation of connection with current Base Station;
 - (m) keep total accumulated interference levels with limits defined by the International Telecommunication Union – Radio communication Sector (ITU-R) as required by national/international rules on frequency assignment planning and implementation; and
 - (n) support a flexible implementation architecture to permit link and network layer functions to be located in different or same physical entities.
- (4) SSR Mode S Air - Ground Data Link between aircraft and ground station requirements shall comply with Annex 10 Volume III, Part I Chapter 5, 5.2 for Mode S Characteristic; Chapter 5, 5.3 for functional requirement for DCE and XDCE and Chapter 5, 5.4 for Mode S package format.
- (5) VHF Air-ground Digital Link (VDL) requirements and system characteristics shall comply with:
- (a) ICAO Annex 10, Volume III, Part I Chapter 6 for VDL Modes 2, 3 and 4; and
 - (b) ICAO Annex 10 Volume V, chapter 4, 4.1.2 Frequency separation and limits of assignable frequency and Chapter 4, 4.1.3 for frequency used for particular function.
- (6) Aeronautical Fixed Service (AFS) requirements and system characteristics shall comply with:
- (a) ICAO Annex 10, Volume III, Part I Chapter 8. for technical provisions associated with AFTN;
 - (b) Implementation aspects of AFTN/AMHS to support the exchange of messages and/or digital data between aeronautical fixed stations;
 - (c) Annex 10 Volume III, Chapter 8, 8.6.5 for general provision and requirement for CIDIN and Annex 10 Volume II, Chapter 4, 4.5 for CIDIN operating procedures;
 - (d) Implementation aspects relating to interoperable data exchange between AFTN and CIDIN stations and networks with the ATN;

- (e) ICAO Annex 10 Volume II Chapter 3, 3.3 for General requirement for acceptance, transmission and delivery of message in Aeronautical telecommunication service and Chapter 4, 4.1.2 for Material permitted in AFS messages;
 - (f) Cancellation process of the messages by a telecommunication station only when cancellation is authorized by the message originator;
 - (g) ICAO Annex 10 Volume II, Chapter 4, 4.4 for AFTN operating procedures, chapter 4,4.6 for AMHS procedure and chapter 4, 4.7 for ICC procedure; and
 - (h) Meteorological operational channel procedures and meteorological operational communication network procedures shall be compatible with aeronautical fixed telecommunication network (AFTN) or ATS message handling services (AMHS) procedures.
- (7) Universal Access Transceiver (UAT) technical specification and system characteristics shall comply with:
- (a) ICAO ANNEX 10 Volume III, Part I Chapter 12.1 for Overall system characteristic; Chapter 12.2 for Characteristic of the ground station; and Chapter 12.4 for Physical layer requirement; and
 - (b) implementation aspects of a wideband broadcast data link operating on 978 MHz with a channel modulation rate of just over 1 Mbps. By design, UAT supports multiple broadcast services, including flight information services (FIS-B) and traffic information services (TIS-B), in addition to automatic dependent surveillance — broadcast (ADS-B);
- (8) Air-Ground VHF Communication system requirements and system characteristics shall comply with:
- (a) ICAO International Standard and Recommended Practice Annex 10 Volume III, Part II Chapter 2, 2.1 for Air-Ground VHF Communication system characteristic and Chapter 2, 2.2 for system characteristic of the ground installation (25 kHz Channel spacing system);
 - (b) ICAO International Standards and Recommended Practices of Annex 10 volume V chapter 4, 4.1 for utilization in the frequency band 117.975-137.000 MHz;
 - (c) Requirement for Emergency channel (121.500 MHz) shall be conformed to Annex 10 Volume V, Chapter 4.1.3.1;
 - (d) Requirement for Search and Rescue Channel (123.100 MHz) shall be conformed to Annex 10 Volume V, Chapter 4.1.3.4;
 - (e) When two or more ATS frequencies are being used by a controller, consideration shall be given to provide facilities to allow ATS and aircraft transmissions on any of the frequencies to be simultaneously retransmitted on

the other frequencies in use, thus permitting aircraft stations within range to hear all transmissions to and from the controller;

