

NOVEMBER 2018

GHANA CIVIL AVIATION (ANS) DIRECTIVES

Part 23 Subpart 6 – Aeronautical Telecommunication Service Provision

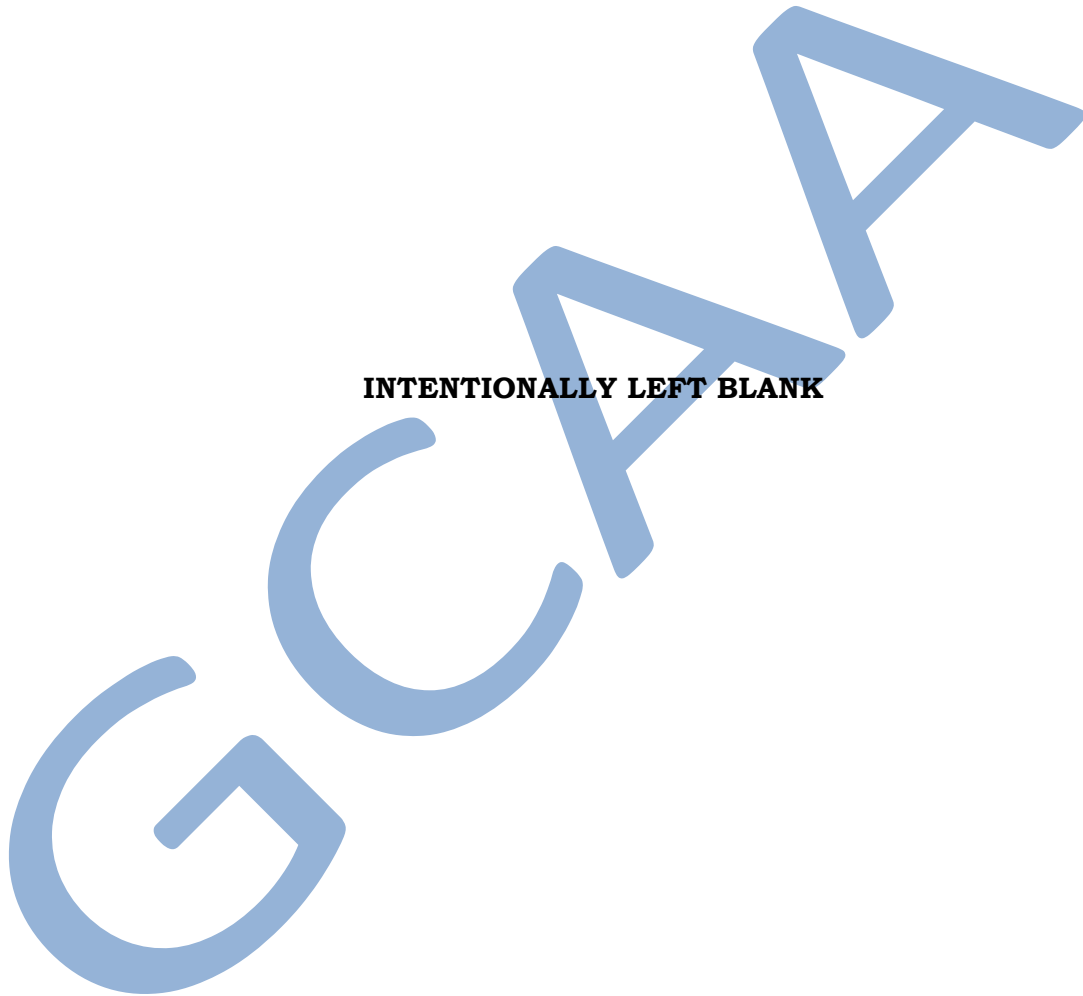
**GHANA CIVIL AVIATION
(AIR NAVIGATION SERVICES)
DIRECTIVES**



PART 23:- SUBPART 6

**REQUIREMENTS FOR AERONAUTICAL SERVICE
PROVISION**

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INTRODUCTION

In Subpart 6 of Part 23 prescribes the additional requirements for the Air Navigation Service Provider (ANSPs) providing Aeronautical Telecommunication (Aerotel) Services.

Whereas the preceding Subparts (i.e. 23.1, 23.2, 23.3, 23.4 and 23.5) deal with specifications and technical details of Aeronautical telecommunication systems mainly based on Standards and Recommended Practices (SARP) in the ICAO Annexes 10, Volume I – V), this subpart focuses on pertinent additional requirements that and procedures that service provider involved in the installation, operations and maintenance of Communication, Navigation and Surveillance / Air Traffic Management (CNS/ATM) should put in place to enhance safety in its operations.

The term CNS Service Provider, Aerotel service provider and/or Service provider are used interchangeably to refer the entity authorized and approved by the Authority to provide aeronautical telecommunications within the territory that the Republic of Ghana has jurisdiction to provide Air Navigation Services.

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23 REQUIREMENTS FOR AERONAUTICAL SERVICE PROVISION

23.6 GENERAL

23.6.1 APPLICABILITY

23.6.1.1 This Subpart prescribes the requirements of the Republic of Ghana for:

- (a) Provision of Aeronautical telecommunication (Aerotel) services and conditions under which those services shall be provided.
- (b) Persons and entities involved in the installation, operation and maintenance of aeronautical telecommunication systems and facilities.
- (c) Communication, Navigation and Surveillance (CNS) Service providers and practitioners.
- (d) Air Navigation Service Providers (ANSP) and /or their Designates;
- (e) Aviation Meteorological Service Providers;
- (f) Aviation Training Organization (ATO);
- (g) Airport Operators; and
- (h) All other Air Navigation Service related operations.

23.6.2 DEFINITIONS

23.6.2.1 For the purpose of this Subpart, the definitions in Part 1 of Ghana Civil Aviation (ANS) Directives shall apply.

23.6.3 APPROVAL OF AERONAUTICAL TELECOMMUNICATION (AEROTEL) SERVICES

23.6.3.1 No person shall provide an aeronautical telecommunication services or operate an aeronautical facility except under the authority of, and in accordance with the provisions of, an approval granted by the Authority.

23.6.3.2 Aeronautical Telecommunication service means:

- (a) Aeronautical broadcasting service described in Subpart 23.2.7;
- (b) Aeronautical fixed service (AFS) described in Subpart 23.2.4;
- (c) Aeronautical mobile service – Voice and Datalink described in Subparts 23.2.5 and 23.2.8;
- (d) Aeronautical Radio Navigation Services as described in

Subparts 23.1 and 23.2.6

- (e) Installation, Operation and Maintenance of Communication, Navigation and Surveillance / Air Traffic Management (CNS/ATM) Systems; and
- (f) Any other telecommunication service provided specifically to support Air Navigation Services.

23.6.3.3 The approval given by the Authority shall authorize the provision of:

- (a) A single aeronautical telecommunication service by means of a single aeronautical telecommunication service units, systems or facilities; or
- (b) A combination of aeronautical telecommunication services by means of a network of aeronautical telecommunication service providers.

23.6.4 DEMONSTRATION OF COMPLIANCE

23.6.4.1 The service provider shall:

- (a) provide all the relevant evidence to demonstrate compliance with the applicable requirements of these Directives at the request of the Authority.
- (b) notify the Authority of planned changes to its provision of aeronautical telecommunication services which may affect its compliance with the applicable requirements of these Directive.

23.6.4.2 Where the service provider does not comply with the applicable requirements any longer, the Authority shall take a decision within a time period not exceeding one month, requiring the service provider to take corrective action.

23.6.4.3 The decision made with respect to 23.6.4.2 shall immediately be notified to the relevant service provider.

23.6.4.4 The Authority shall check that the corrective action has been implemented before notifying its approval to the service provider. Where the Authority considers that corrective action has not been properly implemented within the agreed timetable, it shall take appropriate enforcement measures in accordance with the Ghana Civil Aviation Directives (GCADs) while taking into account the need to ensure the continuity of services.

