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PART -1 ATC/SAR/SMS ensuring mechanism

1. *Ensuring mechanism for determining the ATS system capacity and number of staff required*
2. *Ensuring Mechanism for ATS /SAR & SMS training programme/plan and record*
3. *Ensuring Mechanism for Continued competency of ATS on new equipment, procedures and updated communication systems*
4. *Ensuring Mechanism for ATS /SAR & SMS job description*
5. *Ensuring Mechanism for Surveillance data from primary and secondary recording and retention of the air traffic service data*
6. *Ensuring Mechanism for Human factors principles ATS*
7. *Ensuring Mechanism for Safety management system*
8. *Ensuring Mechanism for Read-back procedure*
9. *Ensuring Mechanism for Co-ordination procedure between air traffic service and military*
10. *Ensuring Mechanism for Information on aerodrome conditions*
11. *Ensuring Mechanism for Movement of persons or vehicles including towed aircraft on the maneuvering area of an aerodrome*
12. *Ensuring Mechanism for MET information is supplied promptly*
13. *Ensuring Mechanism for ATC services requirements for communications*
14. *Ensuring Mechanism for Air traffic services safety reviews*
15. *Separation methods and minima*
16. *Ensuring Mechanism for ANS contingency planning*
17. *Ensuring Mechanism for Coordination in respect of the provision of air traffic control service*
18. *Ensuring Mechanism for General emergency*
19. *Ensuring Mechanism for Emergency descent*
20. *Ensuring Mechanism for Unlawful interference*
21. *Ensuring Mechanism for Bomb threat*
22. *Ensuring Mechanism for Coordination between the aerodrome operator and air traffic services*

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23. *Ensuring Mechanism for Coordination between the Meteorological Authorities and Air Traffic Services*
24. *Ensuring Mechanism for Coordination agreement between air traffic service provider and Rescue Coordination Centre*
25. *Ensuring Mechanism for Fuel dumping*
26. *Ensuring Mechanism for Strayed aircraft*
27. *Ensuring Mechanism for Interception of civil aircraft*
28. *Ensuring Mechanism for Emergency separation*
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30. *Ensuring Mechanism for Minimum safe altitude warning (MSAW)*
31. *Ensuring Mechanism for Separation methods and minima*
32. *Ensuring Mechanism for Air traffic services safety reviews*
33. *Ensuring Mechanism for Safety management system*
34. *Ensuring Mechanism for Establishment of SMS*
35. *Ensuring mechanism for safety management system*
36. *Ensuring Mechanism for Coordination procedure between the aircraft operator and air traffic services*
37. *Ensuring Mechanism for Coordination between the aeronautical information services and air traffic services*
38. *Ensuring Mechanism for Process for verifying that aircraft and operators are approved for operation in RVSM airspace*
39. *Ensuring Mechanism for policies and procedures for recruitment & retention plan of ATS staff*
40. *Ensuring Mechanism for information on aerodrome conditions and the operational status of associated facilities*
41. *Ensuring mechanism for performance based navigation*
42. *Ensuring Mechanism for coordination agreements with neighbouring states*
43. *Ensuring mechanize for SAR plan of operation*
44. *Ensuring mechanism for SAR exercise planning and conducting*

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**1. ENSURING MECHANISM FOR DETERMINING THE ATS SYSTEM CAPACITY
AND NUMBER OF STAFF REQUIRED**

- 1.1 *Ensure that the procedure developed as per the guideline material of ANRD,*
- 1.2 *Verify effective implementation of the procedure by Air Traffic Service provider pass through*
- a) *Signed and approved by Air Navigation Regulation Director*
- b) *In assessing capacity values, factors to be taken into account should include, inter alia*
- ✓ *the level and type of ATS provided;*
 - ✓ *the structural complexity of the control area, the control sector or the aerodrome concerned;*
 - ✓ *controller workload, including control and coordination tasks to be performed;*
 - ✓ *the types of communications, navigation and surveillance systems in use, their degree of technical reliability and availability as well as the availability of back-up systems and/or procedures;*
 - ✓ *availability of ATC systems providing controller support and alert functions; and*
 - ✓ *Any other factor or element deemed relevant to controller workload.*
- c) *Enhancement of ATC capacity ATS provide for flexible use of airspace in order to improve the efficiency of operations and increase capacity*
- d) *Verify ATSP decide appropriate controller in each sector.*
- e) *Verify ATSP assigned appropriate controller in each sector as per the procedure.*

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**2. ENSURING MECHANISM FOR ATS /SAR & SMS TRAINING
PROGRAMME/PLAN AND RECORD**

- 2.1 *Ensure that the training program is developed for ATS /SAR & SMS personal.*
- 2.2 *Verify that the training program has clearly defined duration and the type of training.*
- 2.3 *Ensure that the training program include*
 - 2.3.1 *Initial training*
 - 2.3.2 *Re-current training*
 - 2.3.3 *Specialized training and*
 - 2.3.4 *Refresher training*
- 2.4 *Ensure that the ANSP develop training plan for ATS /SAR & SMS personal which include duration and type of training.*
- 2.5 *Verify that the*
 - 2.5.1 *The training plan implemented accordingly.*
 - 2.5.2 *Certificate is provided after completion each one of the training*
 - 2.5.3 *There is verification mechanism of certificate before recorded.*
 - 2.5.4 *Training program and plan approved by ANRD directorate.*
- 2.6 *Verify that the training record include*
 - 2.6.1 *Initial training*
 - 2.6.2 *Re-current training*
 - 2.6.3 *on job-training*
 - 2.6.4 *Specialized training and*
 - 2.6.5 *Refresher training*
- 2.7 *Ensure that the training record available both in HRM and training sub-directorate.*

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3. ENSURING MECHANISM FOR CONTINUED COMPETENCY OF ATSS ON NEW EQUIPMENT, PROCEDURES AND UPDATED COMMUNICATION SYSTEMS

- 3.1 *Ensure that the procedure developed as per the guideline material of ANRD,*
- 3.2 *Verify effective implementation of the procedure by Air Traffic Service provider pass through*
 - 3.2.1 *Signed and approved by Air Navigation Regulation Director*
 - 3.2.2 *Appropriate awareness or training provided to the controller before implementation.*
 - 3.2.3 *Timely calibrated or made up to date.*
- 3.3 *Make sure that:*
 - 3.3.1 *Controllers are adequately trained;*
 - 3.3.2 *Controller competency is maintained by adequate and appropriate refresher training, including the handling of aircraft emergencies and operations under conditions with failed and degraded facilities and systems;*
 - 3.3.3 *ATC unit/control sector is staffed by teams, are provided relevant and adequate training in order to ensure efficient teamwork;*
 - 3.3.4 *The implementation of new or amended procedures, and new or updated communications, surveillance and other safety significant systems and equipment is preceded by appropriate training and instruction;*
 - 3.3.5 *Controller competency in the English language is satisfactory in relation to providing ATS to international air traffic; and*
 - 3.3.6 *Standard phraseology is used.*
 - a) *Refresher course provided to the controllers.*
 - b) *Appropriate awareness after up-dated.*
 - c) *Awareness is provided in the simulator and theory class.*

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d) Appropriate awareness or training is provided after updated.

e) the implementation of new or amended procedures, and new or updated communications, surveillance and other safety significant systems and equipment precede by appropriate training and instruction;

- **ENSURING MECHANISM FOR ATS /SAR & SMS JOB DESCRIPTION**

- *Ensure that the job description developed as per the guideline material of ANRD,*
- *Make sure that the job description has*
 - *Job title,*
 - *Job process and*
 - *Job process owner*
- *Make sure that the job description has uphold*
 - *Minimum qualification and experience*
 - *Required trainings and*
 - *Professional trainings*
- *Ensure that the job description has major and specific duties are clearly stated.*
- *Make sure responsibilities, functions, accountabilities and authorities are clearly defined on the job description of each controller.*
- *Ensure the availability of job description for ANS provider.*
- *Make sure minimum qualification and experience is met by the controllers before assigned on duty.*

- **ENSURING MECHANISM FOR SURVEILLANCE DATA FROM PRIMARY AND SECONDARY RECORDING AND RETENTION OF THE AIR TRAFFIC SERVICE DATA**

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- *Ensure that the procedure developed as per the advisory circular ECAA-ANRD-AC-025 and ATS manual of standard of ANRD chapter 4.16.2*
- *Ensure that radar recorded*
- *Ensure that Recording facilities are provided on all voice communication channels and surveillance systems data.*
- *Make sure stand alone replay equipment is provided at every ATS centre.*
- *Ensure that the recordings of ATS surveillance, communication and navigation data are a vital aid to post accident or post incident investigation and to provide location data in the event of search and rescue operations.*
- *Ensure that all surveillance, communication and navigation data used by an Air Navigation Service Provider (ANSP) for the purposes of providing an air traffic service automatically recorded and retained by the surveillance data recording system for future replay if required.*
- *Ensure all ATS voice and data are readily available all the time to provide information for accident and incident investigation. Consequently, the availability, integrity, legibility and security of the recording procedures, recording facilities, and recording media management practice, are clearly stated.*
- *Ensure that all surveillance data used by an Air Navigation Service Provider (ANSP) for the purposes of providing an air traffic service shall be automatically recorded and retained by the surveillance data recording system for future replay if required.*
- *Ensure that all Surveillance data used as an aid to air traffic services shall—~~are~~ normally recorded at two points in the path between the surveillance sensor(s) and the display system Analogue Primary Radar Systems.*

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- *Make sure that the recorded data are retained in secure storage and protected from being erased, corrupted or deleted for a period of at least thirty days. When required the data recordings are retained for longer periods*
- *Make sure the following ATS data recorded and retained*
 - *Daily traffic movement records journal*
 - *progress strips*
 - *facility serviceability log book*
 - *ATS messages records*
 - *Operation log book*
 - *Incident log book*
 - *Voice records (tape records)*
 - *Emergency log book*
 - *Permission log book*
 - *Daily meteorological reports*
 - *Violation records format*
 - *Duty roaster*
 - *Daily traffic movement records format and*
 - *Search and rescue log book*
 - *Surveillance data Audio / video*

4. ENSURING MECHANISM FOR HUMAN FACTORS PRINCIPLES ATS

- 4.1 *Ensure that the procedure developed as per advisory circular of ANRD (ECAA-AC-ANR-003) or ATS manual of standard ANRD chapter 3*
- 4.2 *Ensure that ATS providers adopt policies and procedures on human factors principles concept concerns the interaction between*
 - 4.2.1 *People and people*
 - 4.2.2 *People and equipment*
 - 4.2.3 *People and the environment*

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4.2.4 People and procedures

- 4.3 Ensure that the environmental working conditions meet established levels for temperature, humidity, ventilation, noise and ambient lighting, and do not adversely affect controller performance;*
- 4.4 Ensure that the adopting policies and procedures on human factors principles in the provision of Air traffic Services mainly:-*
- 4.4.1 Provide human factors standards and guidelines for systems*
 - 4.4.2 Maximize human system performance*
 - 4.4.3 Reduce human error in air traffic operations*
 - 4.4.4 Identify new ways to select ATC system personnel.*
- 4.5 Confirm that ATS providers policies and procedures on human factors principles Minimize their contribution to accident/incident in the provision of ATSS*
- 4.6 Ensure ANS provider involves three key concepts in human factors understanding and eventual implementation.*
- 4.7 Make sure Human-centered Automation, aids are designed from a technology-centered perspective or from a human- centered perspective.*
- 4.8 Make sure Error Management elements listed below are highly dynamic and present subtle to large changes that may occur at short notice and that can influence how an employee performs at any particular moment.*
- 4.8.1 Personal factors*
 - 4.8.2 Weather*
 - 4.8.3 Airport infrastructure*
 - 4.8.4 Individual differences*
 - 4.8.5 Traffic*
 - 4.8.6 Environment*

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4.8.7 *Navigational aids*

4.8.8 *Aircraft performance*

4.8.9 *Equipment*

4.8.10 *Adjacent units.*

4.9 *ensure that the procedure*

4.9.1 *Signed and approved by Air Navigation Regulation Director*

4.9.2 *Up to date.*

4.9.3 *Appropriate awareness provided for each ATS staff*

4.9.4 *Availability of the procedure in each air traffic services unit.*

5. ENSURING MECHANISM FOR SAFETY MANAGEMENT SYSTEM

5.1 *Ensure that the ANS provider establish and implement Safety Management System on*

5.1.1 *Air Traffic Services*

5.1.2 *Search And Rescue Service*

5.1.3 *AIS*

5.1.4 *Communication navigation surveillance and*

5.1.5 *Air Space Management fields.*

5.2 *Ensure that the ANS provider established and implemented a Safety Management System in accordance with Appendix 2 of annex - 19*

I. *Safety policy and objectives*

1.1 *Management commitment and responsibility*

1.2 *Safety accountabilities*

1.3 *Appointment of key safety personnel*

1.4 *Coordination of emergency response planning*

1.5 *SMS documentation*

II. *Safety risk management*

2.1 *Hazard identification*

2.2 *Safety risk assessment and mitigation*

III. *Safety assurance*

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3.1 Safety performance monitoring and measurement

3.2 The management of change

3.3 Continuous improvement of the SMS

IV. Safety promotion

4.1 Training and education

4.2 Safety communication

5.3 Ensure safety management is based on eight basic and generic building blocks:

5.3.1 Senior management's commitment to allocate financial resources to safety management function:

5.3.2 Safety reporting through voluntary and self-reporting by operational personnel. It is essential therefore for organizations to develop working environments where non punitive safety reporting implement.

5.3.3 Continuous monitoring through systems that collect safety data on hazards during normal operations and to analyze the data to extract safety information.

5.3.4 Investigation of safety occurrences with the objective of identifying systemic safety deficiencies rather than assigning blame.

5.3.5 Sharing safety lessons learned and best practices through the active exchange of safety information.

5.3.6 Integration of safety training for operational personnel.

5.3.7 Operating procedures, including the use of checklists and briefings. Checklists and briefings, in an air traffic control room, have to discharge their daily responsibilities.

5.3.8 Continuous improvement of the overall level of safety.

5.4 Ensure the tools applied to reduce the safety risk index and improve the safety risk tolerability i.e. realize ALOS are:

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5.4.1 Regulations: Prescribe restrictive administration, operations and safety risk control.

5.4.2 Training: Improves safety awareness, knowledge, competence and skill

5.4.3 Technology: Improves accuracy, reliability, dependability & minimises effects of human error.

5.5 Ensure that ATS provider established a mandatory incident reporting system to facilitate collection of information on actual or potential safety deficiencies.

5.6 Ensure the voluntary incident reporting system is non-punitive and afford protection to the sources of the information.

5.7 Ensure that ATS provider established a voluntary incident reporting system to facilitate collection of information on actual or potential safety deficiencies that may not be captured by the mandatory incident reporting system.

5.8 Ensure that ATS provider established and maintained a safety database to facilitate the effective analysis of information on actual or potential safety deficiencies.

5.9 Ensure that key safety personnel/ committee established

5.9.1 Safety (SMS) manager

5.9.2 Safety review board (safety committee)

5.9.3 Safety action group(s)

6. ENSURING MECHANISM FOR READ-BACK PROCEDURE

6.1 Ensure that the procedure developed as per the ATS manual of standard ANRD chapter 4.5.7.5

6.2 Ensure that read-back procedure has been introduced. It is directly related to the possible seriousness of misunderstandings in the transmission and receipt of ATC clearances and instructions. It

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requires strict adherence to read-back procedures ensures that the clearance or instruction has been received and understood correctly.

