

**APPENDIX**

**GUIDE**

**TO SUPPORT THE IMPLEMENTATION OF THE  
QUALITY MANAGEMENT SYSTEM IN  
AERONAUTICAL METEOROLOGY SERVICES (MET/QMS)  
IN THE CAR/SAM REGIONS**

Draft

**INTERNATIONAL CIVIL AVIATION ORGANIZATION**

**SOUTH AMERICAN OFFICE**

**GUIDE**

**TO SUPPORT THE IMPLEMENTATION OF THE  
QUALITY MANAGEMENT SYSTEM IN  
AERONAUTICAL METEOROLOGY SERVICES (MET/QMS)  
IN THE CAR/SAM REGIONS**



***DRAFT***

**NOVEMBER 2011**

***INTERNATIONAL CIVIL AVIATION ORGANIZATION***

***SOUTH AMERICAN OFFICE***

***GUIDE***

***TO SUPPORT THE IMPLEMENTATION OF THE***

***QUALITY MANAGEMENT SYSTEM IN***

***AERONAUTICAL METEOROLOGY SERVICES (MET/QMS)***

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**RECORD OF AMENDMENTS AND CORRIGENDA**

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## Explanation of Terms and Expressions

**Corrective action (1):** Action taken to eliminate the cause of an identified non-conformity or other undesired condition.

**Audit (1):** A systematic, independent and documented process for obtaining evidence from the audit and objectively assessing it in order to determine the extent to which audit criteria are met.

**Improvement (2):** An action aimed at eliminating or reducing a condition identified as weak following an assessment process. Corrective and preventive action would fall under this concept.

**Top management (2):** An individual or group of individuals who direct or control an organization at the highest level.

**Benchmarking (2):** A methodology that consists in comparing the processes and products and services provided by an organization with those of recognized leading entities in order to identify quality improvement opportunities.

**Quality (1):** Extent to which a set of inherent characteristics meets the requirements.

**Capacity (1):** The capability of an organization, system or process to generate a product that meets the requirements for such product.

**Customer (1):** An organization or individual receiving a product.

**Competence (1):** Personal attributes and ability shown in the application of knowledge and skills.

**Empowerment (2):** In relation to leadership management, this practice encourages subordinates to take on more responsibilities, which requires prior education, training and information. This practice results in an improvement in organizational performance.

**Document (1):** Information and its support medium.

**Flow chart (2):** Is a depiction of the stages of a process, used for analyzing opportunities for improvements based on a detailed knowledge of the actual operation of a process at a given point in time.

**Efficacy (1):** Extent to which planned activities are carried out and planned results obtained.

**Efficiency (1):** Relationship between outcome and resources used.

**Objective evidence (1):** Data supporting the existence or accuracy of something.

**Quality management (1):** Coordinated activities for directing and controlling an organization in relation to quality.

**Indicator (2):** Data or set of data that help to measure the evolution of a process or activity in an objective manner.

**ISO 9001:2008 (2):** An international standard that specifies quality management requirements, and whose final objective is customer satisfaction. This standard was last updated in 2008, and is applied in more than 140 countries. It is universally used for assessing providers and showing conformity (certification).

**Process mapping (2):** A depiction of the sequence of, and interaction among, the different processes that take place in an organization.

**Quality manual (1):** A document that specifies the quality management system of an organization.

**Process (1):** A set of interrelated or interacting activities that turns input into outcome.

**Procedure (1):** A specified way of carrying out an activity or process.

**Customer satisfaction (1):** Customer perception about the extent to which his/her requirements have been met.

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- (1) Terms selected from the ISO 9000:2005 standard
- (2) Terms selected from the Ibero-American Glossary of Terms

<b>CAR/SAM MET/QMS GUIDE</b>	<b>INTRODUCTION</b>	<b>PART 1</b>
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**INTRODUCTION**

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## 1.1 General

1.1.1 The main purpose of this guide is to provide general guidelines to assist CAR/SAM States in the implementation of Standard 2.2.3 in Annex 3 — *Meteorological service for international air navigation*, whereby from 15 November 2012, each Contracting State shall ensure that the designated meteorological authority establishes and implements a properly organized quality system comprising procedures, processes and resources necessary to provide for the quality management of the meteorological information to be supplied to the users

1.1.2 According to Recommendation 2.2.2 in Annex 3 *the quality system should be in conformity with the International Organization for Standardization (ISO) 9000 series of quality assurance standards and should be certified by an approved organization, noting that the International Organization for Standardization (ISO) 9000 series of quality assurance standards provide a basic framework for the development of a quality assurance programme.*

1.1.3 In this sense, and based on the ICAO/WMO *Manual of the Quality Management System for the Provision of Meteorological Service to International Air Navigation* (Doc 9873), this guide contains models of the documents required by ISO 9001:2008 standard, comprising a documented quality policy statement, work instructions, records and documents to assist CAR/SAM States in the effective planning, operation and control of MET service processes.