23.6.5 FACILITATION OF COMPLIANCE MONITORING (SAFETY INSPECTION AND AUDITS)

- 23.6.5.1 The service provider shall:
- (a) facilitate inspections and surveys by the Authority or by authorized persons acting on the latter's behalf, including site visits and visits without prior notice.
 - (b) without charge, at the request of the Authority, allow and provide the equipment necessary to conduct any inspections, or conduct tests of aeronautical facilities, equipment or operating procedures at aerodromes or navigational sites where service is being provided to determine compliance with applicable parts of the Ghana Civil Aviation Directives (GCADs) for the purpose of ensuring the safety of Air Navigation.
- 23.6.5.2 The Authority shall perform the following:
- (a) to examine the relevant records, data, procedures and any other material relevant to the provision of air navigation services;
 - (b) to take copies of or extracts from such records, data, procedures and other material;
 - (c) to ask for an oral explanation on site;
 - (d) to enter relevant premises, lands or means of transport.
- 23.6.5.3 The service provider shall allow the Authority to make special inspections to ensure aviation safety:
- (a) as soon as practicable after any aircraft accident or incident.
 - (b) during the period of installation or repair of the aeronautical facilities or equipment that is critical to the safety aircraft operations; and
 - (c) under any other conditions that could affect aviation safety.
- 23.6.5.4 Subject to paragraph 23.6.5.1 above the Authority shall delegate credentialed Aviation Safety Inspectors to conduct safety inspections on its behalf.
- 23.6.5.5 The Authority shall:
- (a) give reasonable notice of any tests to be conducted to the service provider; and
 - (b) carry out the tests at a reasonable time.

23.6.5.6 Where unannounced inspections are to be conducted by the Authority, paragraph 23.6.5.5 does not apply.

23.6.6 FREQUENCY ASSIGNMENT, IDENTIFICATION CODES & CALL SIGNS

23.6.6.1 No person or organization may operate:

- (a) a radio navigation aid, unless it has been assigned a frequency and/or allocated an identification code by the Authority; or
- (b) a radio communication transmitter on an aeronautical radio frequency unless it has been allocated a call sign by the Authority under paragraph 23.6.6.3.

23.6.6.2 The service provider shall request for the frequency assignment, allocation of an identification code or a call sign under paragraph 23.6.6.1 in the form and manner prescribed by the Authority.

23.6.6.3 The Authority may allocate an identification code for a radio navigation aid or a call sign for a radio communication transmitter on an aeronautical radio frequency if the Authority is satisfied that the allocation of a code or call sign is not contrary to the interests of aviation safety.

23.6.7 PERSONNEL REQUIREMENTS

23.6.7.1 The service provider shall employ, contract, or otherwise engage—

- (a) a senior person or persons responsible to the chief executive for ensuring that all activities undertaken by the service provider are in compliance with these requirements and that prescribed by the GCADs, and who shall in addition be vested with the following powers and duties in respect of the compliance with such requirements:
 - (1) unrestricted access to work performed or activities undertaken by all other persons as employees of, and other persons rendering services for and on behalf of the service provider;
 - (2) full rights of consultation with any such person(s) in respect of such compliance by him or her; and
 - (3) Powers to order cessation of any activity where such compliance is not effected; and
 - (4) Has a duty to establish liaison mechanisms with

the Authority with a view to ascertain correct manners of compliance with the said requirements, and interpretations of such requirements by the Authority, and to facilitate liaison between the Authority and the unit concerned ; and

- (5) Powers to report directly to the management of his or her organization, on his or her investigations and consultations generally, and in cases contemplated in 23.6.7.1 (a) (3), and with regard to the results of the liaison contemplated in 23.6.7.1 (a)(4).

- (b) Sufficient personnel to inspect, supervise, and maintain the facilities listed in the Operations Manual.

23.6.7.2 The service provider shall ensure that its personnel are competent and are of sufficient numbers and have been provided with written evidence of the scope of their authorization to be able to discharge their allocated responsibilities. The job description should depict the job purpose, key responsibilities, and outcome to be achieved of each staff.

23.6.7.3 The service provider shall establish procedures for personnel, who are authorized to place into operational service any of the facilities listed in their Operations Manual, to:

- (a) assess the competence of those authorized personnel;
and
- (b) maintain the competence of those authorized personnel;
and
- (c) establish a means to provide those personnel with written evidence of the scope of their authorization.

23.6.8 TRAINING

23.6.8.1 The service provider shall:

- (a) ensure that all its personnel possess the skills and competencies required in the provision of the aeronautical telecommunication services and licensed in accordance with the requirements ATSEP Licensing in Part 2 of Ghana Civil Aviation Directives.
- (b) develop an overall training policy and programme for its personnel which include the details of the training courses that different levels of technical staff have to undergo to perform their duties. This should include Basic, Advanced, Specialized, Recurrent training, On-job-training and Human factor initial and recurrent training.

- (c) ensure that, the training programme takes into consideration guidance provided in ICAO Doc 9868, PANS-Training – ATSEP Competency Framework, ICAO Doc 10057 ATSEP Competency-based Training and Assessment the service provider
- (d) submit the training programme to the Authority for acceptance.
- (e) maintain individual training records for each of its staff, which should include a training plan detailing the courses completed by each staff as well as the time frame for attending future courses as required under this training plan.

23.6.9 AERONAUTICAL FACILITY REQUIREMENTS

23.6.9.1 The service provider shall establish a procedure in its Operations Manual to ensure that:

- (a) each aeronautical facility:
 - (1) is designed, installed, and commissioned to meet the applicable operational specification for that facility
 - (2) conforms with the applicable system characteristics and specification standards prescribed in the Ghana Civil Aviation Directives and relevant ICAO Annexes and Documents; and
 - (3) has been assigned frequency Allocation, 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, that is essential for the approach, landing, and take-off at an aerodrome, is provided to meet the operational needs of:
 - (1) the air traffic control unit providing an aerodrome control service for that aerodrome while that service is being provided;
 - (2) the air traffic control unit providing an approach control service for that aerodrome while that service is being provided;
- (c) each aeronautical facility 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; and
- (d) each aeronautical facility is installed in accordance with

the security programme required under paragraph 23.6.14 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 is:
 - (1) clearly identified on the site drawings for the aeronautical facility;
 - (2) physically protected by suitable signposts on the site; and
 - (3) 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.

23.6.9.2 A service provider who intends to operate a temporary aeronautical facility to carry out site tests shall establish a procedure in its Operations Manual, for conducting those tests such that:

- (a) the operation of the temporary facility does not cause any interference with any other operating aeronautical facility; and
- (b) appropriate information regarding the operation of the temporary facility is forwarded to the provider of the Aeronautical Information Services (AIS) for the issuing of a NOTAM, and if appropriate the publication of a Supplement to the Aeronautical Information Package (AIP); and
- (c) An appropriate NOTAM has been published before the use of the temporary aeronautical facility.

23.6.10 DOCUMENTATION

23.6.10.1 The service provider shall hold copies of applicable Ghana Civil Aviation Directives (GCADs), Civil Aviation Advisory Publications and Information Circulars, relevant equipment manuals, ICAO Annexes, and any other documents necessary for the provision and maintenance of the facilities listed in its Operations Manual;

23.6.10.2 The service provider shall establish a procedure to control all the documentation required by paragraph 23.6.10.1. The procedure shall ensure that:

- (a) all documentation is reviewed, and authorized as required, by an authorized person or Head of Organization before issue;
- (b) current issue of the relevant documentation is available

to personnel at all locations where they need access to such documentation for the provision and operation of facilities;

- (c) all obsolete documentation is promptly removed from all points of issue or use;
- (d) any obsolete documents retained as archives are suitably identified as obsolete;
- (e) changes to documentation are reviewed and approved by an authorized person or Head of Organization who shall have access to pertinent background information upon which to base their review and approval; and
- (f) The current version of each item of documentation can be identified to preclude the use of out-of-date editions.

23.6.11 MANAGEMENT OF RECORDS

23.6.11.1 The service provider shall keep adequate and accurate records as they are necessary elements of a safety management system.