6.3 Confirm that read back

6.3.1 ATC route clearances

6.3.2 Clearances and instructions to

- *Enter, land on, take off from, hold short of, cross, taxi and backtrack on any runway; and*
- *runway-in-use, altimeter settings, SSR codes, level instructions, heading and speed instructions*
- *Conditional clearances shall be read back or acknowledged.*

6.4 Ensure that the flight crew read back to the air traffic controller safety-related parts of ATC clearances and the Air Traffic Controller is checking the completeness and accuracy of the read back.

6.5 Other clearances or instructions, including conditional clearances, read back.

6.6 Make sure that in the read-back procedure has Taxi instructions issued by a controller which always contains a clearance limit for departing aircraft with clearance limit normally for holding position of the runway in use.

7. ENSURING MECHANISM FOR CO-ORDINATION PROCEDURE BETWEEN AIR TRAFFIC SERVICE AND MILITARY

7.1 Ensure that the procedure developed as per ECARS 14. 2.18

7.2 Ensure that

- 7.2.1 Air traffic services authorities shall establish and maintain close cooperation with military authority.**

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7.2.2 *Information relevant to the safe and expeditious conduct of flights of civil aircraft to be promptly exchanged between air traffic services units and appropriate military.*

7.2.3 *Air traffic services units shall provide appropriate military units with pertinent flight plan and other data concerning flights of civil aircraft.*

7.3 *Ensure that*

7.3.1 *The objective coordination agreement is clearly stated*

7.3.2 *The responsibility of Military and*

7.3.3 *The responsibility of Air Traffic Control unit clearly stated*

7.4 *Ensure that*

7.4.1 *Area of responsibility of military authority stated*

7.4.2 *Movement and control messages*

a) *Submission of flight plan clearly stated*

7.4.3 *Exchange of information*

a) *From military to ATS unit clearly stated*

b) *From ATS unit to military clearly stated*

7.4.4 *Means of communication clearly stated*

8. ENSURING MECHANISM FOR INFORMATION ON AERODROME CONDITIONS

8.1 *Ensure that the procedure developed as per ATS manual of standard ANRD chapter 6.5, 6.6 and 7.5*

8.2 *Ensure that the established, approved and implemented procedure regarding information on aerodrome conditions and the operational status of associated facilities is provided to aerodrome control towers and units providing approach control service*

8.3 *Ensure that the procedure is defined requires that ATS units are currently informed about the operational status of non-visual navigation aids,*

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visual aids essential for take-off, departure, approach and landing within their area of responsibility and those visual and non-visual aids essential for surface movement.

8.4 Ensure that information for arriving and departing aircraft are clearly identified and provided

9. ENSURING MECHANISM FOR MOVEMENT OF PERSONS OR VEHICLES INCLUDING TOWED AIRCRAFT ON THE MANOEUVRING AREA OF AN AERODROME

9.1 Ensure that the procedures are developed as per ATS manual of standard and ANRD chapter 7.1.1.1/2 requirement.

9.2 Ensure that the procedures developed for controlling the movements of persons or vehicles including towed aircraft on the manoeuvring area of an aerodrome are controlled by the aerodrome control tower as necessary to avoid hazard to them or to aircraft landing, taxiing or taking off.

9.3 Ensure that the procedures objective is set out in line with safety requirements of the movement of vehicles and/or persons on the manoeuvring area, obstructing safe operation of the aerodrome

9.4 Make sure that the procedures are applied in all areas to be used for takeoff, landing and taxiing of aircraft, including the apron.

9.5 Ensure that the procedures developed cover low visibility operations and movement of Emergency vehicles proceeding to the assistance of an aircraft in distress be afforded priority over all other surface movement traffic.

9.6 Ensure that the procedures cover common potential hazards on the manoeuvring area include:-

9.6.1 Vehicles striking aircraft and/or people

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9.6.2 Accident between taxing aircraft and aircraft on pushback or being towed.

9.6.3 Live aircraft engines (including helicopters)

9.6.4 Communication problem

9.6.5 Work equipment (including machinery)

9.6.6 Inadequate lighting, glare or confusing lights

9.6.7 Adverse weather conditions (including winter operations)

9.6.8 Noise

9.6.9 Faults and defects.

10. ENSURING MECHANISM FOR MET INFORMATION IS SUPPLIED PROMPTLY

10.1 Ensure that the procedures are developed as per ECARS Part 14 14.13.1 and ATS manual of standard ANRD chapter 9.1.3.1-5 requirements.

10.2 Ensure that the agreement signed between National Metrology Agency and Civil Aviation Authority (Aviation Metrology Directorate and Air Traffic Services Directorate) contains and put into practice the following data.

10.3 Information set by qualified personal

- a) Minimum qualification set for each title?*
- b) The qualification met by assigned personal?*
- c) The personal take appropriate refresher training?*

10.4 Ensure that appropriate equipment working properly and calibrated timely

- a) Anemometer*
- b) Wind vane*
- c) Barometer*
- d) Suitable telecommunications facilities and Intercom / AFTN or AMHS /*

10.5 Ensure

- a) Weather Information is accessible in soft or hard copy periodically*
- b) frequency of weather information*
- c) timeliness of the weather information*

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d) availability of special weather report

10.6 Ensure signed agreement for Aerodrome Control Towers contain

- a) Up to date local reports with trend forecasts, including current pressure data for the setting of altimeters, and TAF, related to the aerodrome concerned*
- b) Local special reports with trend forecasts including current pressure data for the setting of altimeters*
- c) Wind shear warnings and relevant SIGMENT information and AIRMET information are communicated to the TWR without delay.*
- d) the TWRs are equipped with displays for surface wind and runway visual range*
- e) pre-irruption volcanic activity, volcanic eruptions and volcanic ash cloud*

10.7 Ensure signed agreement for Approach Control Offices contains

- a) Up to date local reports with trend forecasts, including current pressure data for the setting of altimeters, and TAF, related to the aerodrome concerned*
- b) Local special reports with trend forecasts including current pressure data for the setting of altimeters*
- c) Relevant SIGMET information and appropriate special air-reports, AIRMET information (if appropriate) aerodrome warnings and wind shear warnings*
- d) SIGMET information and appropriate special air-reports, AIRMET information (if appropriate) aerodrome warnings and wind shear warnings*
- e) Providing the service for final approach, landing and take-off will be equipped with displays for surface wind RVR and atmospheric pressure.*

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f) Information received on pre-eruption volcanic activity, volcanic eruptions and volcanic ash cloud, for which SIGMET information.

10.8 Ensure signed agreement for Area Control Center /Flight Information Center contains

- a) Up to date local reports with trend forecasts, including current pressure data for the setting of altimeters, and TAF, related to the aerodrome concerned*
- b) SIGMET information and appropriate special air-reports and AIRMET Information*
- c) Current pressure data for setting altimeters*

11. ENSURING MECHANISM FOR ATC SERVICES REQUIREMENTS FOR COMMUNICATIONS

11.1 Ensure that the procedures are developed as per ATS manual of standard ANRD chapter 4.16 requirements.

11.2 Ensure that the radiotelephony and/or data link are used in air-ground communications for the purpose air traffic services, recording facilities are provided on all such air-ground communication channels and recordings and communications are retained for a period of at list thirty days.

11.3 Ensure that the communication facilities enable two-way communications between units providing flight information service

11.4 Ensure Air-ground communication facilities enable two-way communications to between a unit providing flight information service and appropriately equipped aircraft and appropriately equipped aircraft flying anywhere within the flight information region, unit providing area control service and appropriately equipped aircraft flying anywhere within the control area(s), unit providing approach control service and appropriately equipped aircraft under its control, unit providing aerodrome control tower and appropriately equipped aircraft operating at any distance within aerodrome concerned.

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11.5 Make sure that flight information centre, area control centre, an approach control unit and an aerodrome control tower have facilities for communications one from the other.

11.6 Make sure that flight information centre and 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 centre;
- c) The aeronautical telecommunications station serving the centre;
- d) Appropriate operator's offices;
- e) The rescue coordination centre
- f) The international NOTAM office serving the centre.

11.7 Make sure that approach control unit and 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;
- e) The unit providing apron management service, when separately established.

11.8 Make sure that Flight Information Centers and Area Control Centers have facilities for communications with all adjacent flight information centers and area control centers and Two-way radiotelephony communication facilities are provided for aerodrome control service for the control of vehicles on the manoeuvring area,

12 ENSURING MECHANISM FOR AIR TRAFFIC SERVICES SAFETY REVIEWS

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12.1 *Ensure that the procedures are developed as per ATS manual of standard ANRD chapter 2.5-2.7 requirement.*

12.2 *Ensure that Safety reviews of ATC units are conducted on a regular and systematic basis by personnel qualified through training, experience and expertise.*

- a) *ATC operations manuals, ATC unit instructions and air traffic control (ATC) coordination procedures are complete, concise, and up-to-date;*
- b) *The ATS route structure, where applicable, provides for:*
 - ✓ *Adequate route spacing; and*
 - ✓ *Crossing points for ATS routes located so as to reduce the need for controller intervention and for inter-and intra-unit coordination;*
- c) *The separation minima used in the airspace or at the aerodrome are appropriate and all the provisions applicable to those minima are being complied with;*
- d) *Where applicable, provision is made for adequate observation of the manoeuvring area, and procedures and measures aimed at minimizing the potential for inadvertent runway incursions are in place. This observation may be performed visually or by means of an ATS surveillance system;*
- e) *Appropriate procedures for low visibility aerodrome operations are in place;*
- f) *Traffic volumes and associated controller workloads do not exceed defined, safe levels and that procedures are in place for regulating traffic volumes whenever necessary;*
- g) *Procedures to be applied in the event of failures or degradations of ATS systems, including communications, navigation and surveillance systems, are practicable and will provide for an acceptable level of safety; and*

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h) Procedures for the reporting of incidents and other safety-related occurrences are implemented, that the reporting of incidents is encouraged and that such reports are reviewed to identify the need for any remedial action.

i) Ensure that Safety reviews of ATC units are conducted for operational and technical issues

j) Ensure that Safety reviews of ATC units are conducted for Licensing and training issues

12.3 Ensure that need for safety assessments Safety reviews of ATC units are conducted in respect of proposals for significant airspace reorganizations, for significant changes in the provision of ATS procedures applicable to airspace or an aerodrome, and for the introduction of new equipment, systems or facilities,

12.4 Proposals shall be are implemented only when the assessment has shown that an acceptable level of safety will be met. When appropriate, the ANSP ensure that adequate provision is made for post-implementation monitoring to verify that the defined level of safety continues to be met.

13 ENSURING MECHANISM FOR SEPARATION METHODS AND MINIMA

13.1 Ensure that the procedures are developed as per ECARAS Part 14 14.31 and ATS manual of standard ANRD chapter 5.2 requirements.

13.2 Ensure that vertical or horizontal separation application

b) between all flights in Class A and B airspaces;

c) between IFR flights in Class C, D and E airspaces;

d) between IFR flights and VFR flights in Class C airspace;

e) between IFR flights and special VFR flights; and

f) between special VFR flights, when so prescribed by the ANSP

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- 13.3 *Ensure that no clearance is given to execute any maneuver that would reduce the spacing between two aircraft to less than the separation minimum applicable in the circumstances.*
- 13.4 *Ensure that a larger separation than the specified minima is applied whenever exceptional circumstances such as unlawful interference or navigational difficulties call for extra precautions.*
- 13.5 *Ensure that vertical separation application*
- 13.6 *Ensure that vertical separation is obtained by requiring aircraft using prescribed altimeter setting procedures to operate at different levels expressed in terms of flight levels or altitudes. Check that the ANSP established requirements for carriage and operation of pressure-altitude reporting transponders within its airspace so as to improve the effectiveness of air traffic services as well as airborne collision avoidance systems.*
- 13.7 *Ensure that the vertical separation minimum (VSM) is:*
- a) *a nominal 1 000 ft below FL 290 and a nominal 2 000 ft at or above this level, except as provided for in b) below; and within designated airspace, where a nominal 1 000 ft below FL 410 or a higher level is so prescribed for use under*
 - b) *Specified conditions and a nominal 2 000 ft at or above this level.*
- 13.8 *Ensure that lateral separation is applied so that the distance between those portions of the intended routes for which the aircraft are to be laterally separated is never less than an established distance to account for navigational inaccuracies plus a specified buffer.*
- 13.9 *Ensure that the buffer zone is determined by the ANSP and included in the lateral separation minima as an integral part thereof.*
- 13.10 *Ensure that Lateral Separation Application using*
- a) *VOR:*
 - b) *NDB:*

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c) dead reckoning (DR):

d) RNAV operation

13.11 Ensure that horizontal separation Application

14 ENSURING MECHANISM FOR ANS CONTINGENCY PLANNING

14.1 Ensure that ATSP developed and promulgated contingency plan as per ECARAS PART 14 of 14.10.1

14.2 Ensure that the contingency plan developed and promulgated for implementation in the event of disruption, or potential disruption, of air traffic services and related supporting services within airspace for which they are responsible.

14.3 Ensure that the contingency plan developed in close coordination with the air traffic services authorities responsible for the provision of services in adjacent portions of airspace and with airspace users concerned.

14.4 Verify ATSP provide appropriate awareness to the controllers.

14.5 Verify ATSP provide take while devolve the procedure take in to consideration timely initiative and action.

14.6 Verify ATSP provide made up-to-date the procedure and provide appropriate awareness when updating.

14.7 Ensure the following are the main elements considered for contingency planning depending upon circumstances

a) Re-routing of traffic to avoid the whole or part of the airspace concerned, normally involving establishment of additional routes or route segments with associated conditions for their use;

b) Establishment of a simplified route network through the airspace concerned, if it is available, together with a flight level allocation scheme to ensure lateral and vertical separation, and a procedure for adjacent

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area control centers to establish longitudinal separation at the entry point and to maintain such separation through the airspace;

- c) Reassignment of responsibility for providing air traffic services in airspace over the high seas or in delegated airspace;*
- d) Provision and operation of adequate air-ground communications, AFTN and ATS direct speech links, including reassignment, to adjacent States, of the responsibility for providing meteorological information and information on status of navigation aids;*
- e) Special arrangements for collecting and disseminating in-flight and post-flight reports from aircraft;*

15. ENSURING MECHANISM FOR COORDINATION IN RESPECT OF THE PROVISION OF AIR TRAFFIC CONTROL SERVICE

15.1 Ensure that the coordination achieve the best arrangements which will avoid hazards to civil aircraft and minimize interference with the normal operations

15.1.1 Ensure that the air traffic services units, in carrying out their objectives have appropriate coordination with

15.1.2 The operator and air traffic services to advise when

- An aircraft is in the uncertainty or the alert phase, when practicable.*

15.1.3 Appropriate rescue coordination center for the purpose of

- To an aircraft is considered to be in a state of emergency.*

15.1.4 Aeronautical information services for the purpose of

- To provide up-to-date pre-flight information and to meet the need for in-flight information, arrangements.*

15.1.5 Military authorities for the purpose of

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- *Flexible use of airspace reserved for military or other special activities.*

15.2 Ensure all possible efforts are made to confirm the identity of the aircraft and to provide it with the navigational guidance necessary to avoid the need for interception.