1.1.4 This document has been prepared taking into account Amendment 75 to Annex 3 and the CAR/SAM Regional Air Navigation Plan, Part VI – MET, pursuant to Decision 9/22 – Establishment of the MET Quality Management Task Force of the GREPECAS Aeronautical Meteorology Subgroup (AERMETSG), whose work programme can be summarized as the development, in coordination with the Secretariat, of a draft guide on the documented procedures required by the ISO 9001:2008 standard.

1.1.5 Since the AERMETSG QMS/MET Task Force did not have time to devote to the Guide as required, the ICAO SAM Regional Office, with the support of Project RLA/06/901 took steps to complete this document so that States could validate it at a QMS/MET seminar/workshop, and use it as basic material in their organizations, in keeping with their local institutional conditions.

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<b>CAR/SAM MET/QMS GUIDE</b>	<b>MET QUALITY POLICY</b>	<b>PART 2</b>
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**MET QUALITY POLICY**

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**PQ-5.3-GG-01**: Quality policy (**PQ**)-ref. ISO 9001 standard (5.3)-Director/General Manager of the MET service provider (**GG**)-version **00** of the quality policy

## QUALITY POLICY

Provide meteorological products and services for international air navigation with the highest quality standards, based on the competence and integrity of its workers and its commitment to continuous process improvement, in order to meet customer requirements through the provision of clear, precise and timely aeronautical meteorological information.

SIGNATURE

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Highest Authority of the MET Service Provider

**CAR/SAM MET/QMS  
GUIDE**

**DOCUMENTARY PROCEDURES (MODELS)**

**PART 3**

**DOCUMENTED PROCEDURES  
(MODELS)**

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<b>ORGANIZATION LOGOTYPE</b>  <b>UNIT</b>	<b>3.1 MET QUALITY MANUAL</b>  <b>CONTROLLED DOCUMENT</b>	<b>CODE: MC-4.2-AGC</b>  <b>PAGE 1 OF 35</b>
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**MET QUALITY MANUAL**

**Revision 0**

**2011**

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PREPARED	REVISED	APPROVED

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00	30/11/11

<b>ORGANIZATION LOGOTYPE</b>	<b>3.1 MET QUALITY MANUAL</b>	<b>CODE: MC-4.2-AGC</b>
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## SUMMARY

- I. Introduction to the quality manual**
- II. Process identification**
- III. Terms and definitions**
- IV. Quality management system**
- V. Responsibility of management**
- VI. Resource management**
- VII. Product development**
- VIII. Measurement, analysis and improvement**
- IX. Appendix**

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**REVISION STATUS CONTROL MATRIX**

CODE: R01-AGC.CD-05

REVISION: 00/30-11-2011

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## CHAPTER I

### INTRODUCTION TO THE MET QUALITY MANUAL

#### 1. OBJECTIVE

1.1 To establish the technical/administrative concept of the management system of the aeronautical meteorological (MET) service for air navigation, in order to determine the scope of the system and the commitment of top management with respect to the quality of the processes, products and services established in the documented procedures.

#### 2. PURPOSE

2.2 To provide effective control tools, through the development and use of procedures, work instructions, documents, formats, records and documents related to the MET/MS of (*name of the MET service provider*).

2.3 To serve as a guide in the search for customer and other stakeholder satisfaction in terms of safety and process optimisation, taking into account the following:

- a) check the capacity to provide products or services that meet the requirements of customers and other stakeholders, legal requirements and applicable regulations; and
- b) maintain or increase customer satisfaction and safety through the effective application of the management system focused on continuous improvement.

#### 3. REGULATORY REFERENCE

- a) ISO 9000:2005 Standard, Quality Management Systems, Fundamentals and Vocabulary;
- b) ISO 9001:2008 Standard, Quality Management Systems, Requirements; and
- c) ISO 9004:2009 Standard, Management for sustainable success of an organization. Quality management approach;
- d) ISO 19011:2003 Standard, Guidelines for Quality and Environmental Auditing.

#### 4. SCOPE

4.1 The ISO 9001:2008 certification comprises the meteorological service for national and international air navigation of (*name of the MET service provider*).