23.6.11.2 The service provider should have a Record System to identify, collect, index, store, maintain and dispose of records in a manner to facilitate:

- (a) Safe provision and operation of the facilities listed in their Operations Manual;
- (b) Assistance with any accident or incident investigation; and
- (c) The provision of a traceable history over the complete life cycle of services and facilities.
- (d)

23.6.11.3 The records kept should include the following:

- (a) Records of installation, initial testing, commissioning and re-commissioning of aeronautical telecommunication facilities as prepared by the Installation team and handed over to the station during the handing over of the facility.
- (b) Records of Flight Inspection Results in respect of commissioning and periodic checks of facilities.
- (c) Records 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 (dates) for such test

equipment;

- (d) Records of hazard logs and risk assessments done;
 - (e) Records of investigation under the procedures required by paragraph 23.6.24 (Facility Check after Accident / Incident) and paragraph 23.6.25 (Facility Malfunction) that includes:
 - (1) details of the nature of the malfunction/incident;
 - (2) the findings of the investigation;
 - (3) the corrective actions taken; and
 - (4) if applicable, a copy of the report submitted to the Authority.
 - (f) Records of each internal quality assurance review of the service providers' organization carried out under the procedures required under paragraph 23.6.13.2 (f) (Quality Assurance and Safety Management System);
 - (g) Records for each person who is authorized by the service provider to place facilities into operational service. The record shall include details of their experience, qualifications, training, competence assessments and current authorizations;
- 23.6.11.4 The records may be either a paper or computer system or any combination of both and shall be stored in a safe way with regards to fire, flood and theft;
- 23.6.11.5 Paper system shall use robust material which can withstand normal handling and filing. The record shall be legible throughout the required retention period;
- 23.6.11.6 Computer systems used for maintenance records shall have at least one backup system which shall be updated regularly;
- 23.6.11.7 Each computer terminal is required to contain program safeguards against the ability of unauthorized personnel to alter the database;
- 23.6.11.8 The procedures required under paragraph 23.6.10 (Documentation) shall require:
- (a) All written records to be legible and of a permanent nature; and
 - (b) All aeronautical facility records to be retained for a period of at least 3 years unless a longer period is required:
 - (1) by the Authority; or

- (2) to establish a performance history for the aeronautical facility.

23.6.12 FACILITY MAINTENANCE LOGBOOK

23.6.12.1 The service provider shall establish procedures in its Operations Manual to ensure that a logbook, with sequentially numbered pages, is kept at each facility and where a facility has physically separate operation areas, at each of such location within the facility;

23.6.12.2 The procedure shall ensure that:

- (a) the logbook is maintained by the senior person, or the person on duty at a nominated operating position;
- (b) the logbook is maintained throughout the operating hours of the facility;
- (c) all entries include the date, time of entry and signature;
- (d) Every page of the logbook must be signed by the facility manager or a designated senior person;
- (e) Logbook entries are:
 - (1) in chronological sequence and in ink;
 - (2) without erasure, defacement, or obliteration; and
 - (3) corrected by drawing a single line through the erroneous information and initialing the correction.
- (f) Actual times of opening and closing facility are recorded in the logbook, together with the reason for every variation from published hours of service; and
- (g) Logbooks are retained for a period of not less than two (2) years from the date of final entry.

23.6.12.3 The procedure shall ensure that the facility maintenance log:

- (a) Contains sufficient information in the first pages of the logbook to identify:
 - (1) Facility information;
 - (2) Precautions of operation or its reference number that is included in the Operations Manual; and
 - (3) The services being provided from the facility.

- (b) Is retained for a period of two (2) years from the date of first filing.

23.6.13 QUALITY ASSURANCE & SAFETY MANAGEMENT SYSTEM

- 23.6.13.1 The service provider shall establish an internal Quality Assurance program and also implement a Safety Management System (SMS) acceptable to the Authority in accordance with Part 36 of Ghana Civil Aviation Directives which ensures compliance with the adequacy of the procedures required.
- 23.6.13.2 The Quality Assurance program and Safety Management System shall include:
- (a) A safety policy, an important element of a Safety Management System (SMS) and procedures, including the procedure required under paragraph 23.6.25 for investigating facility malfunction incidents;
 - (b) A procedure to ensure quality indicators, including equipment availabilities, malfunctions, faults, and personnel and customer feedback, are monitored to identify existing problems or potential causes of problems within the internal quality assurance system;
 - (c) A procedure for corrective action to ensure existing problems that have been identified within the internal quality assurance system are corrected; and
 - (d) A procedure for preventive action to ensure that potential causes of problems that have been identified within the internal quality assurance system are remedied; and
 - (e) An internal audit program to ensure conformity with the procedures in the Operations Manual and to achieve the goals set in the safety policy; and
 - (f) Management review procedures, that should include the use of statistical analysis if appropriate, to ensure the continuing suitability and effectiveness of the internal quality assurance system in satisfying the requirements of under paragraph 23.6.13.
- 23.6.13.3 The procedure required under paragraph 23.6.13.2 (c) for corrective action shall specify how:
- (a) to correct an existing quality problem; and
 - (b) to follow up a corrective action to ensure the action is effective; and
 - (c) to amend any procedure required as a result of a

corrective action; and

- (d) Management will measure the effectiveness of any corrective action taken.
- (e) The procedure required under paragraph 23.6.13.2(d) for preventive action shall specify how:
 - (1) to correct a potential problem;
 - (2) to follow up a preventive action to ensure the action is effective;
 - (3) to amend any procedure required under this Subpart as a result of a preventive action;
- (f) management will measure the effectiveness of any preventive action taken.

23.6.13.4 The internal audit program required under paragraph 23.6.13.2(e) shall:

- (a) specify the frequency and location of the audits taking into account the nature of the activity to be audited;
- (b) measure the effectiveness of any preventive or corrective action taken by the personnel responsible for the activity being audited since the last audit; and
- (c) require preventative or corrective action to be taken by the personnel responsible for the activity being audited if problems are found by the audit;

23.6.13.5 The procedure for management review required under paragraph 23.6.13.2(f) shall:

- (a) specify the frequency of management reviews of the internal quality assurance system taking into account the need for the continuing effectiveness of the system; and
- (b) identify the senior person responsible for the management reviews referred to in paragraph 23.6.13.6 (a) below;

23.6.13.6 The senior person responsible for the quality assurance and safety management system shall ensure that:

- (a) the Safety Management Safety (SMS) safety policy and the safety procedures are understood, implemented, and maintained at all levels of the service provider's organization;
- (b) the audits are performed by trained auditing personnel who are independent of those having direct responsibility for the activity being audited;

- (c) the results of the audits are reported to the personnel responsible for the activity being audited;
- (d) all corrective and preventative actions are followed up to review the effectiveness of those actions;
- (e) the results of the management review are evaluated and recorded;

23.6.14 SECURITY PROGRAM

- 23.6.14.1 The service provider shall establish a security program for the facilities listed in its Operations Manual.
- 23.6.14.2 The security program shall specify the physical security requirements, practices, and procedures to be followed for the purposes of minimizing the risk of destruction or, damage to, or interference with the operation of any aeronautical facility operated if such destruction, damage, or interference could endanger the safety of aircraft.
- 23.6.14.3 The security program shall include such physical security requirements, practices, and procedures as may be necessary:
- (a) to ensure that each aeronautical facility is subject to positive access control at all times to prevent unauthorized entry;
 - (b) for personnel to follow in the event of a bomb threat or other threat of damage to an aeronautical facility; and
 - (c) to monitor an unattended aeronautical facility building to ensure that any intrusion or interference is immediately detected.
- 23.6.14.4 The security program shall include procedures to notify, investigate, and report security incidents to the Authority as soon as practicable.

23.6.15 PREVENTION OF FATIGUE

- 23.6.15.1 The service provider shall establish procedures to ensure that all maintenance personnel are not subject to fatigue in that:
- (a) a maintenance personnel does not serve for more than 8 consecutive hours or does not serve for more than 12 hours during a period of 24 consecutive hours, unless a rest period of at least 8 hours at or before the end of the 12 hours of duty have been attained;

- (b) at any time two (2) maintenance personnel shall be present in a shift;
- (c) except in an emergency, maintenance personnel refrains from performing any duties for at least 24 consecutive hours at least once during each 7 consecutive days.