15.3 Ensure that the air traffic services units, made arrangements for activities potentially hazardous to civil aircraft,

15.4 Ensure that the close coordination maintained between

15.4.1 Area control centres,

15.4.2 Flight information centres and

15.4.3 Associated meteorological watch offices

15.5 Ensure that the coordination of the transferring control unit shall communicate to the accepting control unit.

15.6 Ensure that an air traffic control clearance shall be coordinated between air traffic control units.

15.7 Ensure that the coordination with the subsequent area control centre shall be effected prior to issuance of the departure clearance.

15.8 Ensure that the coordination and transfer of control of a flight between successive ATC units and control sectors shall be effected.

15.9 Ensure that the ATC units establish and apply standardized procedures for the coordination and transfer of control of flights.

16. ENSURING MECHANISM FOR GENERAL EMERGENCY

16.1 Review and verify that the procedure is developed as per ECARS 14.32.1 and 14.26.3

16.2 Verify that if an aircraft declared emergency ATS unit takes appropriate and relevant action as follows

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16.2.1 Take all necessary steps to ascertain aircraft identification and type, the type of emergency, the intentions of the flight crew as well as the position and level of the aircraft;

16.2.2 Decide upon the most appropriate type of assistance which can be rendered;

16.2.3 Enlist the aid of any other ATS unit or other services which may be able to provide assistance to the aircraft;

16.2.4 Provide the flight crew with any information requested as well as any additional relevant information;

16.2.5 Obtain from the operator or the flight crew required information

16.2.6 Presence of hazardous materials and the nature thereof; and

16.2.7 Notify the appropriate ATS units and authorities as specified in local instructions.

16.3 Verify that for an aircraft known or believed to be in a state of emergency, the ATS units give priority over other aircraft.

16.4 Review and verify that the responsibility and required actions of each DATCO enumerate the activities of CATCO, SATCO, Area Controller and Assistant controller at ACC/FIC and the activities of Approach and Aerodrome at each aerodrome are stated clearly

17. ENSURING MECHANISM FOR EMERGENCY DESCENT

17.1 Review and verify that the procedure is developed as per ECARS 14.10.4

17.2 Verify that the following actions are taken If an aircraft known or believed to be in emergency descent

17.2.1 Given maximum consideration, assistance and priority over other aircraft

17.2.2 Priority in level assignment

17.2.3 Priority in landing

17.2.4 Clearance to the nearest suitable aerodrome

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17.2.5 Provide useful information like:-

- *Weather of en-route or landing aerodrome*
- *Other pertinent information*

17.3 Verify that an aircraft making an emergency descent through other traffic given priority than others

17.4 Verify that Controllers give all the necessary assistance and information to take immediate action to safeguard other aircraft.

17.5 Review the procedure and verify that, controllers broadcast an emergency message on appropriate frequencies giving instructions to other aircraft during and after the emergency descent.

- *17.6 Verify that immediately after emergency broadcast made the ACC, approach control unit and aerodrome control tower concerned forward further clearances to all aircraft involved and procedures are followed during and subsequent to the emergency descent.*
- *17.7 Make sure that The ATS unit concerned always sin form any other ATSU and control sectors which may be affected.*

18. ENSURING MECHANISM FOR UNLAWFUL INTERFERENCE

18.1 Review and verify that the procedure is developed as per ATS manual of standard 10.1.3

18.2 Review the procedure and verify that if acts of unlawful interference with an aircraft is known or suspected, or a bomb threat warning has been received,

18.2.1 controllers promptly attend to requests by, or to anticipated needs of, the aircraft, including requests for relevant information relating to air navigation facilities, procedures and services along the trajectory and at any aerodrome of intended landing,

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18.2.2 Take such action as it is necessary to expedite the conduct of all phases of the flight.

- a) Transmit, and continue to transmit, information pertinent to the safe conduct of the flight, without expecting a reply from the aircraft;*
- b) Monitor and plot the progress of the flight with the means that are available, and coordinate transfer of control with adjacent ATS units or sectors without requiring transmissions or other responses from the aircraft, unless communication with the aircraft remains normal;*
- c) Inform and continue to keep informed, appropriate ATS units and sectors, including those in adjacent FIRs, which may be concerned with the progress of the flight;*

19 ENSURING MECHANISM FOR BOMB THREAT

19.1 Review and verify that the procedure is developed as per ECARS 14.36.2 and ATS manual of standard 10.1.3

19.2 Verify that the following ensuring mechanize for bomb threat are applied if a threat is received indicating that a bomb or other explosive device has been placed on board a known aircraft. The ATS unit receiving the threat information shall:

- ✓ If in direct communication with the aircraft, advise the flight crew without delay of the threat and the circumstances surrounding the threat; or*
- ✓ If not in direct communication with aircraft, advise the flight crew by the most expeditious means through other ATS units, sectors or other channels.*

19.3 Review the procedure and verify its effectiveness to that the aircraft under acts of bomb threat can be handled in the most expeditious manner

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to the extent possible, the safety of other aircraft and that personnel and ground installations are not put at risk.

19.4 *Ensure that the aircraft in flight shall be given a re-clearance to a requested new destination without delay.*

19.5 *Ensure that the controllers shall not provide any advice or suggestions concerning action to be taken by the flight crew in relation to an explosive device.*

20. ENSURING MECHANISM FOR COORDINATION BETWEEN THE AERODROME OPERATOR AND AIR TRAFFIC SERVICES

20.1 *Ensure that the procedure is developed based on ECARS 14.11.2 - 3a*

20.1.1 *Ensure that the responsibilities of*

- a) *Air Traffic Control unit*
- b) *Bole international Airport Fire Service*
- c) *Bole international Airport marshaling service are clearly stated*

20.2 *Ensure that inspection of the movement area is regularly carried out by air traffic controller and fire officer in charge.*

20.3 *Ensure that the Inspection of the movement area covers*

- 20.3.1 *Approach lighting systems.*
- 20.3.2 *Runway lights.*
- 20.3.3 *Apron*
- 20.3.4 *Paved area*
- 20.3.5 *Taxiways' lights and conducted frequently*

20.4 *Ensure that action to be taken during emergency by Air Traffic Control is clearly stated;-*

- 20.4.1 *Aircraft Accident*
- 20.4.2 *Aircraft Emergency*
- 20.4.3 *Local Standby*

20.5 *Ensure that action to be taken during emergency by Airport Fire Services is clearly stated;-*

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- 20.5.1 Aircraft Accident
- 20.5.2 Aircraft Emergency
- 20.5.3 Local Standby

23. ENSURING MECHANISM FOR COORDINATION BETWEEN THE METEOROLOGICAL AUTHORITIES AND AIR TRAFFIC SERVICES

23.1 *Ensure that the procedure is developed based on ECARS 14.11.1-3*

23.2 *Ensure that*

- 23.2.1 *The objective coordination agreement is clearly stated.*
- 23.2.2 *The responsibility of meteorological offices clearly stated.*
- 23.2.3 *The responsibility of air traffic control unit clearly stated.*

23.3 *Ensure that Up-to-date metrological information provide to the Aerodrome control towers*

- 23.3.1 *Local routine reports (Met Report)*
- 23.3.2 *Local special reports (SPECIAL)*
- 23.3.3 *Special reports (SPECI)*
- 23.3.4 *Aerodrome forecasts (TAF)*
- 23.3.5 *SIGMET and AIRMET*
- 23.3.6 *Wind shear warnings*
- 23.3.7 *Aerodrome warnings*

23.4 *Ensure that Up-to-date metrological information provide to the Approach control offices*

- 23.4.1 *Local routine reports (Met Report)*
- 23.4.2 *Local special reports (SPECIAL)*
- 23.4.3 *Special reports (SPECI)*
- 23.4.4 *Aerodrome forecasts (TAF)*
- 23.4.5 *SIGMET and AIRMET*
- 23.4.6 *Wind shear warnings*
- 23.4.7 *Aerodrome warnings*

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23.5 *Ensure that Up-to-date metrological information provide to the Area control centre*

- 23.5.1 *Routine reports (METAR)*
- 23.5.2 *Special reports (SPECI)*
- 23.5.3 *Aerodrome forecasts (TAF)*
- 23.5.4 *SIGMET and AIRMET*
- 23.5.5 *Volcanic ash advisory*
- 23.5.6 *Aerodrome warnings*

24. Ensuring mechanism for coordination agreements between air traffic service provider and rescue coordination centre

24.1 *Ensure that the procedure developed as per ECARS 14.11.1-7*

24.2 Verify the coordination *agreement* clearly stated

- 24.2.1 Effective date
- 24.2.2 Objective
- 24.2.3 Scope
- 24.2.4 Time of responsible Air Traffic Services Provider
- 24.2.5 Time of responsible *Rescue Coordination Centre*

24.3 *Ensure that*

- 24.3.1 *The action to perform by ATS unit until the RCC is assigned clearly declared.*
- 24.3.2 *Information to be given to RCC/SMC by the ATS provider clearly declared.*

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24.3.3 Assistance to be given to the Emergency Aircraft by ATS Provider clearly declared.

24.4 Ensure that

24.4.1 Air traffic services units shall, notify Rescue Coordination Centres immediately an aircraft is considered to be in a state of emergency in accordance with the following:

- a) when Uncertainty phases:*
- b) when Alert phase*
- c) when Distress phase*

24.5 Verify the coordination agreement clearly stated

24.5.1 Means of communication.

24.5.2 Responsibility of Air Traffic Services Provider until Search Mission Coordinator (SMS) assigned.

24.5.3 Information to be provided to

- o Rescue Coordination Centre (RCC)*
- o Search Mission Coordinator (SMC)*

24.6 Verify the coordination agreement

24.6.1 Assistance to be given to the emergency air craft by Air Traffic Services Provider clearly stated.

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25. ENSURING MECHANISM FOR FUEL DUMPING

25.1 *Review and verify that the procedure is developed as per the ECARS 14.26.1 and ATS manual of standard chapter 10.5.3*

25.2 *Review and verify that the procedure has the following instructions for flight crew to advise ATC and the ATC unit to coordinate accordingly with the flight crew when an aircraft operating within controlled airspace needs to dump fuel,*

- ✓ *the route to be flown, which, if possible, should be clear of cities and towns, preferably over water and away from areas where thunderstorms have been reported or are expected;*
- ✓ *the level to be used, which should be not less than 1 800 m (6 000 ft); and*
- ✓ *The duration of the fuel dumping.*

26. ENSURING MECHANISM FOR STRAYED AIRCRAFT

26.1 *Review and verify that the procedure is developed as per the ECARS 14.32.2 and ATS manual of standard chapter 10.1.3*

26.2 *Verify the following measures are taken as soon as an air traffic services unit becomes aware of a strayed aircraft,*

- a) *attempt to establish two-way communication with the aircraft, if not established*
- b) *use all available means to determine its position;*
- c) *inform other ATS units into whose area the aircraft may have strayed or may*
- d) *stray, taking into account all the factors which may have affected the navigation of the aircraft in the circumstances;*

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- e) *inform, in accordance with locally agreed procedures, appropriate military units and provide them with pertinent flight plan and other data concerning the strayed aircraft;*
- f) *Request from the units referred above and other aircraft in flight assistance in establishing communication with the aircraft and determining its position.*
- ✓ *Review the procedure and make sure that there is a methodology established for the aircraft to advise its position and to take corrective action as follows,*
 - a) *provide, as necessary, other ATS units and appropriate military units with*
 - b) *Relevant information concerning the strayed aircraft and any advice given to that aircraft.*
- ✓ *Review the procedure and make sure that there is an established methodology for the appropriate authority to be immediately informed, in accordance with locally agreed procedures when a strayed or unidentified aircraft is the subject of unlawful interference;*
- ✓ *Ensure that the an air traffic services unit becomes aware of an unidentified aircraft in its area, it shall endeavor to establish the identity of the aircraft whenever this is necessary for the provision of air traffic services or required by the appropriate military authorities in accordance with locally agreed procedures. To this end, the air traffic services unit shall take required action as per local procedure.*

27. ENSURING MECHANISM FOR INTERCEPTION OF CIVIL AIRCRAFT

- 27.1 *Review and verify that the procedure is developed as per the ECARS 14.32.2 and ATS manual of standard chapter 10.5.2*
- 27.2 *Verify that the ATS unit takes the following actions and ensure all are included in the procedure :*

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- a) *Attempt to establish two-way communication with the intercepted aircraft, including the emergency frequency 121.5 MHz, unless such communication already exists;*
- b) *Inform the pilot of the intercepted aircraft of the interception;*
- c) *establish contact with the intercept control unit maintaining two-way communication with the intercepting aircraft and provide it with available information concerning the aircraft;*
- d) *relay messages between the intercepting aircraft or the intercept control unit and the intercepted aircraft, as necessary;*
- e) *in close coordination with the intercept control unit take all necessary steps to ensure the safety of the intercepted aircraft; and*
- f) *Inform ATS units serving adjacent FIRs if it appears that the aircraft has strayed from such adjacent FIRs.*

27.3 *verify the procedure includes the following actions to be taken by the ATS unit for an aircraft which is being intercepted outside its area of responsibility;*

- a) *Inform the ATS unit serving the airspace in which the interception is taking place, providing this unit with available information that will assist in identifying the aircraft*
- b) *Relay messages between the intercepted aircraft and the appropriate ATS unit, the intercept control unit or the intercepting aircraft.*

28 . ENSURING MECHANISM FOR EMERGENCY SEPARATION

28.1 *Review and verify that the procedure is developed as per the ECARS 14.26.7 and ATS manual of standard chapter 10.7.1*

28.2 *Ensure that during an emergency situation, it is not possible to ensure that the applicable horizontal separation can be maintained,*

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emergency separation of half the applicable vertical separation minimum may be used, i.e. 150 m (500 ft) between aircraft in airspace where a vertical separation minimum of 300 m (1 000 ft) is applied, and 300 m (1 000 ft) between aircraft in airspace where a 600 m (2 000 ft) vertical separation minimum is applied.

28.3 Ensure that when emergency separation is applied the flight crews concerned shall be advised that emergency separation is being applied and informed of the actual minimum used. Additionally, all flight crews concerned shall be provided with essential traffic information.

29 ENSURING MECHANISM FOR SHORT-TERM CONFLICT ALERT (STCA)

- 29.1 Review and verify that the procedure is developed as per the ATS manual of standard chapter 10.7.1*
- 29.2 Local instructions concerning use of the STCA function shall specify, inter alia:*
- 29.3 The types of flight which are eligible for generation of alerts;*
- a) The sectors or areas of airspace within which the STCA function is implemented;*
 - b) The method of displaying the STCA to the controller;*
 - c) In general terms, the parameters for generation of alerts as well as alert warning time;*
 - d) The volumes of airspace within which STCA can be selectively inhibited and the conditions under which this will be permitted;*

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e) Conditions under which specific alerts may be inhibited for individual flights; and

f) Procedures applicable in respect of volume of airspace or flights for which STCA or specific alerts have been inhibited.

