
DEVELOPMENT OF THE MANUAL OF AERONAUTICAL METEOROLOGICAL SERVICE OPERATIONS (MAMSOPS)

1.0 PURPOSE

- 1.1 The purpose of this Advisory Circular is to guide designated Meteorological Service providers in the development of the Manual of Aeronautical Meteorological Service Operations
- 1.2 This advisory Circular supersedes CAA-AC-MET-004D issued in December 2024.

2.0 REFERENCES

- 2.1 The Civil Aviation (Certification of Air Navigation Services Providers) Regulations
- 2.2 The Civil Aviation (Meteorological Service for Air Navigation), Regulations.
- 2.3 ICAO Doc 8896: Manual of Aeronautical Meteorological Practice

3.0 GUIDANCE AND PROCEDURES

3.1 General

- 3.1.1 The Civil Aviation (Meteorological Service for Air Navigation) Regulations requires that Meteorological service provided at aerodromes or portion of the airspace shall be provided in accordance with requirements prescribed by the Authority.
- 3.1.2 In order to implement these requirements, the designated Meteorological Service provider shall be required to develop procedures and processes. These procedures and processes shall be outlined in a Manual of Operations to be approved by the Authority and that shall adequately and appropriately address the procedures and processes to be used in the provision of aeronautical Meteorological Service.
- 3.1.3 This Advisory Circular provides guidelines to the designated Aeronautical Meteorological Service Provider (AMSP) in the preparation of the Manual of Operations that will be approved by the Authority.

3.2 The contents the manual of aeronautical meteorological service operations

3.2.1 Content

- 3.2.1.1 The items that must be included in a Manual of aeronautical meteorological service operations, together with a short description of the type of information to be included for each item, are listed in the following paragraphs.
- 3.2.1.2 An Organizational Chart of the Meteorological Service provider in the Manual of Operations should include:
- (1) A chart or other means of describing the service provider's Organizational Structure;
 - (2) The names and relevant qualifications, experience and positions of the principals (officers) of the organization.
 - (3) A description of the chain of command to be established by the AMSP with a statement of the duties and responsibilities of the supervisory positions within the organization;
 - (4) A statement showing how the designated Service Provider determines the number of operational staff required, including the number of operational supervisory staff.
 - (5) The Job description, duties and responsibilities of all technical personnel
- 3.2.1.3 The content of a Manual of Operations must meet the requirements specified in the Civil Aviation (Meteorological Service for Air Navigation) Regulations.

3.3 Types of Aeronautical Meteorological Service Provided

3.3.1 The Manual of Operations should include:

- 3.3.1.1 A statement setting out the Aeronautical Meteorological service, and the related functions, that the AMSP proposes to perform under the Civil Aviation (Meteorological Service for Air Navigation) Regulations.
- 3.3.1.2 Proposed hours of operations for each service.
- 3.3.1.3 The location within which each service is to be provided.
- 3.3.1.4 The specific location or locations in case of distributed facilities, from which each service is to be provided.
- 3.3.1.5 Whether the proposed service is an Aeronautical Meteorological Service at an Aerodrome Meteorological office, Meteorological Watch office or Aeronautical Meteorological station, the following shall be provided;
- (1) List of instruments used in Aeronautical weather observations.
 - (2) Routine and special Meteorological reports
 - (3) SIGMET information, aerodrome warnings, wind shear warnings and alerts.
 - (4) Forecasts

- (5) Information for Air Traffic Services, Search and Rescue services and Aeronautical Information Services.
- (6) Services for Operators and Flight Crew Members; and
- (7) Aeronautical climatological information.
- (8) Space weather advisory information

3.4 Assessment of Standards

- 3.4.1 It is important that Authority's Compliance Officers make an assessment of the relevance and adequacy of the above standards for each service. In particular, attention shall be given to Organizational Structure and the provision of sufficient operational staff, both at supervisory and functional level, to provide the proposed service.

3.5 Information Necessary for Service Provision

- 3.5.1 The Manual of Operations shall include a description of the arrangements made or proposed to be made by the AMSP to ensure that it has, and will continue to receive, the information necessary for providing each service. This shall include the following;

- 3.5.1.1 The information that is both internally and externally sourced.
- 3.5.1.2 The description should indicate the information requirement, its use in service provision, its source and the means of its transfer, receipt and display.
- 3.5.1.3 The integrity levels of the data should also be defined and be consistent with its operational criticality.

- 3.5.2 Data that is sourced from another approved Meteorological Service Provider, ATS units or Meteorological unit can be considered to be adequate in respect to integrity.

- 3.5.3 Examples of data sources normally required are:

- 3.5.3.1 World area forecasting centres
- 3.5.3.2 NOTAM Offices
- 3.5.3.3 Automatic weather observing systems
- 3.5.3.4 National Meteorological centres
- 3.5.3.5 Air Traffic Services
- 3.5.3.6 Meteorological Watch offices
- 3.5.3.7 Aerodrome Meteorological observatories
- 3.5.3.8 OPMET data banks
- 3.5.3.9 Meteorological Headquarters
- 3.5.3.10 Meteorological warning service
- 3.5.3.11 Local and remote radar data
- 3.5.3.12 Air reports and Aircraft observations
- 3.5.3.13 Meteorological Satellite information
- 3.5.3.14 Information on unmanned free balloons
- 3.5.3.15 Information concerning volcanic activity
- 3.5.3.16 Information concerning tropical cyclones

- 3.5.3.17 Information concerning radioactive material and toxic chemical clouds.
- 3.5.3.18 World and Regional Space Weather Centres.