23.6.15.2 An Air Traffic Safety Electronic Personnel (ATSEP) shall not exercise the privileges of his license if he/she knows or suspects that he/she is suffering from or having regards to the circumstances of the period of duty to be undertaken, is likely to suffer from such fatigue as may endanger the safety of any aircraft to which an aeronautical telecommunication service is provided.

23.6.15.3 A service provider shall establish procedures to ensure that no person whose function is critical to the safety of aviation (safety sensitive personnel) shall undertake that function while under the influence of any psychoactive substance, by reason of which human performance is impaired and that they shall not engage in any problematic use of substances.

23.6.16 COORDINATION

23.6.16.1 The service provider shall establish systems and procedures in its Operations Manual to ensure, where applicable co-ordination with the following agencies:

- (a) The Air Traffic Service provider in accordance with Part 24;
- (b) National Security Agencies;
- (c) Search And Rescue authorities;
- (d) The Authority and National Communication Authority (NCA); relating to Frequencies for aeronautical telecommunication services; and
- (e) Other telecommunication service providers operating in Ghana.

23.6.16.2 The service provider shall establish procedures covering each facility in its Operations Manual to ensure that Service Level Agreement (SLA) is in place between it (Service provider) and:

- (a) entities providing services to the facility; and
- (b) entities receiving services from the facility;

23.6.16.3 The entities in items 23.6.16.2(a) and (b) above may be internal within the service provider facilities or external to the service providers such as the electric power company or the

telecommunication service company.

23.6.17 SHIFT ADMINISTRATION

23.6.17.1 The service provider shall establish a procedure to ensure that:

- (a) Adequate time is provided at the beginning and end of each shift, for the performance of those duties required:
 - (1) before start of the shift; and
 - (2) after the end of the shift.
- (b) A minimum of 30 minutes is provided for each transfer of duties at an operational facility.

23.6.18 CONTINGENCY PLAN

23.6.18.1 The service provider shall establish a contingency plan acceptable by the Authority, 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.

23.6.18.2 The plan shall be made on the equipment level, system level and operational level.

23.6.19 PERIODIC INSPECTION AND TESTING

23.6.19.1 The service provider shall establish procedures for the periodic inspection and testing as required in Part 23.1 for the facilities listed in its Operations Manual to verify that they meet the applicable operational requirements and performance specifications.

23.6.19.2 These procedures shall:

- (a) cover ground inspection, ground test and flights test where it is necessary in accordance with Standards stipulated in the GCADs, ICAO Annexes and the manufacturer technical manuals;
- (b) include the criteria for establishing or changing the period between the periodic tests for a facility. The criteria shall have regard to:
 - (1) any applicable information published by the

Authority, International Civil Aviation Organization (ICAO) or the equipment manufacturer;

- (2) any applicable reliability data for the facility; and
- (3) the stability of the facility's operating environment;

- (c) Ensure that the basis of establishing or changing the period between the periodic tests for a facility are documented and approved by the Authority.

23.6.19.3 In addition, the service provider shall establish:

- (a) An approved program of periodic ground inspections for each facility;
- (b) An approved program of periodic ground tests for each facility;
- (c) An approved program of periodic flight tests for each radio navigation aid unless the service provider can establish from the criteria in paragraph 23.6.19.3 (b) (2) that periodic ground tests can replace the periodic flight tests for a facility without affecting the safety of air navigation taking into consideration the requirements of ICAO Doc 8071 for CNS facilities.

23.6.19.4 The programs required by paragraph 23.6.19.3(b) and (c) for the periodic ground and flight tests shall be based on the criteria in paragraph 23.6.19.2(b) (3) and shall specify the maximum period between the tests for each facility.

23.6.19.5 The program shall have procedure to check that all equipment in the facility are properly earthed to prevent electrical shocks and radio interference with the operational systems;

Note. – Additional guidance on earthing requirements for CNS facilities can be obtained from Manual on Testing of Radio Navigational Aids Volume 1 – 3 (ICAO Doc 8071).

23.6.19.6 The program shall have procedure to check that the data control cables are protected with lightning arrestors;

23.6.19.7 The program shall have procedure to check that the antennas and masts of the facilities shall be properly protected against corrosion, lightning and interference;

23.6.19.8 The service provider shall notify the Authority of any radio navigation aid that is not subjected to periodic flight tests.

23.6.20 AERONAUTICAL FACILITY PERFORMANCE /OPERATION

23.6.20.1 The service provider shall establish a procedure to ensure that no aeronautical facility listed in their Operations Manual is placed into operational service unless—

- (a) The person placing the aeronautical facility into operational service is assessed as competent and authorized according to the procedures required under 23.6.7;
- (b) The appropriate checks detailed in the operating and maintenance instructions required under Paragraph 23.6.42 have been carried out to verify the performance of the aeronautical facility; and
- (c) The aeronautical facility record has been completed according to the procedures required by paragraph 23.6.11.

23.6.21 MEASURING AND TEST EQUIPMENT

23.6.21.1 The service provider shall ensure that appropriate measuring and test equipment is available for their personnel to maintain the safe operation of each facility listed in their Operations Manual.

23.6.21.2 The service provider shall establish a procedure to inspect, control, calibrate and maintain all 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.

23.6.21.3 The procedure 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 national and international 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 paragraph 23.6.11.3 (c);
- (b) Identified with a suitable indicator to show its calibration status; and
- (c) Controlled to:
 - (1) safeguard against adjustments that would invalidate the calibration setting; and

- (2) ensure that the handling, preservation and storage are such that the accuracy and fitness for use is maintained.

23.6.21.4 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.

23.6.21.5 The procedure shall ensure that when the service provider intends to operate a temporary aeronautical facility to carry out on site tests shall establish a procedure for carrying out these tests as required by paragraph 23.6.47.

23.6.21.6 The procedure required under paragraph 23.6.19 above in addition to the procedures in paragraph 23.6.47, shall require that:

- (a) The operation of the temporary facility does not cause any interference with any other operating aeronautical facility; and
- (b) Appropriate information regarding the operation of the temporary facility is forwarded to the provider of the Aeronautical Information Service (AIS) for the issue of a NOTAM, and if appropriate, the publication of a Supplement to the AIP; and
- (c) An appropriate NOTAM has been issued.

23.6.22 NOTIFICATION OF FACILITY INFORMATION

23.6.22.1 The service provider shall establish a procedure to notify the users of the facilities with the operational information for each facility.

23.6.22.2 The procedure shall ensure that:

- (a) The operational information on any facility that supports an air traffic service is forwarded to an Aeronautical Information Service (AIS) provider for publication in the Aeronautical Information Publication (AIP);
- (b) 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 AIP the information concerning any

change to their information shall be forwarded to the Aeronautical Information Service (AIS) provider for the issue of a NOTAM if so required.

23.6.23 NOTIFICATION OF FACILITY STATUS

23.6.23.1 The service provider shall establish procedures to notify users of its facilities, of any changes in the operational status of each facility or service.

23.6.23.2 The procedures shall ensure that:

- (a) The change of status for each of the holder's units is forwarded to the Air Traffic Service provider and Aeronautical Information Service provider for AIP service; and
- (b) The users of an aeronautical telecommunication facility/service are notified without delay of any change in operational status of the facility or service that may affect the safety of air navigation. Except where the change is temporary in nature, information concerning any change in operational status of the facility shall be forwarded to the Aeronautical Information Service provider for the NOTAM publication.

23.6.24 FACILITY CHECK AFTER ACCIDENT OR INCIDENT

23.6.24.1 The service provider shall establish a procedure to check and record the operating condition of any facility listed in their Operations Manual that may have been used by an aircraft or an air traffic service involved in an accident or incident.

23.6.24.2 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.

23.6.25 FACILITY MALFUNCTIONS

23.6.25.1 The service provider shall establish a procedure to record, investigate, and rectify any detected or reported malfunction of any facility providing aeronautical telecommunication service.

- 23.6.25.2 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;
 - (b) The facility had the potential to operate outside the allowable tolerance;
 - (c) There appears to be a recurring cause for the facility malfunction reports.
- 23.6.25.3 The report required in paragraph 23.6.25.2 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/or the corrective action taken to prevent a recurrence.