29.4 *Verify that the STCA is generated in respect of controlled flights, and the controller without delay assess the situation and, if necessary, take action to ensure that the applicable separation minimum will not be infringed or will be restored.*

29.5 *Ensure that controllers should be required to complete an air traffic incident report only in the event that a separation minimum was infringed.*

29.6 *Verify that the appropriate ATS provider retain electronic records of all alerts generated. Check the data and circumstances pertaining to each alert are analyzed to determine whether an alert is justified or not.*

29.7 *Ensure that statistical analyses are justified in order to identify possible shortcomings in airspace design and ATC procedures as well as to monitor overall safety levels.*

30. ENSURING MECHANISM FOR MINIMUM SAFE ALTITUDE WARNING (MSAW)

30.1 *Review and verify that the procedure is developed as per the ATS manual of standard chapter 10.7.2*

30.2 *Ensure that Local instructions concerning use of the MSAW function specify, inter alia:*

a) the types of flight which are eligible for generation of MSAW;

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- b) the sectors or areas of airspace for which MSAW minimum safe altitudes have been defined and within which the MSAW function is implemented;*
- c) the values of the defined MSAW minimum safe altitudes;*
- d) the method of displaying the MSAW to the controller;*
- e) the parameters for generation of MSAW as well as warning time; and*
- f) Conditions under which the MSAW function may be inhibited for individual aircraft tracks as well as procedures applicable in respect of flights for which MSAW has been inhibited.*

31. ENSURING MECHANISM FOR SEPARATION METHODS AND MINIMA

- 31.1 Review and verify that the procedure is developed as per ECARAS Part 14.31 and ATS manual of standard ANRD chapter 5.2*
- 31.2 Verify that vertical or horizontal separation applications are included in the procedure*
 - ✓ between all flights in Class A and B airspaces;*
 - ✓ between IFR flights in Class C, D and E airspaces;*
 - ✓ between IFR flights and VFR flights in Class C airspace;*
 - ✓ between IFR flights and special VFR flights; and*
 - ✓ between special VFR flights, when so prescribed by the ANSP*
- 31.3 Verify that no clearance is given to execute any maneuver that would reduce the spacing between two aircraft to less than the separation minimum applicable in the circumstances.*
- 31.4 Verify that a larger separation than the specified minima is applied whenever exceptional circumstances such as unlawful interference or navigational difficulties call for extra precautions.*
- 31.5 Vertical separation is obtained by requiring aircraft using prescribed altimeter setting procedures to operate at different levels expressed in*

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terms of flight levels or altitudes. The ANSP shall establish requirements for carriage and operation of pressure-altitude reporting transponders within its airspace so as to improve the effectiveness of air traffic services as well as airborne collision avoidance systems. It seems like a note.

31.6 *Verify that the procedure includes the vertical separation minimum (VSM which includes*

- ✓ *a nominal 1 000 ft below FL 290 and a nominal 2 000 ft at or above this level, except as provided for in b) below; and*
- ✓ *within designated airspace, where a nominal 1 000 ft below FL 410 or a higher level is so prescribed for use under specified conditions, and a nominal 2 000 ft at or above this level.*
- ✓ *Check the Lateral separation is applied so that the distance between those portions of the intended routes for which the aircraft are laterally separated is never less than an established distance to account for navigational inaccuracies plus a specified buffer. This buffer shall be determined by the ANSP and included in the lateral separation minima as an integral part thereof.*

31.7 *Verify that Lateral Separation Application*

- ✓ *VOR:*
- ✓ *NDB:*
- ✓ *dead reckoning (DR):*
- ✓ *RNAV operation*

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32. ENSURING MECHANISM FOR AIR TRAFFIC SERVICES SAFETY REVIEWS

32.1 *Ensure that the procedure developed as per ATS manual of standard ANRD chapter 2.5, 2.6 and 2.7*

32.2 *Ensure that Safety reviews of ATC units shall be conducted on a regular and systematic basis by personnel qualified through training, experience and expertise.*

- ✓ *ATC operations manuals, ATC unit instructions and air traffic control (ATC) coordination procedures are complete, concise, and up-to-date;*
- ✓ *The ATS route structure, where applicable, provides for:*
 - ❖ *Adequate route spacing; and*
 - ❖ *Crossing points for ATS routes located so as to reduce the need for controller intervention and for inter-and intra-unit coordination;*
- ✓ *The separation minima used in the airspace or at the aerodrome are appropriate and all the provisions applicable to those minima are being complied with;*
- ✓ *Where applicable, provision is made for adequate observation of the maneuvering area, and procedures and measures aimed at minimizing the potential for inadvertent runway incursions are in place. This observation may be performed visually or by means of an ATS surveillance system;*
- ✓ *Appropriate procedures for low visibility aerodrome operations are in place;*
- ✓ *Traffic volumes and associated controller workloads do not exceed defined, safe levels and that procedures are in place for regulating traffic volumes whenever necessary;*
- ✓ *Procedures to be applied in the event of failures or degradations of ATS systems, including communications, navigation and*

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surveillance systems, are practicable and will provide for an acceptable level of safety; and

- ✓ Procedures for the reporting of incidents and other safety-related occurrences are implemented, that the reporting of incidents is encouraged and that such reports are reviewed to identify the need for any remedial action.
- ✓ Ensure that Safety reviews of ATC units shall be conducted operational and technical issues
- ✓ Ensure that Safety reviews of ATC units shall be conducted Licensing and training issues

32.3 Ensure that need for safety assessments Safety reviews of ATC units shall be conducted in respect of proposals for significant airspace reorganizations, for significant changes in the provision of ATS procedures applicable to airspace or an aerodrome, and for the introduction of new equipment, systems or facilities,

32.4 Ensure that proposals shall be implemented only when the assessment has shown that an acceptable level of safety will be met. When appropriate, the ANSP ensure that adequate provision is made for post-implementation monitoring to verify that the defined level of safety continues to be met.

33. ENSURING MECHANISM FOR SAFETY MANAGEMENT SYSTEM

33.1 Ensure that the procedure developed as per ECARS 14.38.1 - 3 and ATS manual of standard 2.1.3

33.2 Ensure that the ATS provider shall establish a safety management system appropriate to the size and complexity of the operation, for the proactive management of safety, that integrates the management of operations and

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technical systems with financial and human resource management, and that reflects quality assurance principles.

33.3 Ensure that the safety management system shall include policy and objectives for continuous improvement to the organization's overall safety performance.

33.3 Ensure that as a part of the continuous safety improvements mentioned in sub-paragraph above, the holder of ATS Operations Specifications shall ensure that:

- a) safety reviews of ATS units are conducted on a regular and systematic basis by personnel qualified through training, experience and expertise and having a full understanding of relevant Civil Aviation legislation, Procedures contained in the Manual of Standards - Air Traffic Services, safe operating practices and Human Factors principles; and*
- b) Any actual or potential hazard related to the provision of ATS within airspace or at an aerodrome, whether identified through an ATS safety management activity or by any other means, shall be assessed and classified by the appropriate ATS authority for its risk acceptability.*

33.4 Ensure that the safety management system shall clearly define lines of safety accountability throughout the operator's organization, including a direct accountability for safety on the part of senior management.

33.5 Ensure that the safety management system shall include, as a minimum, the following:

- a) Processes to identify actual and potential safety hazards and assess the associated risks; and*
- b) Processes to develop and implement remedial action necessary to maintain agreed safety performance; and*

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c) *Provision for continuous monitoring and regular assessment of the safety performance; and*

d) *Recurring processes for continuous improvement of the performance of the safety management system; and*

33.6 *Ensure that Quality assurance processes to:*

a) *Identify applicable requirements, regulations and standards and demonstrate compliance with them; and*

b) *Ensure technical manuals, checklists and other documentation are appropriately maintained and incorporate the latest amendments; and*

c) *Ensure that training programmes maintain staff proficiency and competency.*

33.7 *Ensure that the safety management system shall be described in relevant documentation, and shall be acceptable to the Authority.*

33.8 *Ensure that conducts risk assessments of current and proposed operational policies, plans and procedures; and*

33.9 *Ensure that before introducing any change to an ATS system which may have safety implications, the ATS provider shall:*

a) *Conduct safety assessment in respect of proposals for significant airspace reorganizations, for significant changes in the provision of ATS procedures applicable to an airspace or an aerodrome, and for the introduction of new equipment, systems or facilities; and*

b) *Consult users as far as practicable about the intended change; and*

33.10 *Ensure that hazard identification as well as risk assessment and mitigation are systematically conducted for any changes to those parts of the Air Traffic Management (ATM) functional system and supporting arrangements within managerial control, in a manner, which addresses:*

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33.11 Ensure that Demonstrate that an acceptable level of safety will be achieved as a result of the intended change, taking into account any associated effects of the change.

34. ENSURING MECHANISM FOR ESTABLISHMENT OF SMS

34.1 Ensure that the SMS of a service provider shall:

- a) Establish in accordance with the framework elements contained in Appendix 2 of annex 19; and*
- b) Commensurate with the size of the service provider and the complexity of its aviation products or services.*
- c) SMS of an ATS provider, in accordance with Annex 11, shall be made acceptable to the State responsible for the provider's designation.*

34.2 Ensure that the SMS should as a minimum include:

- a) a process to identify actual and potential safety hazards and assess the associated risks;*
- b) a process to develop and implement remedial action necessary to maintain an acceptable level of safety; and*
- c) Provision for continuous monitoring and regular assessment of the appropriateness and effectiveness of safety management activities.*

34.3 Ensure that the Hazard identification

- a) The ATS provider shall develop and maintain a process that ensures that hazards associated with its aviation products or services are identified.*
- b) Hazard identification shall be based on a combination of reactive, proactive and predictive methods of safety data collection.*

34.4 Ensure that the safety performance monitoring and measurement

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a) *The ATS provider shall develop and maintain the means to verify the safety performance of the organization and to validate the effectiveness of safety risk controls.*

b) *The ATS provider's safety performance shall be verified in reference to the safety performance indicators and safety performance targets of the SMS.*

34.5 Ensure that the management of change

- ✓ *The service provider shall develop and maintain a process to identify changes which may affect the level of safety risk associated with its aviation products or services and to identify and manage the safety risks that may arise from those changes.*

34.6 Ensure that the continuous improvement of the SMS

- ✓ *The service provider shall monitor and assess the effectiveness of its SMS processes to enable continuous improvement of the overall performance of the SMS.*

34.7 Ensure that the agreement on the service provider's safety performance

- ✓ *The agreed safety performance of an individual service provider's SMS is periodically reviewed to ensure it remains relevant and appropriate to the service providers.*

34.8 Ensure that the Safety accountabilities the ATS provider shall:

- a) *Identify the accountable executive who, irrespective of other functions, has ultimate responsibility and accountability, on behalf of the organization, for the implementation and maintenance of the SMS;*

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- b) Clearly define lines of safety accountability throughout the organization, including a direct accountability for safety on the part of senior management;*
- c) Identify the accountabilities of all members of management, irrespective of other functions, as well as of employees, with respect to the safety performance of the SMS;*
- d) Document and communicate safety responsibilities, accountabilities and authorities throughout the organization; and*
- e) Define the levels of management with authority to make decisions regarding safety risk tolerability.*

34.11 Ensure that the Safety oversight

- a) The ATS provider established mechanisms to ensure effective monitoring of the eight critical elements of the safety oversight function. Also ensure established mechanisms for identification of hazards and the management of safety risks by service providers follow established regulatory controls (requirements, specific operating regulations and implementation policies). These mechanisms include inspections, audits and surveys to ensure that regulatory safety risk controls are appropriately integrated into the service provider's SMS, that they are being practiced as designed, and that the regulatory controls have the intended effect on safety risks.*

34.12 Ensure that the Safety data collection Reporting systems

- a) ATS provider shall establish a mandatory incident reporting system to facilitate collection of information on actual or potential safety deficiencies.*
- b) ATS provider shall establish a voluntary incident reporting system to facilitate collection of information on actual or potential safety*

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deficiencies that may not be captured by the mandatory incident reporting system.

35. ENSURING MECHANISM FOR SAFETY MANAGEMENT SYSTEM

35.1 Ensure ANS provider shall develop, establish, maintain and adhere safety management system as Federal Democratic Republic of Ethiopia Safety Management Regulation.

35.2 Ensure ANS provider shall develop, establish, maintain and adhere to a safety management system (SMS) that is appropriate to the size, nature and complexity of the operations.

35.3 Ensure ANS provider shall have in place a safety management system (SMS) acceptable to ECAA that, as a minimum:

35.3.1 identifies safety hazards;

35.3.2 ensures the implementation of remedial action necessary to maintain agreed safety performance;

35.3.3 provides for continuous monitoring and regular assessment of safety performance;

35.3.4 Aims at a continuous improvement of the overall performance of the safety management system.

35.3.5 In order to be acceptable to the CAAP, a service provider's SMS shall meet the requirements set forth in this regulation.

35.4 Ensure ANS provider shall

35.4.1 Define the organization's safety policy.

35.4.2 Be signed by the Accountable Executive of the organization.

35.4.3 Include the responsibilities of management and employees with respect to the safety performance of the SMS.

35.4.4 Include a clear statement about the provision of the necessary resources for its implementation.

35.5 Ensure ANS provider shall identify an Accountable Executive to be responsible

35.5.1 Ensure ANS provider shall have accountable executive that

a. Full control of the human resources required for the operations authorized to be conducted under the operations certificate;

b. Full control of the financial resources required for the operations authorized to be conducted under the operations certificate;

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- c. Final authority over operations authorized to be conducted under the operations certificate;
 - d. Direct responsibility for the conduct of the organization's affairs; and
 - e. Final responsibility for all safety issues
- 35.6 Ensure ANS provider shall develop and maintain SMS documentation on :
- 35.6.1 The safety policy and objectives;
 - 35.6.2 The SMS requirements;
 - 35.6.3 The SMS processes and procedures;
 - 35.6.4 The accountabilities, responsibilities and authorities for processes and procedures; and the SMS outputs.
- 35.7 Ensure ANS provider shall have implementation plan include
- 35.7.1 Safety policy and objectives;
 - 35.7.2 System description;
 - 35.7.3 Gap analysis;
 - 35.7.4 SMS components;
 - 35.7.5 Safety roles and responsibilities;
 - 35.7.6 Hazard reporting policy;
 - 35.7.7 Means of employee involvement;
 - 35.7.8 Safety performance measurement;
 - 35.7.9 Safety training;
 - 35.7.10 Safety communication; and
 - 35.7.11 Management review of safety performance
- 35.8 Ensure ANS provider shall, as part of the SMS documentation, develops and maintains a Safety Management System Manual (SMSM), to communicate the organization's approach to safety throughout the organization.
- 35.9 Ensure ANS provider shall develop and documented SMSM all aspects of the SMS, and its contents shall include the following:
- 35.9.1 scope of the safety management system;
 - 35.9.2 safety policy and objectives;
 - 35.9.3 safety accountabilities;
 - 35.9.4 key safety personnel;