- (f) In case a full failure of voice switching system occur, service provider shall assure the availability of a bypass to the equipment providing the service;
 - (g) Alternative means to ground communications are identified in case of service interruption of the main means of ground communications. Alternative means of ground telecommunications could include direct connections from the telephone company, satellite communications, microwave links and or other systems;
 - (h) Communication procedure that are applicable to the aeronautical mobile service as defined in Annex 10 Volume II, chapter 5;
 - (i) Annex 10 Volume II, Chapter 3, 3.5 for record of communications for aeronautical telecommunication service; and
 - (j) Part-ATS, Air Traffic Service Organization – Certification, regarding the clocks and time recording system of the ATC Communication.
- (9) Single Side Band (SSB) HF Communication System requirements and system characteristics shall comply with:
- (a) ICAO International Standard and Recommended Practice Annex 10 Volume III, Part 2, Chapter 2, 2.4 for Characteristics and requirements of SSB HF Communication system; and
 - (b) ICAO International Standards and Recommended Practices of Annex 10 volume V Chapter 3,3.1 for method of operation of High Frequency below 30 MHz.
- (10) Satellite Voice Communication System requirements and system characteristics to support communication for ATM operation in airspace shall comply with:
- (a) ICAO International Standard and Recommended Practice Annex 10 Volume III, Part 2, Chapter 2, 2.5 for Characteristics and requirements of SATVOICE.
- (11) Selective Calling (SELCAL) System requirements and characteristics shall comply with:
- (a) ICAO Annex 10 Volume III, Part 2 Chapter 3 for system characteristic of SELCAL;
 - (b) ICAO Annex 10 Volume II, Chapter 5, 5.2.4 for communication procedure; and
 - (c) Implementation aspects relating to the usage of Selective Calling systems as an alternative means of communication to aircraft or as main means of communication to aircraft for areas that may not be covered by VHF communications;

- (12) Aeronautical Speech Circuit requirements and system characteristics shall comply with:
- (a) Technical provisions relating to international aeronautical speech circuit switching and signaling for ground-ground applications contained in ICAO Annex 10, Volume III, Part II, Chapter 4;
 - (b) Provision relating to Direct Speech communication contained in ICAO Annex 11 Chapter 6;
 - (c) The implementation aspects relating to the usage of circuit switching and signaling to provide speech circuits to interconnect ATS units not interconnected by dedicated circuits and which shall be by agreement between the Administrations concerned; and
 - (d) The implementation aspects relating to the application of aeronautical speech circuit switching and signaling which shall be made based on regional air navigation agreements.
- (13) Communication procedure for aeronautical broadcasting service (voice broadcasting) shall be in accordance with Annex 10 Volume II, chapter 7.
- (14) Communication procedure for aeronautical mobile service using data link shall be in accordance with Annex 10 Volume II, chapter 8.
- (15) Establishment of Radio Communication requires:
- (a) All stations shall answer calls directed to them by other stations in the aeronautical telecommunication service and shall exchange communications on request;
 - (b) All stations shall radiate the minimum power necessary to ensure a satisfactory service.
- (16) All radio equipment shall be fully redundant to ensure service reliability that are required by the system specifications.
- (17) All remote radio sites shall be easily accessible to the maintenance personnel to allow on time arrival for them in case of emergencies.
- (18) Automatic recording facilities shall be provided on pilot-controller two-way radiotelephony or data link air-ground communication channels, direct speech or data link ground-ground communications and Surveillance data from primary and secondary radar equipment or other systems (e.g., ADS-B, ADS-C) as described in [Appendix A](#).
- (19) All voice switches and position control panels shall be maintained to guarantee continuity of service according to the specifications.

- (20) Communication means shall be established to communicate between ATS units and between the en-route (area) control centers and remote air/ground communication stations or en-route radar stations or military control centers as described in [Appendix A](#) and maintained to guarantee continuity of service according to the system specifications.