3.6 Output Data

- 3.6.1 The Manual of Operations shall include a description of the arrangements made or proposed to be made by the AMSP to ensure that it can, and will continue to be able to, provide the information in relation to Aeronautical Meteorological Service to other organisations whose functions reasonably require that information (e.g. other aeronautical meteorological units, Air Operators, ATS units, SAR units and other centres). This information shall;
 - 3.6.1.1 include the information description, requirement, recipient and the means of its transfer; and
 - 3.6.1.2 include the definition and integrity levels of the data and be consistent with the designated AMSP's operational criticality.
- 3.6.2 Examples of data recipients could normally include:
 - 3.6.2.1 Air Operators
 - 3.6.2.2 World Area Forecast Centres (WAFC)
 - 3.6.2.3 ATS units
 - 3.6.2.4 OPMET data banks
 - 3.6.2.5 SAR units
 - 3.6.2.6 Adjacent aeronautical Meteorological service providers
 - 3.6.2.7 Aerodrome administration
 - 3.6.2.8 Other Government Agencies.

3.7 Meteorological Service Provider's Record Keeping System

- 3.7.1 The Manual of Operations shall include the requirement for a Record Keeping system that covers identification, collection, indexing, storage, security, maintenance, access and disposal of records necessary for the provision of Aeronautical Meteorological Service.
- 3.7.2 The Records systems shall provide an accurate chronicle of Aeronautical Meteorological activities for the purpose of reconstruction of events for Air Safety Investigation.
- 3.7.3 The type of records to be kept and period is specified in the Civil Aviation (Meteorological Service for Air Navigation) Regulations.
- 3.7.4 The Authority shall ensure that the AMSP has a system in place that will cover all the Record types required.

3.8 Agreements with Other Organizations

3.8.1 A Manual of Operations shall contain a copy of any Agreement with other bodies entered into by the Meteorological service provider in relation to the provision of any of the Aeronautical Meteorological Service.

3.8.2 The following Agreements will normally be required:

3.8.2.1 Service Provider Agreement

- (1) An Agreement with ATM provider, or a prospective ATM provider, that provides, or is proposing to provide, the ATM facilities required for MET service provision.
- (2) An Agreement with Air Operators.

3.8.2.2 Aerodrome Operator Agreement

- (1) Such an Agreement will be necessary in situations where the AMSP is to provide Aeronautical Meteorological Service at a Controlled Aerodrome.
- (2) Where the facilities necessary for Aeronautical Meteorological Services provision, such as Meteorological Observatory and Aeronautical Meteorological office, are the property of the aerodrome, the use of the facilities by the AMSP shall also be covered by the Agreement.
- (3) The Authority shall not approve AMSP's manual where the AMSP intends to use facilities they don't own unless there is an Agreement with the owner.

3.8.2.3 Agreement with Other Meteorological Service Agencies

- (1) Where the facilities necessary for Aeronautical Meteorological Services provision, such as Meteorological Observatory, Upper Air observation, Satellite and Radar data are managed by a different Meteorological agency, use of such facilities by the AMSP is covered by an Agreement.

3.9 Quality Management System

3.9.1 The Quality Management System (QMS) described in the Manual of Operations and adopted by the AMSP shall comply with the Civil Aviation (Meteorological Service for Air Navigation) Regulations and any other guidelines as may be provided by the Authority. The QMS is an important component of AMSP's operations.

3.9.2 QMS defines the Quality Culture of an organisation through policies, procedures and practices for managing the Quality of Aeronautical Meteorological Service to be provided and managing any changes in the provision of the service.

3.9.3 The QMS shall include the processes proposed for Management Review of its QMS, and the implementation of Corrective Action as necessary.

- 3.9.4 The Authority shall take into account the type of service that is provided by the AMSP in considering the adequacy of the QMS.

3.10 Disseminating Information to Staff

- 3.10.1 The Manual of Operations must contain a description of the procedures and documentation to be adopted and used by the AMSP to provide its Staff with information on:
- 3.10.1.1 The relevant Standards for Service provisions from the Manual of Operations and operational instructions to Staff; and
 - 3.10.1.2 Operational changes that are to be conveyed to Staff.

3.11 AMSP's Training Program

- 3.11.1 The AMSP's Training program should cover all elements in the Manual of Operations and WMO Training requirements.
- 3.11.2 The Manual of Operations must detail the AMSP's Training and Evaluation program and provide assurance that any individual performing any functions in Aeronautical Meteorological Service is competent to perform that function.
- 3.11.3 The training program should also cover the provision of On-Job-Training under the supervision of a qualified and experienced personnel.
- 3.11.4 The training program should include requirements for maintenance of all training records.
- 3.11.5 The training program should include the requirement of development and implementation of a periodic training plan.

3.12 Commissioning of New Facilities, Equipment and Services

- 3.12.1 The Manual of Operations should describe the processes for the installation, commissioning and transition into service phases of new facilities, equipment and services, and provide evidence, arguments and assumptions for acceptance of the operational performance and the Quality of equipment, procedure or service.
- 3.12.2 Quality Assurance must establish that the design objectives in respect to Performance and Safety have been met, or if not met, that appropriate Corrective Actions and/or Risk Mitigation has been implemented.
- 3.12.3 There should be a process for Sign-Off Authorization by authorities responsible for the design, performance, operation and maintenance of the new system, prior to it being commissioned.

3.13 Revising the Manual of Operations

- 3.13.1 The AMSP must include in the Manual of Operations the processes proposed for preparation, authorization and issue of amendments to its Manual.
- 3.13.2 The Manual of Operations must be a controlled document and therefore, the amendment process must similarly be controlled.



Civil Aviation Authority