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- 35.9.5 documentation control procedures;
 - 35.9.6 coordination of emergency response planning;
 - 35.9.7 hazard identification and safety risk management schemes;
 - 35.9.8 safety performance monitoring;
 - 35.9.9 safety auditing;
 - 35.9.10 procedures for the management of change;
 - 35.9.11 Safety promotion; and
 - 35.9.12 Control of contracted activities.
- 35.10 Ensure ANS provider shall develop and maintain a formal process SMS that ensures that hazards in operations are identified.
- 35.11 Ensure ANS provider shall develop and maintain safety data collection and processing systems (SDCPS) that provide for the identification of hazards and the analysis, assessment and mitigation of safety risks.
- 35.12 Ensure ANS provider shall have SDCPS that include reactive, proactive and predictive methods of safety data collection.
- 35.13 Ensure ANS provider shall develop hazard identification process shall include the following steps:
- 35.13.1 Reporting of hazards, events or safety concerns;
 - 35.13.2 Collection and storage of safety data;
 - 35.13.3 Analysis of the safety data; and
 - 35.13.4 Distribution of the safety information distilled from the safety data.
- 35.14 Ensure ANS provider shall develop and maintain safety assurance processes to ensure that the safety risk controls developed as a consequence of the hazard identification and safety risk management activities.
- 35.15 Ensure ANS provider, as part of the SMS safety assurance activities, develop and maintain them necessary means to verify the safety performance of the organization in reference to the safety performance indicators and safety performance targets of the SMS, and to validate the effectiveness of safety risk controls.
- 35.16 Ensure ANS provider shall have Safety performance monitoring and measurement means which include the following:

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- 35.16.1 Hazard reporting systems;
 - 35.16.2 Safety audits;
 - 35.16.3 Safety surveys;
 - 35.16.4 Safety reviews;
 - 35.16.5 Safety studies; and
 - 35.16.6 Internal safety investigations.
- 35.17 Ensure ANS provider shall, as part of the SMS safety assurance activities, develop and maintain a formal process for the management of change.
- 35.18 Ensure ANS provider shall, as part of the SMS safety assurance activities, develop and maintain formal processes to identify the causes of substandard performance of the SMS, determine the implications on its operations, and rectify situations involving substandard performance.
- 35.19 Ensure ANS provider shall develop and maintain formal safety training and safety communication activities to create an environment where the safety objectives of the organization can be achieved.
- 35.20 Ensure ANS provider as part of its safety promotion activities, develop and maintain a safety training programme that ensures that personnel are trained and competent to perform their SMS duties.
- 35.21 Ensure ANS provider shall, as part of its safety promotion activities, develop and maintain formal means for safety communication, to:
- 35.21.1 Ensure that all staff are fully aware of the SMS;
 - 35.21.2 Convey safety-critical information;
 - 35.21.3 Explain why particular safety actions are taken;
 - 35.21.4 Explain why safety procedures are introduced or changed; and
 - 35.21.5 Convey generic safety information.
- 35.22 Ensure ANS provider shall, establish quality policy that consistent with, and supports the fulfillment of, the activities of the SMS.

36. ENSURING MECHANISM FOR COORDINATION PROCEDURE BETWEEN THE AIRCRAFT OPERATOR AND AIR TRAFFIC SERVICES.

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36.1 Ensure the procedure is developed based on the ECARAS PART-14

14.11.1

37.1.1 Make sure the objective of coordination procedures between air traffic services and operators is clearly stated.

37.1.2 Make sure the responsibility of air traffic services unit is clearly stated.

37.1.3 Verify the responsibility of aircraft operator is clearly stated

37.1.4 Verify the following are clearly stated on the coordination procedure

- *The responsibility of submission flight plan.*
- *The responsibility of checking flight plan.*
- *The media of transmission of flight plan.*
- *The responsibility of transmission of flight plan to control tower and ACC.*

37.1.5 Verify the following are clearly stated on the coordination procedure.

- *Contents and Changes of a flight plan*
- *Delay a flight plan.*
- *Cancellations of flight plan and repetitive flight plan.*
- *Closing a flight plan.*
- *Flight flights to submit Flight Plan.*
- *Adherence to flight plan*
 - ✓ *Operation of controlled flights*
 - ✓ *Position reports*
 - ✓ *Time and Place of submission of flight plan.*

37.1.6 Confirm the

- *Mode of communication between AIS and aircraft operator clearly stated.*

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- *Departure from the procedures clearly stated.*

37. Ensuring Mechanisms for COORDINATION BETWEEN THE AERONAUTICAL INFORMATION SERVICES AND AIR TRAFFIC SERVICES

37.1 *make sure the procedure is developed based on the ECARAS PART-14 14.11.1.*

37.1.1 *Confirm the objective of coordination procedures between air traffic services and Aeronautical Information Services stated?*

37.1.2 *Verify the responsibility of Air Traffic Services unit include to submit to AIS office at least the following data.*

- *Raw Aeronautical Information data to AIS taking in to account accuracy and integrity.*
- *Change of Aeronautical Information data that affect chart and computer based navigation system*

37.1.3 *verify the responsibility of Aeronautical Information Services is clearly stated at least*

- *Responsible to provide AIS for Ethiopia and for the entire airspace Addis FIR in addition Djibouti.*
- *Operational hours of Addis Ababa bole international, Dire dawa, Bahir Dar and Mekele international AIS offices operational hours stated.*

37.1.4 *Confirm the following are clearly stated on the coordination procedure*

- *Collection and distribution of Aeronautical Information.*
- *Submission of Aeronautical Information promulgation of advise form.*
- *Responsibility of AIS personal at the head quarter.*

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- *Responsibility of NOTAM officers at Bole international NOTAM office.*

37.1.5 *Verify the coordination contained list information to be passed to ACC/APP & tower*

- *Current NOTAM and list of NOTAM publication*
- *Flight plan and repetitive Flight plan*
- *Current publication*

37.1.6 *Confirm deviation or departure from the procedures is clearly stated.*

38. ENSURING MECHANISM FOR PROCESS FOR VERIFYING THAT AIRCRAFT AND OPERATORS ARE APPROVED FOR OPERATION IN RVSM AIRSPACE

38.1 Verify ATSP

38.1.1 *Have system to receive all aircraft granted for operations within the RVSM airspace from Aviation Regulation Directorate.*

38.1.2 *Is the list will be updated from time to time based on changes.*

38.1.3 *Submit height keeping performance to the ARMA.*

38.2 Verify that ACC

38.2.1 *Maintain record of pilots and controller report of reduced status of RVSM*

38.2.2 *Transmitted the record of pilots and controllers report to the responsible authority.*

38.3 *Verify that at list the following data shall be forwarded to the ARMA for the purposes of regional monitoring exercise.*

38.3.1 *Height deviation of 300ft. or more*

38.3.2 *Total number of IFR movements for each month.*

38.3.3 *The average time per movement spent in the level band FL 290 to FL 410.*

38.3.4 *ATC coordination failures.*

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38.4 *Verify that ATSP*

38.4.1 *Developed a procedure for RVSM*

38.4.2 *Provide appropriate training for all concerned controllers(syllables of RVSM & certificate)*

38.4.3 *The monitoring mechanisms used for RVSM.*

38.4.4 *Made available RVSM high deviation reporting **FORM***

38.4.5 *Have mechanism or system implemented pilot or controller reporting*

38.4.6 *Adopted and implemented appropriate Phraseology.*

38.4.7 *Application of information indicated on flight progress strips.*

38.4.8 *Effect co-ordination with other sectors where RVSM is applied*

38.4.9 *Implemented FPL requirements.*

39) ENSURING MECHANISM FOR POLICIES AND PROCEDURES FOR RECRUITMENT & RETENTION PLAN OF ATS STAFF

39.1 *Verify the procedure clearly state*

- *The objective of recruitment & retention plan of ATS staff.*
- *places of advertisement*
- *the job specification (descriptions) for each position requires*
 - ✓ *the knowledge, skills and attitude*
 - ✓ *the education*
 - ✓ *training*
 - ✓ *qualifications and experience*
- *the recruiting of air traffic controllers is based on*
 - ✓ *ability,*
 - ✓ *qualification,*
 - ✓ *experience*

39.2 *verify the procedure clearly state*

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- *controller recruitment source*
- *minimum requirement for each position such as*
 - ✓ *Educational back ground*
 - ✓ *Citizenship*
 - ✓ *Ability to speak and understand English language*
 - ✓ *Not less than 18 years of age.*

39.3 verify the procedure clearly stated examination criteria

- *written examination*
 - ✓ *Flexibility and inventiveness*
 - ✓ *Logical ability*
 - ✓ *Ability of spatial notion and*
 - ✓ *Observation of details*
- *medical*
 - ✓ *Class 3 Medical Assessment*
- *Psychological and*
- *an interview.*
 - ✓ *Stress tolerance*
 - ✓ *Ability to co-operate*
 - ✓ *Ability to take own initiative*
 - ✓ *Professional motivation*

39.4 verify the procedure clearly stat selection criteria such as

- *Numeric ability,*
- *Prioritization,*
- *Planning, decisiveness,*
- *Visualization,*
- *Problem solving and Movement detection.*

39.5 verify the procedure for ATS staff retention plan clearly state

- *Career path*
- *Recognitions for best Achievers.*

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- *International Training .*
- *Financial initiative.*
- *Unique salary scale.*
- *Anual salary incraement.*

40. ENSURING MECHANISM FOR INFORMATION ON AERODROME CONDITIONS AND THE OPERATIONAL STATUS OF ASSOCIATED FACILITIES

40.1 Verify the procedure clearly stated

- *The objective of providing Information on aerodrome conditions*
- *The objective of providing Information operational status of non-visual and visual aids.*

40.2 Verify unit providing Aerodrome control and unit providing approach control service shall be kept currently informed of the operationally significant conditions.

- *movement area*
- *The existence of temporary hazards, and*
- *the operational status of any associated facilities*
 - ✓ *operational status of radio navigation services and visual aids essential for take-off, departure, approach and landing procedures within their area of responsibility and those radio navigation services and visual aids essential for surface movement.*

40.3 Verify the procedure ATS provider shall be kept currently informed to controller an indication of failure or malfunction of navigational aids and visual aids.

- *Very-High Omni Directional Range*
- *Distance Measuring Equipment*
- *Non-Directional Beacon*
- *Localizer*

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- *Glide Slope*
- *Precision Approach Path Indicator*

40.4 *Verify the procedure ATS provider shall be kept currently informed to controller essential information on aerodrome conditions is information necessary to safety in the operation of aircraft,*

- *Construction or maintenance work on, or immediately adjacent to the movement area;*
- *Rough or broken surfaces on a runway, a taxiway or an apron, whether marked or not;*
- *Ice on a runway, a taxiway or an apron;*
- *Water on a runway, a taxiway or an apron;*
- *Drifts adjacent to a runway, a taxiway or an apron;*
- *Other temporary hazards, including parked aircraft and birds on the ground or in the air;*
- *Failure or irregular operation of part or all of the aerodrome lighting system;*
- *Any other pertinent information.*

41) ENSURING MECHANISM FOR PERFORMANCE BASED NAVIGATION

41.1 *Ensure that the procedures developed as per ECAA-ANR-AC-041.*

41.2 *Ensure the benefits of performance based navigation clearly stated.*

41.3 *Ensure that the procedure NAVAID Infrastructure and associated Navigation Specification clearly stated.*

41.4 *Ensure that the procedure RNP Approach and Related Procedures clearly stated.*

41.5 *Ensure that the procedure for implementation of PBN clearly stated
ATS delivery such as*

41.5.1 flight plan requirements

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41.5.2 Designation of RNAV Routes

41.5.3 Contingency Procedures

41.5.4 Separation Minima

41.5.5 Mixed Equipage Environment

41.5.6 Reporting of Gross Navigational Errors

41.5.7 RNAV STARs and SIDs

41.5.8 Related Control Procedures

41.5.9 Radar Vectoring Techniques

41.5.10 General procedure for air traffic controller

✓ *checking flight plan item 10*

✓ *holdings*

✓ *phraseology*

✓ *when active runway is 25L*

✓ *when active runway is 07R*

41.6 Ensure that the performance based navigation procedure training provided for concerned air traffic controller

41.6.1 How area navigation systems work (in the context of navigation specification):

41.6.2 Flight plan requirements;

41.6.3 ATC procedures:

41.6.4 ATC contingency procedures;

41.6.5 Separation minima;

41.6.6 Mixed equipage environment

41.6.7 Transition between different operating environments and

41.6.8 Phraseology

42. ENSURING MECHANISM FOR COORDINATION AGREEMENTS WITH NEIGHBOURING STATES

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42.1 *Ensure that the procedure developed as per ECARAS PART 15.3.1.5*

42.1.1 *Verify the coordination agreement clearly stated how SAR service provider clearly stated;*

- ❖ *Pooling facilities for operations*
- ❖ *Sharing information without delay*
- ❖ *Each state Immediately alert RCC*
- ❖ *To enter SAR unit for collaborative efforts*
 - ✓ *Visits of RCC by SAR personal.*
 - ✓ *Joint training or exercise.*
 - ✓ *Coordination in the development of SAR procedure, techniques, equipment or/and facility and ;*
 - ✓ *Exchange of SAR pertinent information?*

42.2 **Ensure that the agreement with neighbouring States SAR service provider clearly stated;**

- ❖ *To permit SAR aircraft enter into and/or leave its territory without special authorization?*
- ❖ *During SAR operation promptly inform*
 - ✓ *Area to be searched*
 - ✓ *Estimated time of a/c, personal and equipment to be stay and other information?*
- ❖ *Facility to enter for SAR L Air search*
- ❖ *Facility to enter for SAR Land search*
- ❖ *Institutional arrangements*
- ❖ *Amendment of the agreement*

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❖ *Termination of agreement*

42.3 *Verify the coordination agreement signed by appropriate authority each state*

43. ENSURING MECHANIZE FOR SAR PLAN OF OPERATION

43.1 Verify the plan clearly stated

- The objective of SAR plan of operation.
- To which air craft apply SAR Services.