CNS.180 Surveillance facilities

An aeronautical telecommunication service provider shall ensure the availability, continuity, accuracy and integrity of the services they are providing and shall demonstrate that:

- (1) Secondary Surveillance Radar requirements and system characteristics shall comply with:
- (a) ICAO Annex 10 Volume IV, Chapter 2, 2.1.2 and Chapter 3, 3.1.1 for characteristic of Secondary Surveillance Radar (SSR) systems (having only Mode A & C capabilities);
 - (b) Ground SSR equipment shall have appropriate ground decoding system to ensure immediate recognition of Mode A Codes 7500, 7600 and 7700;
 - (c) Mode A code 2000 shall be reserved in the ground decoding system to provide recognition of an aircraft which has not received any instruction from Air Traffic Controller to operate the transponder;
 - (d) SSR system having Mode-S capabilities shall conform to the standards incorporated in Annex 10 Volume IV, Chapter 3, 3.1.2;
 - (e) The Monopulse secondary surveillance radar (MSSR) shall be modified to the application of Mode-S;
 - (f) Application of Mode S Extended Squitter system supporting TIS-B out shall conform to Annex 10 Volume IV, Chapter 5, 5.1 and Chapter 5, 5.2 for Mode S Extended Squitter system supporting ADS-B IN;
 - (g) Mode S Extended squitter messages for TIS-B shall conform to requirements specified in the Technical Provisions for Mode S Services and Extended Squitter (Doc 9871); and
 - (h) ground station supporting TIS-B use an extended squitter transmission capability, the characteristics of such ground stations, in terms of transmitter power, antenna gain, transmission rates, etc., are to be tailored to the desired TIS-B service volume of the specific ground station assuming airborne users are equipped with (at least) Class A1 receiving systems.

- (2) Multi-lateration (MLAT) System requirements and system characteristics shall comply with:
 - (a) ICAO Annex 10 Volume IV, Chapter 6 for general requirement of Multi-lateration system as amended;
 - (b) An MLAT system used for air traffic surveillance shall be capable of determining aircraft position and identity;
 - (c) Where an MLAT system is equipped to decode additional position information contained in transmissions, it shall report such information separately from the aircraft position calculated based on TDOA; and
 - (d) Radio frequency characteristics, structure and data contents of signals used in 1090 MHz MLAT systems shall conform to the provisions of ICAO Annex 10 Volume IV, Chapter 3.
- (3) Alternative operational means to radar surveillance services are identified in case of service interruption of the main radar surveillance services facilities according to the Part-ATS and associated procedures.
- (4) All surveillance systems are provided with monitoring facilities to ensure service continuity.
- (5) Non-aircraft transponders that are installed on aerodrome surface vehicles, obstacles or fixed Mode S target detection devices for surveillance and/or radar monitoring purposes shall be assigned 24-bit aircraft addresses conforming to standards incorporated in Annex 10 volume III, Chapter 9, 9.1.
- (6) All radar services are provided in accordance with procedures published in Document 4444 or Document 7030, as applicable to the Middle East/Asia Region.
- (7) Full information is made available to air traffic control administration on:
 - (a) The nature and extent of the radar services provided; and
 - (b) Any significant limitations regarding such radar service.
- (8) Based on the needs of an aerodrome and ICAO Regional Air Navigation Plan, ICAO Doc 9830, A-SMGCS manual should be referenced for guidance on the application of the Operational and Performance Requirements of A-SMGCS implementation.
- (9) In accordance with ADS-B requirements and system characteristics, both ICAO Doc 9924 Aeronautical Surveillance Manual and ICAO MID Doc 013 surveillance plan should be referenced for guidance on the application of the operational and planning requirements of ADS-B ground system implementation.

CNS.185 ATS automation system

- (1) An aeronautical telecommunication service provider shall ensure the availability, continuity, accuracy and integrity of the services they are providing and shall demonstrate that the automation systems that serve the en-route, the approach and the tower facilities are maintained according to the approved operation manual and the maintenance manual of the manufacturer of each system.
- (2) ATS Automation system is required to enhance the safety of the flights by providing the controllers with information of air movements from radars, flight plans and direction finders.
- (3) All ATS Automation equipment shall be fully redundant to ensure service reliability that are required by the system specifications.
- (4) The main system components of ATS Automation system shall comprise of:
 - (a) Redundant Radar Data Processing system;
 - (b) Redundant Flight Data Processing system;
 - (c) Redundant MET and AIS data processing system;
 - (d) Data Recording and analysis;
 - (e) Situation Data display;
 - (f) A computer-controlled Data communication system;
 - (g) A computer-controlled Voice communication system;
 - (h) Simulation; and
 - (i) Common time system.
- (5) ATS Automation system shall fulfill the following characteristics:
 - (a) Based on a legacy of successfully delivered systems around the world;
 - (b) Open system architecture by complying with open system standards (UNIX, etc.);
 - (c) Use of COTS technology from industry leaders;
 - (d) Scalable design that allows future growth;
 - (e) All mission critical servers are redundant with proven switchover strategy; and
 - (f) Designed to allow evolutionary upgrades and future enhancements.