23.6.26 INFORMATION FLOW REQUIREMENTS

- 23.6.26.1 The 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 Technical / System Monitoring and Control (SMC) supervisor shall be available:
- (a) 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) to receive all status of all radio navigation aids facility and report the status to the AIS or to the ATC depending on the particular case; and
 - (c) to receive all status of aeronautical facilities reported at the aerodromes and take necessary actions including reporting the status to the appropriate authorities.
- 23.6.26.2 The service provider shall establish systems and procedures to ensure that for each facility, appropriate to the intended area of responsibility, the user (ATC) is kept informed of the operational status and the existence of temporary hazards of all:
- (a) navigation aids in the system;
 - (b) surveillance radar in the system;
 - (c) air/ground and ground/ground communication facilities in the system;
 - (d) automation facilities in the system; and

- (e) environmental facilities in the system.

23.6.27 AERONAUTICAL COMMUNICATION FACILITIES

23.6.27.1 The service provider shall establish procedures to ensure that:

- (a) all radio communication services listed in the AIP are being served by physical facilities identified;
- (b) all radio equipment is fully redundant to ensure service reliability that is required by the system specifications;
- (c) all remote radio sites are easily accessible to the maintenance personnel to allow on time arrival for them in case of emergencies;
- (d) all voice switches and ATC position control panels are maintained to guarantee continuity of service according to the specifications;
- (e) fully uninterrupted power supply units are available at each separate technical site;
- (f) availability of a bypass to the equipment providing the service in case a full failure of voice switching system should occur; and
- (g) High Frequency (HF) communication facilities with Selective Calling (SELCAL) systems is maintained 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 if required.
- (h) when two or more ATS frequencies are being used by an air traffic 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 air traffic controller.
- (i) 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.
- (j) the use of circuit switching and signaling to provide speech circuits to interconnect ATS units not interconnected by dedicated circuits shall be by agreement between the Administrations concerned.

- (k) the application of aeronautical speech circuit switching and signaling shall be made on the basis of regional air navigation agreements.

23.6.28 AIR – GROUND COMMUNICATION FACILITIES

- 23.6.28.1 The service provider shall install systems and establish procedures to communicate between the en-route (area) control centres and remote air – ground communication stations or en-route radar stations or military control centres. The systems and the procedures shall be established and maintained to guarantee continuity of service according to the system specifications;
- 23.6.28.2 The service provider shall establish procedures to ensure that:
- (a) All service interruptions to the air – ground communication services are promptly reported and acted upon according to the standard corrective maintenance procedures;
 - (b) The standard preventive and periodic maintenance procedures are applied to the air – ground communication facilities to minimize the probability of service interruption; and
 - (c) Alternative means to air – ground communications are identified in case of service interruption of the main means of air – ground communications. Alternative means of air – ground communications could include direct connections from the telephone company, satellite communications, microwave links and or other systems.

23.6.29 NAVIGATION AND SURVEILLANCE FACILITIES

- 23.6.29.1 The service provider shall establish systems and procedures to:
- (a) ensure compliance with the provision of the Subparts 23.1, 23.2, 23.3, 23.4 and 23.5 of Part 23 of these Directives for the specified radio navigation and Surveillance facilities including frequency spectrum management related to these facilities to avoid interference thus ensure optimum operation.
 - (b) ensure that all systems are provided with remote monitoring and control facilities.
- 23.6.29.2 The service provider shall establish a procedure to ensure that:
- (a) All service interruptions to these services are promptly reported and acted upon according to the standard

corrective maintenance procedures;

- (b) The standard preventive and periodic maintenance procedures are applied to these facilities to minimize the probability of service interruption;
- (c) All services are provided in accordance with the Global Air Navigation Plan, Africa-Indian Ocean (AFI) Region air navigation agreement, AFI Planning and Implementation Group (APIRG) Decision and conclusions as well as such other meetings to ensure uniformity.

23.6.30 DATA AUTOMATION FACILITIES

23.6.30.1 The service provider shall establish procedures to ensure that:

- (a) All automation systems that serve the en-route, the approach and the aerodrome facilities are properly maintained to ensure satisfactory operations;
- (b) Terminals are manned continuously to monitor the automation systems functions efficiently.

23.6.31 CLOCKS AND TIME RECORDING DEVICES

23.6.31.1 The service provider shall establish procedures to ensure:

- (a) Compliance with the Ghana Civil Aviation Directives (GCADs), regarding the clocks and time recording system of the ATC communications;
- (b) Coordinated Universal Time devices that express time in hours and minutes of the 24- hour day beginning at 0000 UTC are available and properly maintained;
- (c) Each facility is checked as necessary to ensure the correct time within 5 seconds of UTC as determined by reference to a standard time station or GPS time standard.
- (d) Wherever data link communications are utilized, the service provider shall establish a procedure to ensure that all clocks and time-recording devices be checked as necessary to ensure correct time to within one (1) second of UTC.

23.6.31.2 The service provider shall establish a procedure to 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.

23.6.32 RECORD OF DATA AND COMMUNICATION

- 23.6.32.1 The service provider shall establish a procedure to ensure compliance with the Part 23 Subpart 2 and Part 24 regarding the automatic recording system of the ATC communications and surveillance data.

- 23.6.32.2 The service provider shall establish a procedure to ensure that:
 - (a) the recording systems capacity and quality are adequate according to the international standards; and
 - (b) the recording system is maintenance properly and recording media used are securely handled to prevent unauthorized access and/or tempering with such recordings.
 - (c) recordings shall have time and date stampings.
 - (d) recordings of data and communications shall be retained for a period of at least thirty (30) days unless a longer period is required to assist in Accident and incident investigations.

23.6.33 AERONAUTICAL RADIO FREQUENCY SPECTRUM UTILIZATION

- 23.6.33.1 The Authority shall handle all matters relating to Aeronautical Radio Frequency Spectrum Utilization in accordance with these Directives and ICAO Annex 10 Volume V.

- 23.6.33.2 The service provider shall consult the Authority regarding all matters relating to frequency Spectrum Utilization in accordance with these Directives.

- 23.6.33.3 The service provider shall establish procedures to ensure compliance with Aeronautical Radio Frequency Spectrum utilization regarding frequency allocation to:
 - (a) Radio navigation aids;
 - (b) Air-Ground and Ground – Ground Radio communications using the HF, VHF, UHF etc. bands; and
 - (c) Aeronautical surveillance radar systems and other Surveillance systems employed for civil aviation use.

- 23.6.33.4 The service provider shall establish a procedure to ensure:
- (a) Frequencies allocated for services outside those in items 23.6.33 (a) through (c) above are coordinated with the National Communication Authority (NCA) in consultation with the Authority, and
 - (b) Compliance with frequency allocation protection procedures regarding VHF frequencies.

23.6.34 ANCILLARY FACILITIES

23.6.34.1 The service provider shall ensure that, the operational aeronautical facility listed its Operation Manual are provided with means to ensure continuity of operation appropriate to the needs of the ATC unit or radio navigation service being provided. The following essential facilities shall be provided:

- (a) **Power Supply system:** The safety of operations of aeronautical facilities depends on the quality of the supplied power. The total electrical power supply system may include connections to one or more external sources of electric supply, one or more local generating facilities and to a distribution network including transformers and switchgear. Many other aeronautical facilities supplied from the same system need to be taken into account while planning the electrical power system at aerodromes.
- (b) **Primary Power Supply:** Adequate primary power supply shall be available at aerodromes for the safe functioning of aeronautical facilities
- (c) **Secondary Power Supply** shall be provided by either of the following:
 - (1) **Independent Public Power:** - Which is a source of power supplying the aerodrome service from a substation other than the normal substation through a transmission line following a route different from the normal (Primary) power supply route and such that the possibility of a simultaneous failure of the normal (primary) and independent public power supplies is extremely remote; or
 - (2) **Standby Power Supplies** which may be engine-generator sets, or turbine generators from which electrical power can be obtained and which can be automatically connected to the facilities requiring secondary power. The maximum load which can be connected should be within the capacity of the

stand-by units. Electric power supply connections to those aeronautical facilities for which secondary power is required should be so arranged that the facilities are automatically connected to the secondary power supply on failure of the primary source of power.