43.2 Verify the procedure clearly stated global Search and Rescue Organization

- Understanding overall management of SAR operations.
- SAR system administration, management and operations.
- Preparations to be made to achieve maximum effectiveness in SAR operation.
- SAR system processes during SAR operation.
- The five search and rescue stages noticeably confirmed
 - Awareness Stage
 - Initial Action Stage
 - Planning Stage
 - Operations Stage and Mission Conclusion Stage

43.3 SAR system has components that work together to provide the overall SAR service

43.4 National SAR Organization in Ethiopia

43.5 National SAR Organization Structure Ethiopia

43.6 Ethiopia SAR Mission Organization Structure

43.7 Is the plan of operation clearly stated Authorities, Responsibilities and Duties of SAR Resources

- Ethiopian Civil Aviation Authority (ECAA)

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- RCC Chiefs Responsibilities and Duties
- SAR Mission Coordinator (SMC)
- On Scene Commander (OSC)
- SEARCH AND RESCUE UNIT (facility that actually performs the search, rescue operation during any of the SAR stages)
- LOCAL BASE SAR OFFICERS are to be appointed by officers commanding of the major operational military bases for the purpose of co-coordinating the use of local resources with the RCC
- SAR Briefing Officers
- Verify SAR plan of operation clearly stated role of Air Traffic control Units for successful SAR operation
- Search and Rescue Resources
- Verify SAR plan of operation clearly stated FORWARD SAR STAGING BASE
 - Communications
 - Equipment
 - Staffing and SAR Mission Co-coordinator Kit

43.8 Verify SAR plan of operation clearly stated alerting procedures when an actual or potential distress situation search and rescue operations

- Air traffic control
- COSPAS - SARSAT distress alerts
- Other alerting posts

43.9 Verify SAR plan of operation clearly stated when Emergency phases declared and action taken

- Action to be taken by the RCC during Uncertainty phase (INCERFA)
- Action to be taken by the RCC during Alert phase (ALERFA)

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- Action to be taken by the RCC during distress phase

43.10 Verify SAR plan of operation signed by authorized personal.

44. ENSURING MECHANISM FOR SAR EXERCISE PLANNING AND CONDUCTING

44.1 *Ensure that the SAR exercise plan clearly define the following item*

44.1.1 *The objective*

44.1.1.1 *SAR operation name and case number clearly stated*

44.1.1.1 *Is the type of SAR exercise clearly stated*

❖ *Exercises can and should be conducted on three levels.*

- *The simplest type of exercise, a Communications Exercise, requires the least planning. It consists of periodic use of all means of communications between all potential users to ensure capability for actual emergencies.*
- *A Co-ordination Exercise involves simulated response to a crisis based on a series of scenarios. All levels of the SAR service are involved but do not deploy. This type of exercise requires considerable planning, and usually one to three days to execute.*
- *The third type, a Full-Scale Exercise or a Field Exercise, differs from the previous types in that actual SAR facilities are deployed. This increases the scope of SAR system-testing and adds realistic constraints due to times involved in launching, transit and activities of the SRUs.*

❖ *Is the types of SAR exercise and time to be conducted clearly stated*

44.2 *Ensure that the SAR exercise*

44.2.1 *Detail of SAR*

- ❖ *RCC action*
- ❖ *Search operation*
- ❖ *Rescue operation and*
- ❖ *Limitations*

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44.3 Ensure that the SAR exercise

44.3.1 If practicable appropriate SAR stages comprise

- ❖ Awareness Stage
- ❖ Initial Action Stage
- ❖ Planning Stage
- ❖ Operations Stage
- ❖ Mission Conclusion Stage

44.3.2 Components participate as per plan of operation and conduct their responsibility

- ❖ Organization
- ❖ Facilities
- ❖ means of communication
- ❖ emergency care
- ❖ mission documentation

44.4 Ensure that the following parties are participated as per plan of operation and meet their responsibility

- ❖ Air Traffic control Units
- ❖ RCC Chiefs
- ❖ SAR Mission Co-coordinator (SMC)
- ❖ On Scene Commander (OSC)
- ❖ Local Base SAR Officer
- ❖ SAR Briefing Officers
- ❖ Ethiopian Air Force
- ❖ Ministry of Foreign Affairs (MOFA)
- ❖ Ministry of Health
- ❖ National Meteorological Agency
- ❖ Ethiopian News Agency
- ❖ Ethiopian Airports Enterprise

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- ❖ *Ethiopian Airlines*
- ❖ *Abyssinian Flight Services*
- ❖ *Trans nation Airways*
- ❖ *Ministry of Defense*
- ❖ *Federal Police Commission*
- ❖ *National intelligence & Security Service and*
- ❖ *Red Cross Society and*
- ❖ *Other concerned*

44.5 if practicable ensure that determination of SAR search areas conducted as per plan of operation

- ❖ *Possibility Area*
- ❖ *Probability Area*
- ❖ *Search Radius*

44.6 ensure that Public relation conduct its responsibility according to the plan of operation

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PART -2 AIS ensuring mechanism

1. Ensuring mechanism for effective establishment of an AIS office or entity

- 1.1 Verify that the AIS providers established a system to provide an aeronautical information service to all concerned
- 1.2 Verify that aeronautical data and aeronautical information necessary for the safety, regularity or efficiency of air navigation are made available in a form suitable for the operational requirements of the ATM community
- 1.3 Check the availability of the following evidences (AIP, including amendment service; Supplements to the AIP; NOTAM; AIC; and Checklists and lists of valid NOTAM)
- 1.4 Check the AIS has an Approved organizational chart
- 1.5 Check that the establishment service , postal address and area of responsibility

2. Ensuring mechanism for effective implementation of a properly organized Quality Management System (QMS) in the AIS.

- 2.1 Ensure that a properly organized quality management system is established in the AIS office
- 2.2 Verify that QMS is implemented and maintained in AIS Office encompassing all functions of an aeronautical information service,
- 2.3 Verify that QMS is applicable to the aeronautical information data chain from origination to distribution to the next intended user.
- 2.4 Check that personnel assigned to perform those functions are appropriately trained.
- 2.5 Verify that each quality management system includes the necessary policies, processes and procedures
- 2.6 Verify and Confirm that the established QMS provide users with the necessary assurance and confidence that distributed aeronautical data and aeronautical information satisfy data quality requirement for Accuracy, Resolution and Integrity.

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2.7 Check that An ISO 9000 certificate issued by an accredited certification body.

2.8 Verify that the AIS provider implemented and maintained QMS as per the manual of AIS /ECAA/ANR/OP/001,2.2

3. Ensuring mechanism for providing one copy of Aeronautical information products to other AIS unit(s), when requested

3.1 Verify that the AIS provider has established and implemented a system for exchanging aeronautical data and aeronautical information with other AIS unit.

3.2 Review the NOTAMs ,AIP including AIP amendments ,AIP supplements ,AIC ,Pre-flight information bulletins , checklist & valid NOTAM

3.3 Verify the AIS distribution list

3.4 Check there is a designated office to which all elements of the Integrated Aeronautical Information Package originated by other States are addressed.

3.5 Verify referring the distribution list, how frequent the package is distributed as per ICAO standards to all concerned.

4 Ensuring mechanism for effective development of job descriptions.

4.1 Review and verify that the AIS provider has developed job descriptions for its AIS

4.2 Review and verify that the job description has Job title, job process and job process owner

4.3 Check that it contains minimum qualification, experience, required training and professional training

4.4 Check that major and specific duties are clearly stated

4.5 Review and verify that the terms of reference is developed properly

4.6 Review and verify that the scope is clearly defined

4.7 Check that major duties are indicated

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5. Ensuring mechanism for effective development of a training programme and record keepings

- 5.1 Verify that AIS service providers developed a training programme for its staff
- 5.2 Review mechanism established to ensure effective implementation.
- 5.3 Ensure that the training program has the types (Initial, Recurrent, Advanced, Specialized Refresher and OJT) trainings with duration and priority of training.
- 5.4 Ensure that the training program is approved by ANRD.
- 5.5 Review and verify that the AIS provider has developed and implemented a procedure to keep the training record of its staff
- 5.6 Ensure that the availability of the certificate in hard copy or soft copy
- 5.7 Verify that training records are maintained properly by confirming:-
 - Certificate awarded
 - Training provided
 - Duration of the training and
 - Name of the institute of the training
 - it is more appropriate for training plan

6 Ensuring mechanism for publishing of AIP

- 6.1 Verify that the AIP Ethiopia is in three parts
- 6.2 Review and verify that its parts, sections and subsections properly indicated
- 6.3 Review and verify the quality verification process in place prior to publication
- 6.4 verify the amendment process of AIP Ethiopia before distribution (Procedure for amendment-ECAA/AIS/OP/001,4.2)
- 6.5 Verify the effective implementation of the check and balance system

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6.6 Check the paper quality as per the standard specifications stated in the Annex 15

7. Ensuring mechanism for Aeronautical Information Regulation and Control (AIRAC) system

7.1 Verify that the Aeronautical Information Regulation and Control (AIRAC) system is used to notify the establishment, withdrawal and premeditated significant changes of circumstances listed in accordance with Chapter 6 and Appendix 4 Part 2 of Annex 15

7.2 Confirm that information concerning the circumstances listed in Appendix 4, Part 1, shall be distributed under the regulated system (AIRAC), i.e. basing establishment, withdrawal or significant changes upon a series of common effective dates at intervals of 28 days,

7.3 Verify that when information has not been submitted by the AIRAC date, a NIL notification shall be originated and distributed by NOTAM.

7.4 Verify that implementation dates other than AIRAC effective dates shall not be used for pre-planned operationally significant changes requiring cartographic work and/or for updating of navigation databases.

7.5 Verify that the establishment and withdrawal of, and premeditated significant changes to

- Position, height and lighting of navigational obstacles.
- Hours of service of aerodromes, facilities and services.
- Customs, immigration and health services.
- Temporary danger prohibited and restricted areas and navigational hazards, military exercises and mass movements of aircraft.
- Temporary areas or routes or portions thereof where the possibility of interception exists.

7.6 Verify that the information provided under the AIRAC system distributed at least 42 days in advance of the effective date

- Review AIRAC AIP amendment or supplement
- Ensure the compliance with Annex 15 requirements

8. Ensuring mechanism for aeronautical data quality requirement related to publication resolution and data integrity

8.1 Ensure that aeronautical data quality requirements related to publication resolution and data integrity is in accordance with the provisions of Annex 15,

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8.2 Verify that an aeronautical information service provider established verification and validation procedures to verify the receipt of aeronautical data, aeronautical information and quality requirements (accuracy, resolution, integrity and traceability) are met.

8.3 Review and Verify Aeronautical data publication resolution and integrity classification of:

- Latitude and longitude
- Elevation/altitude/height
- Declination and magnetic variation
- Bearing
- Length/distance/dimension

8.4 Ensure that the order of publication resolution of aeronautical data are as per in Appendix 7 of Annex 15.

8.5 Review and verify that procedure for data quality requirement developed by AISP.

9. Ensuring mechanism for Technical library

9.1 Check the availability of Annexes and documents in the AIS provider.

9.2 Review the Working Procedure established for the management of the technical library

9.3 Verify the availability of ICAO distribution log book in the technical library

9.4 Verify the effectiveness of the system in place to determine currency of documents.

9.5 Verify that the availability the updated soft and hard copies of Annexes, Documents and circulars.

10. Ensuring mechanism for Origination of a NOTAM

10.1 Verify that a NOTAM is originated and issued promptly whenever the information is of:-

- a temporary nature and of short duration or
- when operationally significant permanent changes, or
- Temporary changes of long duration are made at short notice.

10.2 Verify that a NOTAM is originated and issued when :

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- Establishment, closure or significant changes in operation of aerodrome(s)/heliport(s) or runways;
- Establishment, withdrawal and significant changes in operation of aeronautical services (AGA, AIS, ATS, CNS, MET, SAR, etc.);
- Establishment, withdrawal and significant changes in operational capability of radio navigation and air-ground communication services.
- Establishment, withdrawal or significant changes made to visual aids;
- interruption of or return to operation of major components of aerodrome lighting systems;
- Establishment, withdrawal or significant changes made to procedures for air navigation services;
- Occurrence or correction of major defects or impediments in the manoeuvring area;
- Changes to and limitations on availability of fuel, oil and oxygen;
- Major changes to search and rescue facilities and services available;

10.3 Review and verify that the duration of a NOTAM is remaining in force for more than three months.

10.4 Review and Verify the distribution of a NOTAM

10.5 Verify that a NOTAM is allocated a series identified by a letter and a four-digit number.

10.6 Verify that the location indicators are four-letter code groups assigned by ICAO.

10.7 Verify that a NOTAM format in use is as per ICAO standard.

10.8 Review and Verify that a **NOTAM** deal with only one subject and one condition of that subject.

10.9 Review and verify that all published time is in UTC.

10.10 Review and verify that each NOTAM are as brief as possible and so compiled and its meaning is clear.

10.11 Verify that each NOTAM are transmitted as a single telecommunication message.

11. Ensuring mechanism for the Origination of an Aeronautical Information Circulars (AIC)

11.1 Verify that an AIC is originated to promulgate:

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- A long-term forecast of any major change in legislation, regulations, procedures or facilities;
- Information of a purely explanatory or advisory nature liable to affect flight safety;
- Information or notification of an explanatory or advisory nature concerning technical, legislative or purely administrative matters.

11.2 Verify that the AIC includes:

- Forecasts of important changes in the air navigation procedures, services and facilities provided;
- Forecasts of implementation of new navigation systems;
- Significant information arising from aircraft accident/incident investigation which has a bearing on flight safety;
- Information on regulations relating to the safeguarding of international civil aviation against acts of unlawful interference;
- Advice on medical matters of special interest to pilots;
- Warnings to pilots concerning the avoidance of physical hazards;
- Effect of certain weather phenomena on aircraft operations;
- Information on new hazards affecting aircraft handling techniques;
- Regulations relating to the carriage of restricted articles by air;
- Reference to the requirements of, and publication of changes in, national legislation;
- Aircrew licensing arrangements;
- Training of aviation personnel;

11.3 Verify that a serial number which is consecutive and based on the calendar year is allocated to each AIC.

11.4 Verify that a checklist of AIC currently in force and issued at least once a year

12 Ensuring mechanism for the Origination of pre-flight and post-flight information

12.1 Verify that Aeronautical information provided for pre-flight planning purposes include:-

- Elements of the Integrated Aeronautical Information Package;
- Maps and charts

12.2 Verify that additional current information relating to the aerodrome of departure is provided concerning the following:

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- construction or maintenance work on or immediately adjacent to the manoeuvring area
- presence and depth of snow, ice or water on runways and taxiways, including their effect on surface friction;
- snow drifted or piled on or adjacent to runways or taxiways;
- parked aircraft or other objects on or immediately adjacent to taxiways;
- presence of other temporary hazards;
- presence of birds constituting a potential hazard to aircraft operations;

12.3 Verify that Post-flight information arrangements are made to receive at aerodromes/heliports information concerning the state and operation of air navigation facilities or services noted by aircrews.

12.4 Verify that arrangements are made to receive at aerodromes/heliports information concerning the presence of birds observed by aircrews.

13 Ensuring mechanism for telecommunication requirements

13.1 Verify that International NOTAM offices are connected to the aeronautical fixed service (AFS).

13.2 Verify that the connections are provided for printing communications.

13.3 Verify that each international NOTAM office is connected, through the AFS, to the following points within the territory for which it provides service:-

- area control centres and flight information centres;
- aerodromes/heliports at which an information service is established

14 Ensuring mechanism for Common reference systems for air navigation

14.1 Verify that for Horizontal reference system World Geodetic System — 1984 (WGS-84) is used for published aeronautical geographical coordinates (indicating latitude and longitude) and expressed in terms of the WGS-84 geodetic reference datum.

14.2 Verify that for Vertical reference system Mean sea level (MSL) datum, which gives the relationship of gravity-related height (elevation) to a surface known as the geoid, shall be used

14.3 Verify that for Temporal reference system the Gregorian calendar and Coordinated Universal Time (UTC) are used as temporal reference system for international air navigation.

14.4 Verify that an ICAO abbreviation is used in the AIS whenever they are appropriate and their use facilitates distribution of aeronautical data and aeronautical information.

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PART -3 MET ensuring mechanism

Evaluating over Aviation - MET Service ICAO PQ

1. Ensuring mechanism for the establishment of an Agreement between Air Traffic Service (ATS) and MET for the provision of Meteorological (MET) service:

1.1 Verify an agreement signed between the two entities;

1.2 Review and verify whether the agreement includes:

1.2.1 The provision of the necessary meteorological information to individual Air Traffic Service (ATS) units (Control tower, Approach and Area Control) from the meteorological offices and relevant meteorological stations at aerodromes.