- (6) Service provider of an aeronautical telecommunication service should refer to ICAO Doc 9426, ATS Planning Manual, Section 2, Chapter 3 for general provision and requirement of ATS Automation system.

CNS.190 Identification codes and calls signs

- (1) An aeronautical telecommunication service provider shall make sure that all required identification code for a radio navigation facility or call sign for a communications facility appropriately registered locally and internationally; and
- (2) Such action is needed prior to operational use of the equipment.

CNS.195 Notification of facility information

- (1) An aeronautical telecommunication service provider shall provide the users of the facilities with the operational information for each facility.
- (2) The operational information on any facility that supports an air traffic service or the Libyan air navigation system is forwarded to an aeronautical information service (AIS) for publication in the country's aeronautical information publication (AIP).
- (3) The users of a facility are notified without delay of any updates in the facility information that if updated, may affect the safety of air navigation. For those facilities published in the Libyan AIP, the information concerning any change to their information shall be forwarded to the aeronautical information service for the issue of a NOTAM if so required.

CNS.200 Notification of facility operational status

- (1) An aeronautical telecommunication service provider shall provide the users information of the operational status of each facility or service listed in the operation manual.
- (2) The users of an aeronautical telecommunication facility are notified without delay of any change in operational status of the facility or service that may affect the safety of air navigation and, except where the change is temporary in nature, information concerning any change in operational status of the facility is forwarded to the air traffic service provider and service provider of the aeronautical information service for the NOTAM service.
- (3) Notification for the navigation aid systems shall take place through at least remote monitoring unit (RMU) Systems at the towers or the en-route (area) centers;
- (4) Aerodrome control towers and units providing approach control service shall be provided without delay with information on the operational status of radio navigation aids essential for approach, landing and takeoff at the aerodrome as mentioned in Document 9426, Part 1, chapter 10 and APP. A STD A11 7.3 A10 VOL 1.

- (5) Arrangements shall be made for the local aeronautical information service unit to receive without delay essential information about changes in the operational status of non-visual aids as required for pre-flight briefing and dissemination in accordance with the provisions of Annex 15.

CNS.205 Facility maintenance and report

- (1) An aeronautical telecommunication service provider shall apply proper maintenance to each Aeronautical Telecommunication Facilities and report its condition to the Authority.
- (2) All service interruptions to the Aeronautical Telecommunication services shall be promptly reported and acted upon according to the standard corrective maintenance procedures.

CNS.210 Facility logbook

- (1) An aeronautical telecommunication service provider shall provide each aeronautical telecommunication facility with a logbook and kept at each facility site or location.
- (2) The facility logbook shall contain sufficient information in the first pages of the logbook to identify:
 - (a) Facility information;
 - (b) Precautions of operation or its reference number that included in the operation manual; and
 - (c) The services are being provided from the facility.
- (3) The logbook shall be maintained by the senior person, or the person on duty at a nominated operating position.
- (4) The logbook is maintained throughout the operating hours of the facility.
- (5) All entries include the date, time of entry and signature.
- (6) Every page of the logbook shall be signed by the facility manager or senior person.
- (7) Logbook entries are:
 - (a) In chronological sequence and in ink;
 - (b) Without erasure, defacement, or obliteration; and
 - (c) Corrected by drawing a single line through the erroneous information and initialing the correction.
- (8) Actual times of opening and closing facility are recorded in the logbook, together with the reason for every variation from published hours of service.

- (9) Logbooks are retained for a period of 3 years from the date of final entry.