- (3) **Uninterruptable Power Supply (UPS)** systems of required capacities shall be provided in all the essential units to ensure continuous operation of aeronautical facilities.

(d) **Transfer (switch-over) time requirements**

When the primary power supply to the more critical facilities, and radio navigation aids fails, the load must be transferred to the secondary power source. The transfer, or switch-over, times permitted depend on the most critical instrument classification of the aerodromes operation. (See paragraph 23.6.34.3 for the list of the maximum permissible transfer times).

(e) **Air conditioning Facilities**

To reduce failures of equipment due to high temperature and humidity air conditioning shall be provided to all the Aeronautical Telecommunication facilities and equipment.

(f) **Battery Back-up / UPS**

For protection against power loss and voltage fluctuation, the provision of Uninterruptable Power Supply (UPS) and / or battery back-up system shall be made for all essential Aeronautical Telecommunication facilities according to the requirements of each aerodrome. The UPS / battery back-up system may be located centrally at a suitable location in the equipment room and extended to the required system / facility. Suitable UPS / battery back-up systems shall be provided for each navigational site. The system should be arranged so the battery system will instantaneously come on line and maintain critical operations upon loss of power. The battery system must have adequate capacity to maintain critical operations until the emergency generator can come up to speed and generate the required electrical demand.

23.6.34.2 Additionally the following ancillary facilities shall be provided:

(a) **Non exchange lines**

Multi-pair non- exchange lines shall be laid between different units for control, display of status, inter unit-communication, drop circuits, recording of voice and data monitoring of channels and dedicated speech circuits.

- (b) **Private Automatic Branch EXchange (PABX)**
PABX Systems of required capacity shall be provided at all aerodromes between operational units and ATC operating Positions for providing intercommunication and co-ordination among different units. The telephone exchange, lines and connected telephones shall be maintained by ATSEPs.
- (c) **Direct Speech Circuits (DSC) and Telephones**
The DSC and telephones may be provided by outside agencies and maintained by them on rental basis. The DSC lines shall be extended to concerned ATC operating Positions. Important inter-communication telephones and DSC shall be provided through Speech Switching System (SSS) for immediate Communications.

23.6.34.3 The power supply switchover time for Aeronautical facilities shall comply with the following table:

Type of runway	Aids requiring power	Maximum Switch – over times
Instrument approach	SRE	15
	VOR	15
	NDB	15
	D/F facility	15
Precision approach, Category I	ILS Localizer	10
	ILS Glide path	10
	ILS middle maker	10
	ILS outer maker	10
	PAR	10
	ILS localizer ILS	0
	Glide path ILS	0
Precision approach, Category II	Inner maker	1
	ILS middle maker	1
	ILS Outer maker	10
	(same as Category II)	(same as Category II)
Precision approach, Category III		

- 23.6.34.4 The service provider shall establish a procedure to ensure that:
- (a) All water supply is adequate to provide the water required for firefighting equipment and other purposes by ensuring proper operation of water pumps; and
- (b) All ventilation systems in the Aeronautical facilities are maintained according to the accepted standards.
- (c) The power supply voltage stability shall comply with the manufacturer of the specific equipment

specifications;

- (d) All Aeronautical facilities and equipment rooms environmental condition including room temperature and humidity are within the recommended values by the specific aeronautical telecommunication equipment manufacturer; and
- (e) All Aeronautical facilities and 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 directive;

23.6.34.5 The service provider shall establish procedures to ensure that:

- (a) All services interruptions to the environmental facilities are promptly reported and acted upon according to the standard corrective maintenance procedures;
- (b) The standard preventive and periodic maintenance procedure are applied to the environmental facilities to minimize the probability of service interruption;
- (c) Alternative means to environmental facilities are identified in case of service interruption of the main means of environmental facilities.

23.6.34.6 The service provider shall establish systems and procedures to communicate between environmental facilities.

23.6.35 REPORTING SERVICE DISRUPTIONS

23.6.35.1 The service provider shall establish procedures to:

- (a) Advise the ATS provider and 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 48 hours of the occurrence, the circumstances surrounding any 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.

- 23.6.35.2 Disruptions reportable under paragraph 23.6.35.1 (a) shall include, but are not limited to, any:
- (a) Any interruption, of greater than 10 minutes, to the normal provision of an air traffic service;
 - (b) Any interference on the air-ground communications channel that may affect the service greater than 10 minutes;
 - (c) Failure of any radar coverage to areas that are declared as covered in the Accra FIR in the Ghana AIP for greater than 10 minutes;
 - (d) Failure of any radio navigation aids covered by Accra FIR and published in the Ghana AIP for more than 10 minutes;
 - (e) Routine maintenance of equipment that will have impact on the service when service brought off air;
 - (f) New installations or additions on established services that require the service to be off-air; and
 - (g) Any services that affect the air traffic services without having a contingency plan for operation.

23.6.36 REPORTING UNSAFE CONDITIONS

- 23.6.36.1 The service provider shall establish a policy encouraging the reporting of unsafe conditions or practices observed by facility personnel;
- 23.6.36.2 Shift personnel shall have 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 23.6.36.1 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.

23.6.37 PROTECTION OF FACILITIES FROM RADIO FREQUENCY INTERFERENCE AND STRUCTURAL OBSTACLES

23.6.37.1

The service provider shall establish procedures to ensure that:

- (a) All radio navigation aids are protected from radio frequency interference in accordance with these Directives and ICAO Annexes;
- (b) All aeronautical communications facilities are protected from radio frequency interference in accordance to the following procedures:
 - (1) 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.
 - (2) 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.
 - (3) For ground VHF facilities which provide service beyond the radio horizon, any spurious or harmonic radiation outside the band ± 250 kHz from the assigned carrier frequency shall not exceed an effective radiated power of 1 mW in any azimuth.
 - (4) No radio interfering devices shall be established in the proximity of the

aeronautical telecommunication facilities utilizing radio reception without prior approval from the Authority.

- (5) The service provider shall establish procedures to ensure that all Aeronautical Telecommunication systems that are using transmit or receive antennas shall not be obstructed by buildings towers structures that would impact their performance.
- (6) The service provider shall report any harmful Radio Frequency Interference affecting the provision of air navigation services and air traffic for prompt resolution.

23.6.38 APPROVAL OF AERONAUTICAL FACILITIES

- 23.6.38.1 The Authority shall approve all the technical facilities and navigational sites for Air Navigation Services, including Communications, Navigation, Surveillance facilities, systems and procedures before their deployment in the airspace and aerodromes within Ghana.
- 23.6.38.2 The CNS Section shall not introduce any new CNS/ATM system, including equipment, facilities, procedures and ATSEP rating courses, without the required regulatory approval prior to commencement of the new CNS/ATS system.
- 23.6.38.3 The concept of the change, including any design, specifications, purpose of introducing the change and initial safety assessment performed, shall be sent to the Regulator for assessment and approval before continuing with the process.
- 23.6.38.4 The CNS section shall include the Regulator (CNS Inspector(s)) in the training of its technical staff regarding any new equipment, procedures or other technical changes.
- 23.6.38.5 The ATS Section shall not conduct any Factory and Site Acceptance Tests (FAT and SAT) without the involvement of the Regulator (CNS Inspector(s)). This is to enable the Regulator make appropriate evaluation prior to the acceptance of the equipment.
- 23.6.38.6 Installation and implementation processes of new CNS/ATM equipment shall be monitored and assessed by the Regulator (CNS Inspector(s)) to ensure proper procedures are being adhered to for safety assurance.
- 23.6.38.7 The Regulator (CNS Inspector(s)) shall carry out post-implementation monitoring to ensure acceptable levels of safety are maintained.