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## 5. GEOGRAPHICAL SCOPE OF THE MET MANAGEMENT SYSTEM

MET Service	
AOP Aerodromes	
Name	Address
Domestic aerodromes/No AOP*	

## 6. EXCLUSIONS

6.1 Services start when customers have a requirement for their aircraft. Services are standard in nature and governed by international regulations that do not require the design and development process; that is, AERONAUTICAL meteorological services have the same characteristics worldwide. Therefore, (name of the organisation) is excluded from ISO 9001:2008 requirement 7.3.

## 7. MISSION OF THE ORGANISATION

## 8. VISION OF THE ORGANISATION

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## CHAPTER II

### DESIGN OF THE MET MANAGEMENT SYSTEM

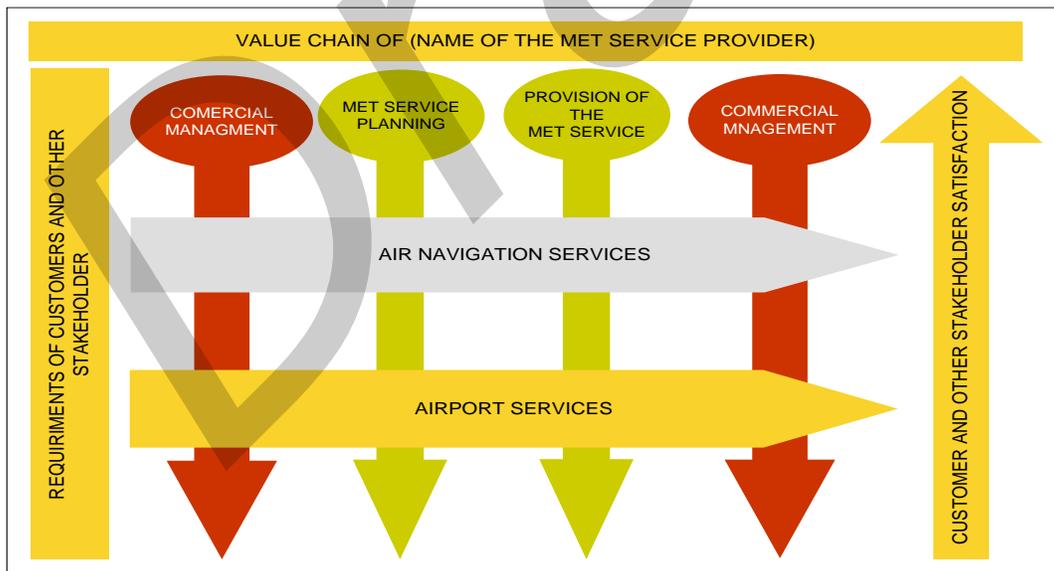
#### 9. PROCESS IDENTIFICATION

9.1. The purpose of (name of the organisation) with the implementation of the management system is:

- a. To identify and meet the needs and expectations of its customers and other stakeholders (aeronautical meteorological authority, ICAO, society, service provider, employees, etc.) in an effective manner in order to obtain competitive advantage.
- b. Obtain, maintain and improve the capacity and global performance of aeronautical meteorological services.

The needs and expectations of customers and other interested parties are identified in Chapter IV of this manual.