CNS.215 Reporting service disruptions

- (1) An aeronautical telecommunication service provider shall:
- (a) advise the Authority of any planned disruption of equipment that will result in disruption of air traffic services that could have an impact on safety;
 - (b) report to the Authority within forty-eight (48) hours of the unplanned disruption of equipment resulting disruption of air traffic services when the disruption affected or could have affected, the safety of air traffic, including development of a list of such disruptions of equipment that are reportable. All other disruptions that are not affecting the continuation of air traffic services are reportable internally only; and
 - (c) Investigate any unplanned disruption to the provision of air traffic services and send a report of the investigation to the Authority.
- (2) Planned disruption reportable under paragraph (1)(a) shall include, but are not limited to:
- (a) Routine maintenance of equipment that will have an impact on the service when service is brought off-air;
 - (b) New installations or changes on established services that require the service to be off-air; and
 - (c) Any service that may affect the safe continuation of air traffic services without having a contingency plan for the operation.
- (3) Unplanned disruption reportable under paragraph (1)(b) shall include, but are not limited to:
- (a) Any interference on the air/ground telecommunications channel that may affect the service for more than ten (10) minutes;
 - (b) Failure of any radar coverage, to areas that are declared as covered in the Tripoli FIR in the Libyan AIP, for more than ten (10) minutes;
 - (c) Failure of any radio navigation aids, providing service in the Tripoli FIR and published in the Libyan AIP, for more than ten (10) minutes; and
 - (d) Any other unplanned disruption to the safe continuation of an air traffic service for more than ten (10) minutes.

CNS.220 Reporting unsafe conditions

- (1) An aeronautical telecommunication service provider shall establish a policy encouraging the reporting of unsafe conditions or practices observed by facility personnel.
- (2) An aeronautical telecommunication service provider shall establish a checklist to report at the beginning of each shift the conditions of equipment in the facility where unsafe condition exists. Unsafe conditions reportable under paragraph (a) may include, but are not limited to:
 - (a) Radar signal of fixed targets are not present on the screen;
 - (b) Unstable performance of navigation aid;
 - (c) Simultaneous failure of radar and voice signals;
 - (d) Failure of air conditioning of the facility to operate;
 - (e) Failure of the UPS to function when the main power supply is interrupted;
 - (f) Persistent power failures without adequate alarms or failure of UPS systems to function in case of power failure;
 - (g) Persistent failures of main or standby equipment in the facility;
 - (h) Problems with shift administration;
 - (i) Failure to comply with aeronautical telecommunication/radio navigation Facility instructions;
 - (j) Significant equipment reading deviations; and
 - (k) Procedural errors or inconsistencies that may affect the safety of air navigation services.

CNS.225 Human factors considerations

- (1) An aeronautical telecommunication service provider shall observe Human factors principle in the design and certification of Aeronautical telecommunication facility.
- (2) Guidance material on Human Factors principles can be found in the Human Factors Training Manual (Doc 9683).

CNS.230 Environmental facilities

An aeronautical telecommunication service provider shall establish procedures to ensure that:

- (1) All Aeronautical Telecommunication facilities shall be provided with suitable power supplies that comprise the main feed power and back-up power supply to provide additional power means and ensure continuity of the service consistent with the use of the service(s) involved.
- (2) The power supply switch-over times for Aeronautical Telecommunication facilities shall comply with the following table:

Type of runway	Aids requiring power	Maximum Switch – over times (seconds)
Instrument approach	DME	15
	VOR / NDB	15
	D/F facility	15
Precision approach, Category I	ILS Localizer	10
	ILS glide path	10
	ILS middle marker	10
	ILS outer marker	10
	PAR	10
Precision approach, Category II	ILS localizer	0
	ILS glide path	0
	ILS inner marker	1
	ILS middle marker	1
	ILS outer marker	10
Precision approach, Category III	Same as Category II	Same as Category II

- (3) The power supply voltage stability shall comply with the manufacturer of the specific equipment specifications.
- (4) All Aeronautical Telecommunication facilities equipment rooms are provided with firefighting means and environmental condition including room temperature and humidity, within the recommended values by the specific equipment manufacturer.
- (5) All Aeronautical Telecommunication facilities equipment rooms are shielded and insulated against leakage of air and dust. All exit doors and windows shall be closed to ensure the environmental conditions meet the requirements of this Regulation.
- (6) The service provider shall ensure that all water supply is adequate to provide the water required for firefighting equipment and other purposes by ensuring proper operation of water pumps.
- (7) All ventilation systems in the Aeronautical Telecommunication facilities are maintained according to the general standards.