1.2.2 The provision in ATS units of displays related to integrated automatic system;

1.2.3 The provisions for the use of displays/ instruments by ATS personnel;

1.2.4 Calibration and maintenance of the displays/instruments of MET equipment available for use by ATS units;

1.2.5 The frequency of calibration and maintenance of the displays/instruments of MET equipment available for use to by ATS units;

1.2.6 The type of meteorological information to be supplied to ATS units such as:

- MET Report, METAR and Special weather reports;
- MET Aerodrome forecast, landing forecast;

1.2.7 The frequency of issuance meteorological information; Verify that Meteorological information are obtained from aircraft taking – off or landing;

1.3 Verify the establishment of fast and reliable communications in order to effect coordination in the most efficient manner;

1.4 Review and verify that the format for supplying meteorological information to individual ATS Units as per standard.

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2. Ensuring mechanism for establishment of a properly organized quality system for providing the MET service

- 2.1 Verify the establishment of an organized quality system document;
- 2.2 Review and verify that the documented evidence for the established quality management system comprise:
 - a) Procedures,
 - b) Processes and
 - c) Resources
- 2.3 Review and verify whether the quality system includes verification and validation procedures and resources for monitoring adherence to the prescribed transmission schedules for individual messages and/or bulletins required to be exchanged, and the times of their filing for transmission;
- 2.4 Review and verify that the established quality system is certified by an approved organization;
- 2.5 Review and verify that the meteorological information supplied complies with the stated requirements in terms of:
 - a) Format and content,
 - b) Time and frequency of issuance and period of validity, and
 - c) The accuracy of measurements, observations and forecasts.

3. The mechanism for effective implementation of wind sensor for local routine reports

- 3.1 Verify the wind sensors` site physical location is appropriate;
- 3.2 Review and verify that the location of wind sensors and its site be included in AIP GEN 3.5.3;
- 3.3 Review and verify that the surface wind observation reports for arriving aircraft be representative of touch downzone;
- 3.4 Review and verify that the surface wind observation reports for departing aircraft be representative of condition along the runway;
- 3.5 Verify and confirms that the wether meteorological information displayed in the meteorological station and in the air traffic services units are from the same sensors,

4. Ensuring mechanism for issuance of SIGMET message and occurrence

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of weather phenomena.

- 4.1 Verify the establishment of meteorological watch office;
- 4.2 Verify the issuance of SIGMET information by a meteorological watch office;
- 4.3 Review most recent SIGMET message issued;
- 4.4 Review and verify that staff instruction cover the issuance of SIGMET message for the volcanic ash; and verify if tropical cyclone applicable.

5. Ensuring mechanism for provision related to special air reports, including that volcanic ash with respect to relevant MET offices.

- 5.1 Verify the existence staff instruction at the air traffic service and MET units regulating the issuance of special air port;
- 5.2 Review specific case of volcanic ash covered; and
- 5.3 Verifies, the air traffic services units relay routine and special air-reports by data link communications, if applicable without delay to their associated meteorological watch office.

6. Ensuring mechanism for issuing wind shear warning by MET office for aerodrome where wind shear warning is considered as a safety factor.

- 6.1 Verify the issuance of wind shear warning;
- 6.2 Verify the existence of staff instruction concerning the issuance of wind shear;
- 6.3 Verify wind shear warnings gives concise information on the observed or expected existence wind shear warnings.

7. Ensuring mechanism that the MET, in coordination with ATS, has established criteria for special observation.

- 7.1 Review and verify that the established criteria requires:

- 7.1.1 The change of mean surface wind direction by 60E or more from that given in the latest report,
- 7.1.2 The mean surface wind speed before and/or after the change being 10 kt or more;
- 7.1.3 The visibility is deteriorating and passes through one or more of the following values: 800, 1 500 or 3 000 m; and

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7.1.4 The onset, cessation or change in intensity of any of the following weather phenomena or combinations thereof occurs:

- freezing precipitation
- Moderate or heavy precipitation (including showers thereof)
- Thunderstorm (with precipitation)
- dust storm
- Sandstorm;

7.1.5 The onset or cessation of any of the following weather phenomena or combinations thereof occurs:

- ice crystals
- freezing fog
- Low drifting dust, sand or snow
- blowing dust, sand or snow
- Thunderstorm (without precipitation)
- squall
- funnel cloud (tornado or waterspout);

7.1.6 The height of the base of the lowest cloud layer of BKN or OVC extent is lifting and changes to, values: 100, 200 , 500 or 1 000 ft ;

7.1.7 T he sky is obscured and the vertical visibility is improving and changes to, values: 100, 200, 500 or 1 000 ft.; and

7.2 Review the most recent local routine and special reports.

8 The ensuring mechanism for issuing the:

1. Local routine report and local special report
2. METAR and SPECI
3. TAF
4. SIGMET and AIRMET and
5. Aerodrome warning and wind shear warning reports,

8.1 Review and verify that reports are issued in accordance with the format contained in Annex3:

- Check the use of
 - A3-1 Template for local routine report and local special report
 - A3-2 Template for METAR and SPECI
 - A5-1 Template for TAF

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- A6-1 Template for SIGMET and AIRMET messages and
- A6-2 & A6-3 Templates for Aerodrome warning and wind shear warning respectively;
- Check and verify that communication facilities are available for the exchange of operational meteorological information, for the exchange of non-time critical operational meteorological information.

	Company Name የኢትዮጵያ ሲቪል አቪዬሽን ባለሥልጣን ETHIOPIAN CIVIL AVIATION AUTHORITY	Document No. ECAA/ANR/EM/013	
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PART -4 CNS ensuring mechanism

NAVGATIONAL AID FLIGHT INSPECTION ENSURING MECHANISM

1. FLIGHT INSPECTOR TRAINING PROGRAMME AND RECORD

- 1.1 Verify that the training program is established and clearly defined.
- 1.2 Review and verify that the training program contains the duration and the type of each training which includes the following: -
 - Initial
 - Recurrent
 - Specialized
 - Refresher and OJT trainings
- 1.3 Verify that the training program and plan are submitted to ANRD and approved for implementation.
- 1.4 Check that the appropriate certificate is provided after the successful completion of each training
- 1.5 Check that training records, including OJT are properly kept.

2. FLIGHT INSPECTOR JOB DESCRIPTION

- 2.1 Verify that job description is made available for Flight inspector technical staff.
- 2.2 Verify that the job description has Job title, Job process and Job process owner
- 2.3 Make sure that the job description has contained minimum qualification, experience, required trainings and Professional trainings
- 2.4 Check major and specific duties are clearly stated in the job description.

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2.5 Make sure that responsibilities, functions, accountabilities and authorities are clearly defined

3. FLIGHT INSPECTION

- 3.1 Review and verify that CNS service provider has flight inspection plan for navigation aids equipment that require flight inspections.
- 3.2 Conform through verification of evidences that CNS service provider conduct Periodic checks according to the plan.
- 3.3 Review evidence and conform that the CNS service provider prepares a report within 14 days after completion of the flight inspection.
- 3.4 Review and verify the availability of the latest flight calibration of Navigational Aid equipment report.

4. EQUIPMENT TO BE CHECKED DURING FLIGHT INSPECTION

4.1 VERY HIGH FREQUENCY OMNIDIRECTIONAL RADIO RANGE (VOR)

4.1.1 Review and Verify that the following Flight tests performance parameters of VOR are maintained all the time.

- A. Identification Coding Check: -check the correctness and clarity to ensure that there is no adverse effect on VOR course structure.
- B. Modulation Levels Check: -confirm that modulation levels of 30 Hz AM, 9960 KHz Sub-carrier and the 30Hz FM (deviation ratio of 9960 KHz sub-carrier) are set properly.
- C. Orbit Checks:-

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- Check the evaluation error in azimuth alignment , the roughness and scalloping of sectors and the signal strength over the orbit,
- Check the accuracy and overall alignment error distribution of the Radials over 360 degrees.

D. Radial Checks:-

- Check that the quality of course signals is satisfactory. Course bends, roughness, Scalloping (all combined together) should be within tolerance limits.
- Minimum 8 radials with at least one radial in each quadrant including PDRs are checked during commissioning. During Routine inspections, only PDRs are checked.

E. Polarization Check:-confirm, that no adverse effect will be encountered, while flying on course due to undesired vertical polarization component. The desired polarization of VOR is **HORIZONTAL**.

F. Coverage Check:-confirm that VOR provides coverage to the defined service volume even when operating on Standby Power Supply.

G. Bearing Monitor alarm check:-confirm that the deviation is within the tolerance limits.
Tolerance: Bearing Monitor: $\pm 1.0^\circ$

4.1.2 Verify that the parameter to be inspected fulfills during orbit procedure done.

4.1.3 Verify that the parameter to be inspected fulfills during Radial procedure done.

4.1.4 Conform Periodic checks are typically made within CVOR 240+ 30 days and DVOR 720+ 60 days.

4.2 DISTANCE MEASURING EQUIPMENT (DME)

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4.2.1 Review and verify that the following Flight test performance parameters of DME are maintained all the time.

- a. Identification: - A DME associated with an ILS localizer or VOR is checked for correct synchronization of the two identification signals. 1 350 pulse pairs during key down period's proper Morse code sequence.
- b. Distance Accuracy: The indicated Slant range distance must be within the limits.
- c. Coverage:- The area of coverage of the DME will be at least that of its associated facility (VOR & ILS)
- d. Signal Strength (AGC):- The signal strength must be at least -82 dBm throughout the area of coverage.
- e. Squatter Rate:- The normal squatter rate should be 2700 ± 90 pps. On certain type Facilities, rates as low as 700 pps are normal.
- f. False replies:- No false replies should be present which could result in false locks ones With in the area of coverage. This may occur at any location especially in the presence of vertical nulls.

4.2.2 Verify guidance on flight testing requirements applicable to the standard distance measuring equipment (DME), as specified in Annex 10, Volume I, 3.5.

4.2.3 Conform Periodic checks are made as per the associated facility.

4.3 INSTRUMENT LANDING SYSTEM (ILS)

4.3.1 Localizer flight Inspections

Review and verify that the following Flight test performance parameters of ILS LLZ are maintained all the time.

- a. Identification coding check: - Ident should have no effect on Cross Pointer. Ident level is adjusted to 10% Modulation.
- b. Mod-Balance and Mod-Depth:-confirm that mod balance and mod depth are set properly. On centre line of LLZ the DDM should be zero and Mod sum should be 40%.

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- c. Course width and Clearance check: - Ensure Course Width is satisfactory; check off-course clearance (in the sector 10°-35° either side of C/L)
- d. Course Structure, Course Alignment and Fly ability Check
- e. Check the alignment of electronic centre line with the physical Runway centre line. Check that the quality of course signals is satisfactory. Course bends, Roughness, scalloping (all combined together) should be within tolerance limits of the applicable category

Fly ability is checked to ensure it is satisfactory that an aircraft following The ILS can fly smoothly "manually" as well as on its "auto pilot".
- f. Conform High angle clearance be investigated during
 - 1. Initial Commissioning
 - 2. Change in location of Antenna
 - 3. Change in height of Antenna
 - 4. Installation of a different type of Antenna
- g. Alignment Monitor Alarm checks: -Monitor alarm limits are cross-checked. Calibration aircraft detects the deviation to confirm that the deviation is within the tolerance limits.
- h. Width Monitor Alarm check:-Width wide and Narrow Alarm Check ensures that even during width wide condition, clearance current does not reduce below the minimum. In this check *off*- Course Clearance must not fall below 160 micro Amps in the Zone ± 10° & 135 micro Amps in the Zone +10° to + 35°.
- i. Coverage and Power Monitor Alarm Check: -confirm that Localizer provides coverage to the defined service volume even when operating at Half Power (Monitor Alarm).
- j. Polarization Check: -confirm that no adverse effect will be encountered while flying on LLZ course due to undesired vertical polarization component. The desired polarization of LLZ is Horizontal
- k. Course width Symmetry check: - confirm that course width an either side of centre line is SYMMETRICAL within prescribed limit.
- Conform Periodic checks are made within 210+ 30 days.

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4.3.2 GLIDE PATH FLIGHT INSPECTIONS

Review and Verify that the following Flight tests performance parameters of ILS GP is maintained all the time.

- a. Antenna NULL check: -confirm and correct (if required) the height of G/P Antenna elements above ground. This check is performed during commissioning or after major maintenance of antenna.
- b. Phasing check: -Check the established correct quadrature phase relationship between CSB and SBO signals exists.
- c. Glide Angle and Sector Width check: -check the determined Glide angle and a sector width.
- d. Glide Angle & Path Structure check: -check the determined computed (actual) Glide Angle. Confirm that the G.P. bends; roughness and scalloping are within tolerance.
- e. Monitor Checks: -confirm that the Angle Alarm is adequately sensitive to detect a change of Glide Angle.
- f. Azimuth Coverage:- Confirm that usable signal is available in the $\pm 8^\circ$ azimuth zone (With the extended centre line as the reference). This check is carried out only during commissioning *or* after major maintenance of the antenna.
- g. Generation of Flight Check Reports:-check the final flight inspection report is prepared after return to the base and is generally sent ANRD within 14 days. The data collected during Flight inspection is archived in records along with the report.
- Conform Periodic checks are typically made within 210 + 30 days.

4.4 Non-Directional Beacon (NDB)

Review and verify that the following Flight test performance parameters of NDB are maintained all the time.

- a. Coverage: - Check Minimum coverage for the various classes of facilities.

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- b. AGC:-Check receiver AGC be the equivalent to at least 70 $\mu\text{v}/\text{m}$ (or 120 $\mu\text{v}/\text{meter}$ between 30 degrees North and 30 degrees South latitude) $\pm 20\%$ throughout the area of coverage.
- c. Identification:-Check the identification code is clear and correct throughout the area of coverage. If voice is installed, it is readable to at least two thirds of the rated usable distance.
- d. Enroute:-Check Needle oscillations not exceed ± 10 degrees to the maximum usable distance published for the facility.
- e. Approach and Holding: -Check Needle oscillations not exceed ± 5 degree throughout the approach or holding procedure.
- f. Conform Periodic checks are made within 240+ 30 days.

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PART -5 PANS-OPS and Cartography Ensuring Mechanism
PART- I- Ensuring mechanism for PANS –OPS

1. PANS-OPS TRAINING PROGRAMME AND RECORD

- 1.1 Ensure that the training program is established and clearly defined.
- 1.2 Verify that the training program contains the duration and the type of each training which includes the following: -
 - Initial
 - Recurrent
 - Specialized
 - Refresher and OJT trainings
- 1.3 Verify that the training program and plan are submitted to ANRD and approved for implementation.
- 1.4 Check that the appropriate certificate is provided after the successful completion of each training.
- 1.5 Check that training records, including OJT are properly retained.

2. PANS-OPS JOB DESCRIPTION

- 2.1 Verify that job description is made available for PANS-OPS technical staff.
- 2.2 Verify that the job description has Job title, Job process and Job process owner
- 2.3 Make sure that the job description has contained minimum qualification, experience and required trainings.
- 2.4 Check major and specific duties are clearly stated in the job description.

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2.5 Make sure that responsibilities, functions, accountabilities and authorities are clearly defined.

3. Designing of Standard Arrival Route (STAR) and Standard Departure Procedure (SID)

3.1. The STAR and SID procedures shall be developed as per the criteria stated in ECAA/ANR/AC/005 -3.4.2 which refers about the Performance Based Navigation (PBN).

- Verify that the appropriate Navigation Specification selected in accordance with communication, navigation and surveillance requirement. Ensure also that the navigation specification that can be selected for the design of STAR and SID includes the following as applicable :-

- RNP 1 - for non surveillance environment
- RNAV 1 - for surveillance environment
- RNAV 2 - for surveillance environment
- RNAV 5 *may be used for initial parts of STARs outside 30 NM from the*

ARP

- Review and verify that Primary and secondary protection areas are drawn based on the selected navigation specification and the calculation of half area width.
- Review and verify that the calculation of parameters to determine protection for turning areas are carried out.