23.6.39 COMMISSIONING PROCEDURES

- 23.6.39.1 The service provider shall establish procedures to ensure that each new facility:
- (a) is commissioned to meet the specifications for that facility; and
 - (b) is in compliance with the provisions in Part 23 of Ghana Civil Aviation Directives and in ICAO Annex 10, where applicable.
 - (c) meets the certification procedures in paragraph 23.6.37.
- 23.6.39.2 The service provider shall ensure that the system performance of the new facility has been validated by the necessary tests, and that all parties involved with the operations and maintenance of the facility, including its maintenance contractors have accepted and are satisfied with the results of the tests.
- 23.6.39.3 The service provider shall ensure that the procedures required in 23.6.39.1 and 23.6.39.2 including documentation of tests conducted on the facility prior to the commissioning, the test on the facility to ensure compliance with the applicable Subparts of Part 23 of Ghana Civil Aviation Directives or Annex 10 SARPS and any flight check required in compliance with ICAO Doc 8071.

23.6.40 DEVIATIONS

- 23.6.40.1 Subject to compliance with paragraph 23.6.23, the service provider may deviate from any requirement of these Directives 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.
- 23.6.40.2 The provider who deviates from a requirement of this Directive under paragraph 23.6.40.1 shall provide a written report to the Authority as soon as practicable, but in any event not later than 7 days after the emergency. The report shall cover the nature, the extent and the duration of the deviation.

23.6.41 LIMITATIONS ON SERVICE

- 23.6.41.1 The 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.

23.6.41.2 The service provider shall not operate a radio transmitting facility on an aeronautical radio frequency except pursuant to a written approval granted by the Authority, subject to the provisions of paragraph 23.6.3 in this Subpart.

23.6.41.3 Except where a deviation under 23.6.40 is required, the service provider shall not operate a facility unless:

- (a) The facility is listed in their Operations 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 paragraph 23.6.19;
- (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 paragraph 23.6.19.3 (b) and (c);
- (f) The facility is included in the service providers security program, if the destruction, damage, or interference of the facility is likely to endanger the safety of an aircraft in flight;
- (g) The provisions of the service providers security program for the facility are being complied with.

23.6.42 OPERATING AND MAINTENANCE INSTRUCTIONS

23.6.42.1 The service provider shall:

- (a) have operating and maintenance instructions that set out the requirements for operating and maintaining each aeronautical facility listed in its Operations Manual; and
- (b) Provide the operating and maintenance instructions required for the use and guidance of its personnel.

23.6.42.2 The operating and maintenance instructions required under paragraph 23.6.42.1 must include:

- (a) details of the critical performance parameters for each

aeronautical facility; and

- (b) the associated minimum performance levels for those critical performance parameters referred to in paragraph 23.6.42.2 (a); and
- (c) details of the test equipment required for the measurement of those critical performance parameters referred to in paragraph 23.6.42.2 (a); and
- (d) details of the mandatory inspections and test procedures for the operational service; and
- (e) Details of the mandatory inspection and test procedures for the operation and maintenance of each aeronautical facility.

23.6.43 APPROVAL TO PLACE AERONAUTICAL FACILITY INTO OPERATIONAL SERVICE

23.6.43.1 The service provider shall ensure that no aeronautical facility listed in their Operations Manual is placed into operational service unless—

- (a) The person placing the aeronautical facility into operational service is assessed as competent and authorized according to the requirement under paragraph 23.6.7.3;
- (b) The appropriate checks detailed in the operating and maintenance instructions required under paragraphs 236.42 have been carried out to verify the performance of the aeronautical facility; and
- (c) The aeronautical facility record has been completed according to the procedures required under paragraph 23.6.11.

23.6.44 APPROVAL TO RETURN EQUIPMENT/FACILITY TO SERVICE

23.6.44.1 The service provider shall ensure that the return to services of any aeronautical facility that has undergone maintenance, or alteration/ or upgrading shall not be approved unless:

- (a) The appropriate entry has been made in the maintenance logbook;
- (b) The facility is tested, ground checked and flight checked if applicable.

23.6.44.2 The description in any required state in a maintenance logbook

of an aeronautical facility as having been altered/upgraded shall not be used unless it has been disassembled, cleaned, inspected as permitted, repaired as necessary, reassembled, and tested to the same tolerances and limits as a new item, using either new parts or used parts that conform to new part tolerances and limits.

- 23.6.44.3 The service provider shall ensure that the return to service of equipment/facility after a major alteration or equipment part replacement shall not be approved unless the equipment is tested to determine satisfactory performance in accordance with the current manufacturer's recommendations.
- 23.6.44.4 The service provider shall establish procedures for the control, repair and return to service of equipment or modules. The procedures shall show which modules may be repaired on-site and which should be returned to the manufacturer or recognized repair facility.
- 23.6.44.5 The service provider shall establish a procedure to ensure that equipment spares shall be—
- (a) Maintained at a level appropriate to the level of service desired; and
 - (b) Be stored under suitable environmental conditions.
 - (c) Spares having a lifetime, or requiring regular Maintenance or Calibration shall be suitably identified to that effect.

23.6.45 AUTHORIZED PERSONNEL TO APPROVE RETURN TO SERVICE

No person, other than the person in Senior position described 23.6.7.1, shall approve the return to service of an aeronautical facility especially after a major component of the equipment/facility has been replaced or undergone maintenance or alteration.

23.6.46 CONTINUED COMPLIANCE

- 23.6.46.1 The service provider shall:
- (a) continue to meet the standards and comply with the requirements of this Directive and the applicable GCARs; and
 - (b) comply with all procedures referred to in its Operations Manual ; and
 - (c) hold at least one complete and current copy of its

Operations Manual , at each location listed in its manual where a senior person is based; and

- (d) make each applicable part of its Operations Manual available to personnel who require those parts to carry out their duties; and
- (e) Notify the Authority of any change of its operations occurs.

23.6.47 FACILITY FOR CONDUCTING TEMPORARY TEST

- 23.6.47.1 The service provider shall establish a procedure for the operation of the facility for conducting temporary test to:
- (a) Advise the Authority of a plan to conduct the temporary test;
 - (b) Include the time frame for conducting the test;
- 23.6.47.2 The plan shall include the type and class of the facility that the test will be conducted;
- 23.6.47.3 The plan shall indicate the purpose of the test, and
- 23.6.47.4 The service provider shall not operate the facility for temporary tests unless the Authority's approval is obtained.

23.6.48 CHANGES TO SERVICE PROVIDERS' ORGANIZATION

- 23.6.48.1 The service provider shall:
- (a) ensure that its Operations Manual is amended, as required, to remain a current description of the organization, the aeronautical facilities and services; and
 - (b) ensure that any amendments made to its Operations Manual meet the applicable requirements of the GCARs and this Directive; and
 - (c) comply with the amendment procedure contained in its Operations Manual ; and
 - (d) provide the Authority with a copy of each amendment to its Operations Manual , immediately after the amendment is incorporated into the Operations Manual; and
 - (e) Make such amendments to its Operations Manual as the Authority may consider necessary in the interests of

aviation safety.

23.6.49 FIRE SAFETY MEASURES

- 23.6.49.1 The service provider shall ensure that precautions are taken to:
- (a) prevent or reduce the likelihood of a fire that may result in death, injury, or property damage;
 - (b) alert those in a structure or building of the presence of an uncontrolled fire in the event one occurs; and
 - (c) enable those threatened by fire to survive in and evacuate from affected areas, or to reduce the damage caused by a fire.
- 23.6.49.2 Fire safety measures shall include those that are planned during the construction of a building, cabins housing equipment or implemented in structures that are already standing, and those that are taught to personnel and occupants of the building.
- 23.6.49.3 The service provider shall install fire detection and firefighting equipment with appropriate extinguishing agents and technologies in rooms housing the aeronautical facilities.
- 23.6.49.4 The service provider shall have a fire safety plan which shall be approved by the Authority and a copy of the approved fire safety plan must be available for the responding fire department's use during a fire emergency. The fire safety plan shall include the following:
- (a) Key contact information
 - (b) Utility services (Including shut-off valves for water, gas and electric)
 - (c) Access issues
 - (d) Dangerous stored materials
 - (e) Connections to sprinkler system if used
 - (f) Layout, drawing, and site plan of building
 - (g) Maintenance schedules for fire safety systems
 - (h) Personnel training and fire drill procedures

23.6.50 RADIO FREQUENCY RADIATION HAZARDS

- 23.6.50.1 The service provider shall establish procedures to ensure that

precautions are taken to prevent or reduce the likelihood of health hazard which may be caused by:

- (a) Microwave energy (which are non-ionizing radiations) of sufficient intensity which can produce biological damage in humans; and
- (b) other harmful radiation in the form of X-rays produced in High Power tubes such as Klystrons which uses high voltages to generate high Radio Frequency (RF) power.