- (8) the antennas and masts of the Aeronautical Telecommunication facilities shall be properly protected against corrosion and lightening.
- (9) All services interruptions to the environmental facilities are promptly reported and acted upon according to the standard corrective maintenance procedures.
- (10) The standard preventive and periodic maintenance procedure are applied to the environmental facilities to minimize the probability of service interruption.
- (11) Alternative means to environmental facilities are identified in case of service interruption of the main means of environmental facilities.

CNS.235 Inspection, measuring and test equipment

- (1) An aeronautical telecommunication service provider shall ensure that appropriate inspection, measuring and test equipment is available for their personnel to maintain the safe operation of each facility listed in their operation manual.
- (2) An aeronautical telecommunication service provider shall control, calibrate and maintain all of the inspection, measuring and test equipment to ensure that each item of equipment has the precision and accuracy that is necessary for the measurements and tests to be performed.
- (3) An aeronautical telecommunication service provider shall ensure that each item of test equipment required for the measurement of critical performance parameters is:
 - (a) Calibrated before use or at prescribed intervals against certified equipment having a known valid relationship to nationally recognized standards. Where no such standards exist, the basis used for the calibration shall be documented. Records of such calibrations and the standards used shall be maintained in accordance with the procedures required by [CNS.170](#);
 - (b) Identified with a suitable indicator to show its calibration status; and
 - (c) Controlled to:
 - i. Safeguard against adjustments that would invalidate the calibration setting; and
 - ii. Ensure that the handling, preservation and storage are such that the accuracy and fitness for use is maintained.
- (4) Where hardware and software systems are used as an alternative form of facility performance testing, the functions of the systems shall be checked before being released for use in order to establish that they are capable of verifying the performance of the facility. These functions shall be checked at prescribed intervals. Records of these checks shall be maintained as evidence and verification of adequate performance of the test system.

CNS.240 Deviations

- (1) Subject to compliance with [CNS.125](#) and [CNS.130](#), the aeronautical telecommunication service provider may deviate from any requirement of this Regulation to meet an emergency situation, if there is a need to take immediate action for the protection of life or property involving carriage by air.
- (2) The aeronautical telecommunication service provider who deviates from a requirement of this Regulation under the above paragraph (1) shall provide a written report to the Authority as soon as practicable, but in any event not later than seven (7) days after the emergency. The report shall cover the nature, the extent and the duration of the deviation.

CNS.245 Limitations on service

- (1) An aeronautical telecommunication service provider shall not operate a facility if there is any cause to suspect the integrity of the information being provided by the facility. A cause to suspect the integrity of the information being provided by a facility includes the infringement of any critical site area of the facility until performance checks on the facility verify that the infringement does not and will not affect the performance of the facility.
- (2) An aeronautical telecommunication service provider shall not operate a radio transmitting facility on an aeronautical radio frequency except pursuant to a written radio apparatus license granted by the Telecommunication Regulatory Authority and subject to the provisions of ICAO Annex 10, Volume V.
- (3) Except where a deviation under [CNS.240](#) is required, the aeronautical telecommunication service provider shall not operate a facility unless:
 - (a) The facility is listed in the operation manual;
 - (b) The performance of the facility meets the applicable facility published information;
 - (c) The performance of the facility meets the applicable facility requirements in [CNS.090\(2\)](#);
 - (d) Any integrity monitoring system for the facility is fully functional;
 - (e) All the periodic tests for the facility are completed in accordance with the programs established under [CNS.090 \(2\) \(d\)](#) and [CNS.230 \(10\)](#);
 - (f) The facility is included in the holder's security program, if the destruction, damage, or interference of the facility is likely to endanger the safety of an aircraft in flight; and
 - (g) The provisions of the holder's security program for the facility are being complied with.

Appendix A - Aeronautical mobile service (air-ground communications)

1. General

Radiotelephony and/or data link shall be used in air-ground communications for air traffic services purposes.

ATS units shall be provided with and maintain guard on the emergency channel 121.5 MHz as specified in Annex 10 Volumes II and V.

When direct pilot-controller two-way radiotelephony or data link communications are used for the provision of air traffic control service, recording facilities shall be provided on all such air-ground communication channels and shall be retained for a period of at least thirty days.