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- Verify that critical obstacles identified and appropriate MOC is applied for each segment.
- Verify that appropriate methods for merging protection area with in 15 and 30NM from ARP Applied.
- Check that Minimum obstacle clearance (MOCA) for each segment is applied
- Verify that the appropriate descent gradient for STAR and climb gradient for SID are applied.
- Verify that appropriate Procedural altitude applied, if applicable, to address CFIT, ATS or environmental requirements.

3.2 The STAR and SID procedures shall be developed as per the criteria stated in ECAA/ANR/AC/005 -3.4.2 which refers about the STAR and SID procedures based on Conventional NAVAIDS (VOR/DME, NDB etc),

- Review and verify that Primary and secondary protection areas are drawn based on the selected VOR or NDB criteria.
- Review and verify that the calculation of parameters to determine protection for turning areas is carried out.
- Verify that critical obstacle is identified and appropriate MOC is applied for each segment.
- Verify Minimum obstacle clearance altitude (MOCA) for each segment is applied
- Verify that the appropriate descent gradient for STAR and climb gradient for SID are applied.
- Verify that appropriate Procedural altitude applied, if applicable, to address CFIT or ATS or environmental requirements

	Company Name የኢትዮጵያ ሲቪል አቪዬሽን ባለሥልጣን ETHIOPIAN CIVIL AVIATION AUTHORITY	Document No. ECAA/ANR/EM/013	
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4. Designing of approach procedures

4.1 Non-precision approach procedures based on performance based navigation criteria

Non- precision approach procedures shall be developed as per the criteria stated in ECAA/ANR/AC/005 -3.4.3 which refers about the approach procedure based on Performance Based Navigation (PBN)

- Ensure that the appropriate Navigation Specification is selected in accordance with communication, navigation and surveillance requirement.

Note also that the navigation specification that can be selected for the design of initial approach segment , intermediate ,final and missed approach segments of the approach procedures includes the following :-

- **RNP 1** - for non surveillance environment that can be used for initial approach segment, intermediate segment and missed approach segments of the approach procedures.
- **RNAV 1** - for surveillance environment that can be used for initial approach segment, intermediate, final and missed approach segments of the approach procedures
- **RNP APCH** - used for the entire approach procedure segment that includes the following four approach segments:-

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- Initial approach segment = 1 NM
- Intermediate approach segment = 1 NM
- Final approach segment = 0.3 NM
- Missed approach segment = 1 NM

- Review and verify that Calculation of parameters to determine protection for turning areas are carried out.
- Review and verify that Primary and secondary protection area for each segments are drawn based on the calculation of half area width.
- Verify that critical obstacles are identified and appropriate MOC is applied
- Check that minimum obstacle clearance (MOCA) is determined and dissent gradient established for each segment of the approach procedures.
- Verify that appropriate Procedural altitude applied to address CFIT or ATS or environmental requirements.
- Ensure that OCA/H is determined in accordance with BAROVNAV – LNAV/VNAV criteria and published on AIP that includes for visual circling approach for the applicable category of aircraft. During insuring the determination of OCA/H verify that :-
 - BARVNAV protection area in the final segment of the approach procedure is appropriately drawn.
 - Obstacles are assessed against the height of the BAROVNAV surfaces to determine the critical obstacles that penetrates

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BAROVNAV surface.

- During the assessment of the obstacles insure also that the principles of the secondary area are applied at the side surfaces of the primary area.
- Appropriate MOC is applied for critical obstacles penetrating the height of the BAROVNAV surfaces or obstacles on the side surfaces of the primary area to determine the OCA/H.
- Note that the minimum obstacle clearance that is applied in the primary area for BAROVNAV approach is the appropriate height loss margin and reducing linearly to the outer edge of the secondary area to zero.

4.2 Non- precision approach procedures based on Conventional NAVAIDS (VOR/DME, NDB)

Non- precision approach procedures shall be developed as per the criteria stated in ECAA/ANR/AC/005 -3.4.3 which refers about the approach procedure based on conventional NAVAIDS (VOR/DME, NDB)

- Review and verify that calculation of parameters to determine protection for turning areas are carried
- Review and verify that Primary and secondary protection area for each segments are drawn in accordance with VOR and NDB criteria.
- Verify that Critical obstacles are identified and appropriate MOC is applied for each segment.

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- Check that minimum obstacle clearance (MOCA) is determined and dissent gradient established for each segment including the missed approach gradient.
- Verify that appropriate Procedural altitude applied, if applicable, to address CFIT ,ATS or environmental requirements
- Ensure that OCA/H is determined and published on AIP that includes for visual circling approach for the applicable category of aircraft.

During insuring the determination of OCA/H for VOR/DME or NDB approaches verify also that:-

- Primary and secondary protection area is drawn based on VOR or NDB facilities for the final approach segment.
- All Obstacles are assessed and critical obstacle is identified
- Appropriate MOC is applied to the critical obstacles to determine the OCA/H.

Note that the minimum obstacle clearance (MOC) that is applied in the primary area for non –precision approach is 75m and reducing linearly to the outer edge of the secondary area to zero.

4.3 Precision approach procedures based on ILS procedure design criteria.

Precision approach procedures shall be developed as per the criteria stated in ECAA/ANR/AC/005 -3.4.3 which refers about ILS procedure design.

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- Ensure that if the ILS procedure is connected to PBN procedures, the appropriate Navigation Specification is selected in accordance with communication, navigation and surveillance requirement. Ensure that the navigation specification selected for the PBN part of the ILS procedure complies with the navigation specification specified above on No 4.1.
 - Review and verify that calculation of parameters to determine protection for turning areas are carried out
 - Review and verify that Primary and secondary protection area for each segments are drawn.
 - Verify that critical obstacles are identified and appropriate MOC are applied for each segment before the start of precision approach segment.
 - Check that minimum obstacle clearance altitude (MOCA) is determined and dissent gradient established for each segment including the missed approach gradient.
 - Verify that appropriate procedural altitude applied, if applicable, to address CFIT or ATS or environmental requirements.
 - Review and verify that basic ILS surfaces and /or OAS surfaces are drawn and the ILS surfaces are merged with intermediate segments.
 - Verify that critical obstacles assessed by applying basic ILS surfaces or *OAS ILS surfaces* or CRM method.
 - Verify that the OCA/H are calculated by adding the appropriate height loss margin to the critical obstacles which penetrates the ILS surfaces and determined by the following methods:-

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- Basic ILS surface
- *OAS ILS surfaces* or
- CRM method as applicable:
- Review and verify that OCA/H are Published on AIP that includes for visual circling approach for the applicable category of aircraft.

4.4 Construction of holding areas:-

Holding procedures shall be developed as per the holding criteria stated in ECAA/ANR/AC/005 -3.4.2 which refers about ILS procedure design

- Ensure that the applicable facility fix tolerance area are used
- Review and verify that that calculations associated with the construction of basic holding areas are carried out and the basic holding area is drawn
- Review and verify that that omnidirectional entry area to accommodate the specified entry procedures are drawn to the basic area based on the facility fix tolerance.
- Check that the buffer area are included to create the overall holding area ,
- Review and verify that that obstacles are assessed and critical obstacles identified and appropriate MOC and vegetation applied to the critical obstacles to determine the Minimum holding altitude.
- Review and verify that that the holding pattern is published on the approach procedure or on the STAR, as applicable.

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5. Documentation of flight procedure

The service provider responsible for the provision of PANS-OPS is required to retain all procedure design documentation of flight procedure so as to allow any data anomalies or errors found during the production, maintenance or operational use of the procedure to be corrected as per the criteria stated in ECAA/ANR/AC/005 -3.4.6

5.1 Verify that the service provider responsible for the provision of PANS-OPS has retained all flight procedure design documentation.

5.2 Review and verify that that the documentation includes the following phases of flight:-

- STAR
- SID
- Holding pattern
- Non precision approach procedures including visual circling area.
- Precision approach procedures including visual circling area.

Note also that the detail content of the procedure design documentation for the above mentioned phases of flight (STAR, SID ,holding pattern and approach procedures) also includes:-

- All the calculations,
- Navigation specification used in the case of PBN procedures
- The drawing of the protection areas for each phases of flight including holding pattern and visual circling area.
- The critical obstacles and applied MOC.

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- MOCA, procedural altitude and other relevant factors that are considered in the flight procedure design process.
- Additional documentation, as applicable, established to facilitate ground and flight validation of the procedures.

6. Ground and flight validation of instrument flight procedures

6.1 Ground validation

- Verify that Ground validation has been carried out to review the entire instrument flight procedure for each instrument procedures.
- Verify that ground validation is carried out by a person trained in procedure design and with appropriate knowledge of flight validation issues.
- Review and verify that Issues identified in the ground validation are addressed prior to any flight validation.

6.2 Flight validation-

Review and verify that Flight validation of instrument flight procedures met the following objectives

- a) Adequate obstacle clearance has been provided;
- b) The navigation data to be published, as well as that used in the design of the procedure, is correct;
- c) The required infrastructure, such as runway markings, lighting, and Communications and navigation sources are in place and operative;
- d) Fly ability checked and the procedure can be safely flown; and

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e) The charting, required infrastructure, visibility and other operational factors evaluated.

7. Aerodrome operating minima

7.1 Verify that the OCA/H is established based on the criteria specified in No 4.1,4.2 and 4.3 above and published in the AIP by Air Space Management.

7.2 Review and verify that in Coordination with Air Operators Certification and Surveillance Directorate that the operator established Aerodrome operating minima as per the requirement in ECARAS or based on the guidance materials or procedures disseminated by the directorate.

PART- II- Ensuring mechanism for aeronautical cartography

1. Aeronautical cartography training program and record

1.1 Ensure that the training program is established and clearly defined.

1.2 Verify that the training program contains the duration and the type of each training that includes the following: -

- Initial
- Recurrent
- Specialized
- Refresher and OJT trainings

1.3 Verify that the training program and plan are submitted to ANRD and approved for implementation.

1.4 Check that the appropriate certificate is provided after the successful completion of each training

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1.5 Verify that training records, including OJT are properly kept for inspection by ANRD.

2 Aeronautical cartography job description

- 2.1** Verify that job description is made available for cartographic technical staff.
- 2.2** Verify that the job description has Job title, Job process and Job process owner
- 2.3** Make sure that the job description has contained minimum qualification, experience , required trainings and Professional trainings
- 2.4** Check that major and specific duties are clearly stated in the job description.
- 2.5** Make sure that responsibilities, functions, accountabilities and authorities are clearly defined.
- 2.6** Verify minimum qualification and experience is met by cartographic staff before assigned to the task.

3. Production and making available aeronautical charts to users

- 3.1 Ensure how the Air space management has made available aeronautical charts by verifying whether :-
 - a) the Air Space Management is producing the chart or sheet itself; or
 - b) Arranging for its production by another Contracting State or by an agency; or
 - c) Providing another Contracting State prepared to accept an obligation to produce the chart or sheet with the data necessary for its production.

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If chart production is arranged with agencies ensure that a document is developed that clearly defines each entity's duties and responsibilities in order to avoid conflict or overlapping of responsibilities. .

3.2 Verify that the airspace management has made prompt availability of the aeronautical charts to States, organizations or individuals.

3.3 Check that availability of distribution list that indicates the type and number of charts distributed and the name and address of state or company to which the chart is dispatched.

3.4 Review and verify that that aeronautical charts which are made available by the Air Space Management are published in the AIP or AIP Supplement as applicable and includes the following aeronautical charts:-

1. Aerodrome Obstacle Chart – CAO Type A
2. En-route Chart – ICAO
3. Area Chart – ICAO or, alternatively, Standard Departure Chart – Instrument (SID) – ICAO and Standard Arrival Chart – Instrument (STAR) – ICAO
4. Instrument Approach Chart – ICAO
5. Visual Approach Chart – ICAO
6. Aerodrome/ Heliport Chart – ICAO
7. Aerodrome Ground Movement Chart – ICAO
8. Aircraft Parking/Docking Chart – ICAO
9. World Aeronautical Chart – ICAO 1: 1 000 000
10. ATC Surveillance Minimum Altitude Chart – ICAO

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3.4.1 Aerodrome Obstacle Charts — ICAO Type A shall be produced as per the criteria stated in ECARS PART-21- chapter-3.

Review the Aerodrome obstacle chart and verify that the following items are included in the chart:-

- The chart Identification,
- Coverage and scale
- Format
- Magnetic variation
- Aeronautical data:-((obstacles, Take-off flight path area etc)

3.4.2 Enroute Chart-ICAO shall be produced as per the criteria stated in ECARS PART-21- chapter-7 and 8.

Review and verify that:-

- Chart Identification
- Culture and topography
- Coverage and scale
- Magnetic variation
- Aeronautical data:- (Aerodromes, Prohibited, restricted and danger areas, Air traffic services system)

3.4.3 Area Char =ICAO shall be produced as per the criteria stated in ECARS PART1- chapter- 8.

Review and verify that the following items are included in the chart :-

- Identification
- Culture and topography
- Coverage and scale
- Magnetic variation
- Aeronautical data:- (Aerodromes, Prohibited, restricted and danger areas, Air traffic services system-minimum obstacle clearance altitudes,)

Instrument Approach Chart – ICAO

3.4.4 Visual Approach chart-ICAO shall be produced as per the criteria stated in ECARS PART-21- chapter- 11.

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Where:

- a) Only limited navigation facilities are available; or
- b) Radio communication facilities are not available; or
- c) No adequate aeronautical charts of the aerodrome and its surroundings at 1:500 000 or greater scales are available;

Review and verify that

- Identification
- Culture and topography
- Coverage and scale
- projection
- Magnetic variation
- Aeronautical data:- (Aerodromes, obstacles ,Prohibited, restricted and danger areas, radio navigation aids)

3.4.5 The Aerodrome Chart — ICAO , - The Aerodrome Ground Movement chart — ICAO and - The Aircraft Parking/ Docking Chart— ICAO shall be produced as per the criteria stated in ECARS PART-21- chapter-13 and 14 and 15 .

Review and verify that the following items are included in the chart :-

- Identification
- Coverage and scale
- Magnetic variation
- Aerodrome data
(Geographical coordinates for aircraft stand, all aprons, with aircraft stands, taxiways with designations,)

Aerodrome Ground Movement Chart – ICAO

Aircraft Parking/Docking Chart – ICAO

3.4.6 - The World Aeronautical Chart — ICAO 1:1 000 000 shall be produced as per the criteria stated in ECARS PART-21- chapter-16.

Review and verify that the following items are included in the chart:-

- Identification
- Culture and topography
- Format and scale
- Magnetic variation

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- Aeronautical data:- (Aerodromes,, obstacles , radio navigation aids, significant air traffic systems-ATS-route etc)

3.4.7 The ATC Surveillance Minimum Altitude Chart — ICAO shall be produced as per the criteria stated in ECARS PART-21- chapter-21.

Review and verify that the following items are included in the chart:-

- Identification
- Culture and topography
- Format and scale
- Magnetic variation
- Aeronautical data:- (Aerodromes, Air traffic systems-radio navigation aids ,transition altitude ,lateral limits of radar minimum altitude ,)