23.6.50.2 The Service Provider shall ensure that the procedures required in 23.50.1:

- (a) are in compliance with standards and safety guidelines for exposure of the public to RF Radiation from transmitting antennas developed by the Institute of Electrical and Electronic Engineers (IEEE), American National Standards Institute (ANSI), the International Commission of Non-Ionizing Radiation Protection (ICNIRP), the National Council on Radiation Protection and Measurements (NCRP) etc.
- (b) Include safety precautions when operating high power radar and other communication systems such that:
- (c) Areas of high power density shall be fenced off, locked or otherwise made inaccessible when transmitting;
- (d) Personnel of any kind shall never look into an open waveguide or antenna feed horn connected to energized transmitters;
- (e) Tubes and accompanying parts must be properly shielded with lead; and
- (f) The safety rules set are provided for workers and are posted at the site requiring employees and contractors to follow such stringent procedures.

23.6.50.3 The service providers personnel shall undergo regular medical checkup as a mitigatory measure as well as immediate treatment when working in environments likely to cause exposure or when exposure to such radiations has occurred.

23.6.51 FORMAT FOR DEVELOPMENT OF MANUALS

23.6.51.1 The manuals have been prepared in conventional manual format and provided in an electronic version or printed.

- (a) **Introduction or Preface.** The first page shall contain a brief description of the manual, its intent and intended users. This page shall contain a section for endorsement

by the approving authority. The introduction or preface section shall contain a statement of signed by the Chief Executive on behalf of the service providers' organization confirming that:

- (1) the manual defines the organisation and demonstrates its means and methods for ensuring ongoing compliance with the GCAR and this Directive; and
 - (2) the Operations Manual and all other technical manuals, operating and maintenance instructions, must be complied with by the organization's personnel at all times. This section emphasizes that the procedures and policies in the manual are expected to be used by the organization personnel.
- (b) **Revision Control.**
The manual shall be bound in a manner easy to revise and shall contain a revision control page or section from which the user can readily determine whether the manual is current or not. This page or section should follow the cover page. The control date of the most recent revision of each individual page must appear on each page.
- (c) **A Bulletin system**
The manual may be established to bring temporary information or changes that should not be delayed by a formal revision process, to the attention of the user. The bulletin system should have a means of control that includes giving bulletins a limited life and systematically incorporating them into appropriate manuals in a timely manner. Users should be able to easily determine whether they possess all current bulletins.
- (d) **List of Effective pages (LEP).**
The manual shall have a List of Effective Pages used to ensure that the manual contains current information. The LEP shows the revision status of each page.
- (e) **Table of Contents.**
The manual shall have a table of contents containing lists of major topics with their respective page numbers.
- (f) **References.**
The Manual may include references to other manuals when it is necessary to clarify the intent of the text or when it is useful to the user for looking up specific subject matter. References should not be made to Advisory Circular (AC) as these sources are advisory. Operators should use caution when adapting the text of advisory documents into their manuals. AC text may not necessarily translate into a Regulation.

- (g) **Definitions.** Significant terms used in manuals should be defined. Any acronym or abbreviation not in common use should also be defined.
- (h) **Elements of Style.** The Manuals should be composed in the style of general technical writing. This style should be clear, concise, and easy to understand.

23.6.52 OPERATIONS MANUAL

- 23.6.52.1 The service provider shall provide to the Authority for approval, an Operations Manual in a format prescribed in paragraph 23.6.51 and subject to compliance with the requirements in these Directives.
- 23.6.52.2 Initial copies of the manuals shall be submitted to the Authority both in hard and soft copies for review. A comprehensive review shall be conducted by the Authority to verify that the manuals conform to the format and style as follows:
- (a) The Operations Manual shall contain the following:
 - (1) the titles and names, duties and responsibilities of the senior person or person(s) in paragraph 23.6.7 including matters for which they have responsibility to deal directly with the Authority on behalf of the organization;
 - (2) an organization chart showing lines of responsibility of the senior persons in paragraph 23.6.52.2 (a) (1) and covering each location where the service provider performs operations;
 - (3) a summary of the organization's staffing structure at each location of operations;
 - (4) a summary of the scope of activities at each location where the organizations' personnel are based for the purpose of providing or maintaining the types of facilities listed under paragraph 23.6.52(5);
 - (5) a list of types of aeronautical facility and a summary of the operational details of each aeronautical facility associated with each location; and
 - (6) the detailed procedures, or an outline of the procedures including information that identifies the documentation with respect to requirements under paragraphs:
 - (i) 23.6.7.1 (b) and 23.6.7.2 regarding the personnel requirements and competence;

- (ii) 23.6.8 regarding the training requirements of personnel;
- (iii) 23.6.9 regarding Aeronautical Facility requirements;
- (iv) 23.6.10 regarding Documentation;
- (v) 23.6.11 regarding Management of Records;
- (vi) 23.6.12 regarding Facility Maintenance Logbook;
- (vii) 23.6.13 regarding Quality Assurance and Safety Management System;
- (viii) 23.6.14 regarding Security Program;
- (ix) 23.6.15 regarding Prevention of Fatigue;
- (x) 23.6.16 regarding Coordination;
- (xi) 23.6.17 regarding Shift Administration;
- (xii) 23.6.18 regarding Contingency Plan;
- (xiii) 23.6.19 regarding Periodic Inspection and Testing;
- (xiv) 23.6.20 regarding Aeronautical Facility Performance /Operation
- (xv) 23.6.21 regarding Inspection of Measuring and Test equipment;
- (xvi) 23.6.22 regarding Notification of Facility Information;
- (xvii) 23.6.23 regarding Notification of Facility Status;
- (xviii) 23.6.24 regarding Facility Check after Accident or Incident;
- (xix) 23.6.25 regarding Facility Malfunction;
- (xx) 23.6.26 regarding Information Flow requirement;
- (xxi) 23.6.27 regarding Aeronautical Communication Facilities;
- (xxii) 23.6.28 regarding Air-Ground Communication Facilities;

- (xxiii) 23.6.29 regarding Navigation and Surveillance Facilities;
- (xxiv) 23.6.30 regarding Data Automation Facilities;
- (xxv) 23.6.31 regarding Clocks and Time Recording Devices;
- (xxvi) 23.6.32 regarding Record of Data and Communications;
- (xxvii) 23.6.33 regarding Aeronautical Radio Frequency Spectrum Utilization;
- (xxviii) 23.6.34 regarding Environmental Facilities;
- (xxix) 23.6.35 regarding Reporting Service Disruption;
- (xxx) 23.6.36 regarding Reporting Unsafe Conditions;
- (xxxi) 23.6.37 regarding Protection of Facilities from Radio Frequency Interference and Structural Obstacles;
- (xxxii) 23.6.38 regarding Certification of Aeronautical facilities and procedures;
- (xxxiii) 23.6.39 regarding Commissioning Procedures;
- (xxxiv) 23.6.40 regarding Deviations;
- (xxxv) 23.6.41 regarding Limitation of Services;
- (xxxvi) 23.6.42 regarding Operating and Maintenance Instructions;
- (xxxvii) 23.6.43 regarding Approval to Place;
- (xxxviii) 23.6.44 regarding Approval to return Equipment / Facility into Service;
- (xxxix) 23.6.45 regarding Authorized Personnel to Approve return into service;
- (xl) 23.6.46 regarding Continued Compliance;
- (xli) 23.6.47 regarding Operation of facility for conducting temporary test;
- (xlii) 23.6.48 regarding Changes to Service providers Organization;

- (xliv) 23.6.49 regarding Fire Safety; and
 - (xlv) 23.6.50 regarding Radio Frequency Radiation hazards.
- (b) The detailed procedures to control, amend, and distribute the Operations Manual.
 - (c) The Authority may not grant an approval to an ANSP for the provision of aeronautical telecommunication service unless the Authority is satisfied the ANSP's Operations Manual.

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