2. Flight information service

Information air-ground communication facilities shall enable two-way communications to take place between a unit providing flight information service and appropriately equipped aircraft flying anywhere within the flight information region and whenever practicable direct rapid continuous and static free two-way communications should be permitted.

3. Area control service

Air-ground communication facilities shall enable two-way communications to take place between a unit providing area control service and appropriately equipped aircraft flying anywhere within the control areas and whenever practicable direct rapid continuous and static free two-way communications should be permitted.

4. Approach control service

Air-ground communication facilities shall enable direct, rapid, continuous and static-free two-way communications to take place between the unit providing approach control service and appropriately equipped aircraft under its control. Where the unit providing approach control service functions as a separate unit, air-ground communications shall be conducted over communication channels provided for its exclusive use.

5. Aerodrome control service

Air-ground communication facilities shall enable direct, rapid, continuous and static-free two-way communications to take place between an aerodrome control tower and appropriately equipped aircraft operating at any distance within 45 km (25 NM) of the aerodrome concerned. Where conditions warrant, separate communication channels should be provided for the control of traffic operating on the maneuvering area.

6. Ground to ground communications

Direct-speech and/or data link communications shall be used in ground-ground communications for air traffic services purposes. Requirements for retention of all automatic recordings of communications in ATC as specified in Annex 10. Volume II. 3.5.1.5.

7. Flight Information Centre

A Flight Information Centre shall have facilities for communication with the following units providing a service within its area of responsibility:

- (a) The area control center unless collocated;
- (b) Approach control units; and
- (c) Aerodrome control towers.

8. Area Control Centre

In addition to being connected to the Flight Information Centre, an Area Control Centre shall have facilities for communications with the following units providing a service within its area of responsibility:

- (a) approach control units;
- (b) aerodrome control towers; and
- (c) air traffic services reporting offices, when separately established.

9. Approach Control Unit

In addition to being connected to the Flight Information Centre and the Area Control Centre, an Approach Control Unit shall have facilities for communications with the associated aerodrome control tower(s) and, when separately established, the associated air traffic services reporting office(s).

10. Aerodrome Control Tower

In addition to being connected to the Flight Information Centre, the Area Control Centre and the Approach Control Unit, an Aerodrome Control Tower shall have facilities for communications with the associated air traffic services reporting office, when separately established.

11. Communications between air traffic services units and other units

A Flight Information Centre and an Area Control Centre shall have facilities for communications with the following units providing a service within their respective area of responsibility:

- (a) appropriate military units;
- (b) the meteorological office serving the center;
- (c) the aeronautical telecommunications station serving the center;
- (d) the unit providing apron management services, when separately established;
- (e) the rescue coordination center or, in the absence of such center, any other appropriate emergency service; and

(f) the international NOTAM office serving the center.

The communication facilities required shall include provisions for rapid and reliable communications between the air traffic services unit concerned and the military unit(s) responsible for control of interception operations within the area of responsibility of the air traffic services unit.

12. Communications between an Approach Control Unit and an Aerodrome Control Tower and other service units

An Approach Control Unit and an Aerodrome Control Tower shall have facilities for communications with the following units providing a service within their respective area of responsibility:

- (a) appropriate military units;
- (b) rescue and emergency services (including ambulance, fire. etc.);
- (c) the meteorological office serving the unit concerned;
- (d) the aeronautical telecommunications station serving the unit concerned; and
- (e) the unit providing apron management service when separately established.

The communication facilities required shall include provisions for rapid and reliable communications between the air traffic services unit concerned and the military unit(s) responsible for control of interception operations within the area of responsibility of the air traffic services unit.

Where conditions warrant, separate communication channels shall be provided for the control of vehicles on the maneuvering area. Automatic recording facilities shall be provided on any such channels.

Recordings of communications as required above shall be retained for a period of at least thirty (30) days.

13. Automatic recording of Surveillance data

Surveillance data from primary and secondary radar equipment or other systems (e.g. ADS-B. ADS-C) used as an aid to air traffic services shall be automatically recorded for use in accident and incident investigations, search and rescue, air traffic control and surveillance systems evaluation and training.

Automatic recordings shall be retained for a period of at least thirty (30) days. When the recordings are pertinent to accident and incident investigations, they shall be retained for longer periods until it is evident that they will no longer be required.