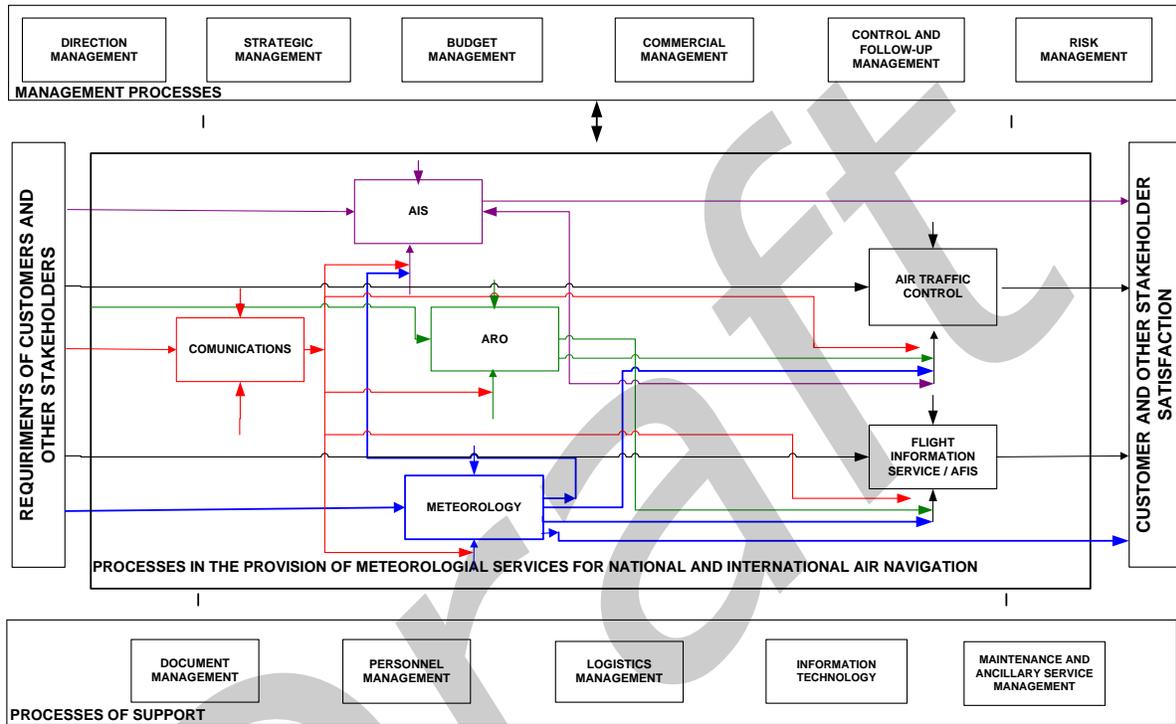
#### 10. VALUE CHAIN OF (name of the MET service provider)



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## 11. INTERACTION OF THE MET PROCESS IN THE AIR NAVIGATION SYSTEM



The activities involved in the processes and sub-processes are explained in the procedures and work instructions of (name of the MET service provider) MET services.

## 12. (Name of the MET service provider) MET SERVICE PROCESS CLASSIFICATION

### MANAGEMENT PROCESSES:

- a) Direction management;
- b) Strategic management;
- c) Budget management;
- d) Commercial management;
- e) Control and follow-up management
- f) Risk management

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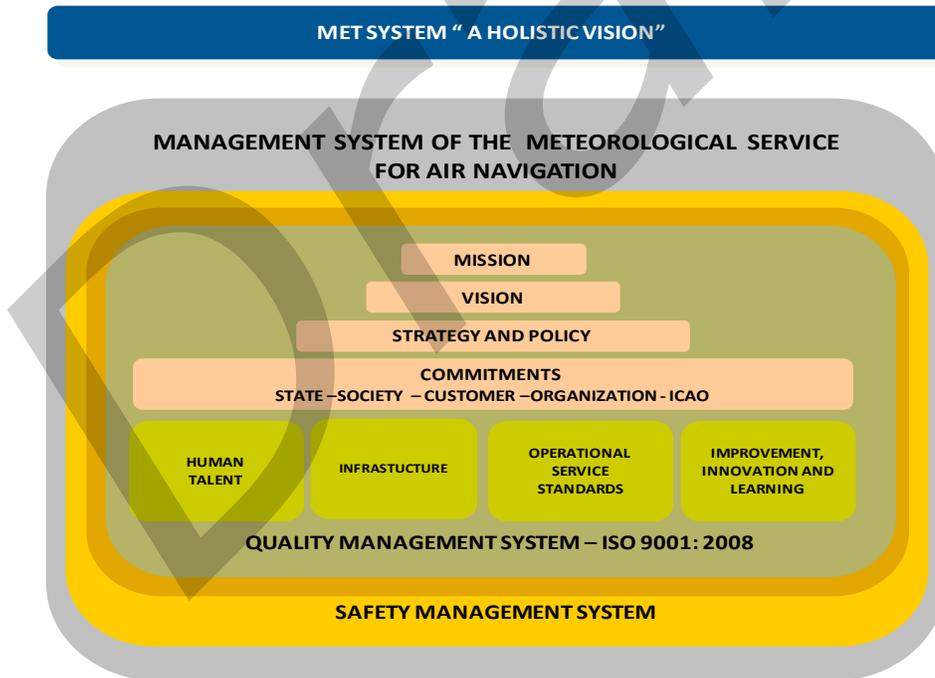
**PROCESSES INVOLVED IN THE PROVISION OF THE MET SERVICE:**

- a) MET service process;
- b) Aerodrome meteorological observations and reports sub-process;
- c) Aeronautical meteorology forecasting and watch sub-process; and
- d) Aeronautical climatology sub-process

**SUPPORT PROCESSES:**

- a) Document management;
- b) Personnel management;
- c) Logistics management;
- d) IT management; and
- e) Maintenance and ancillary service management

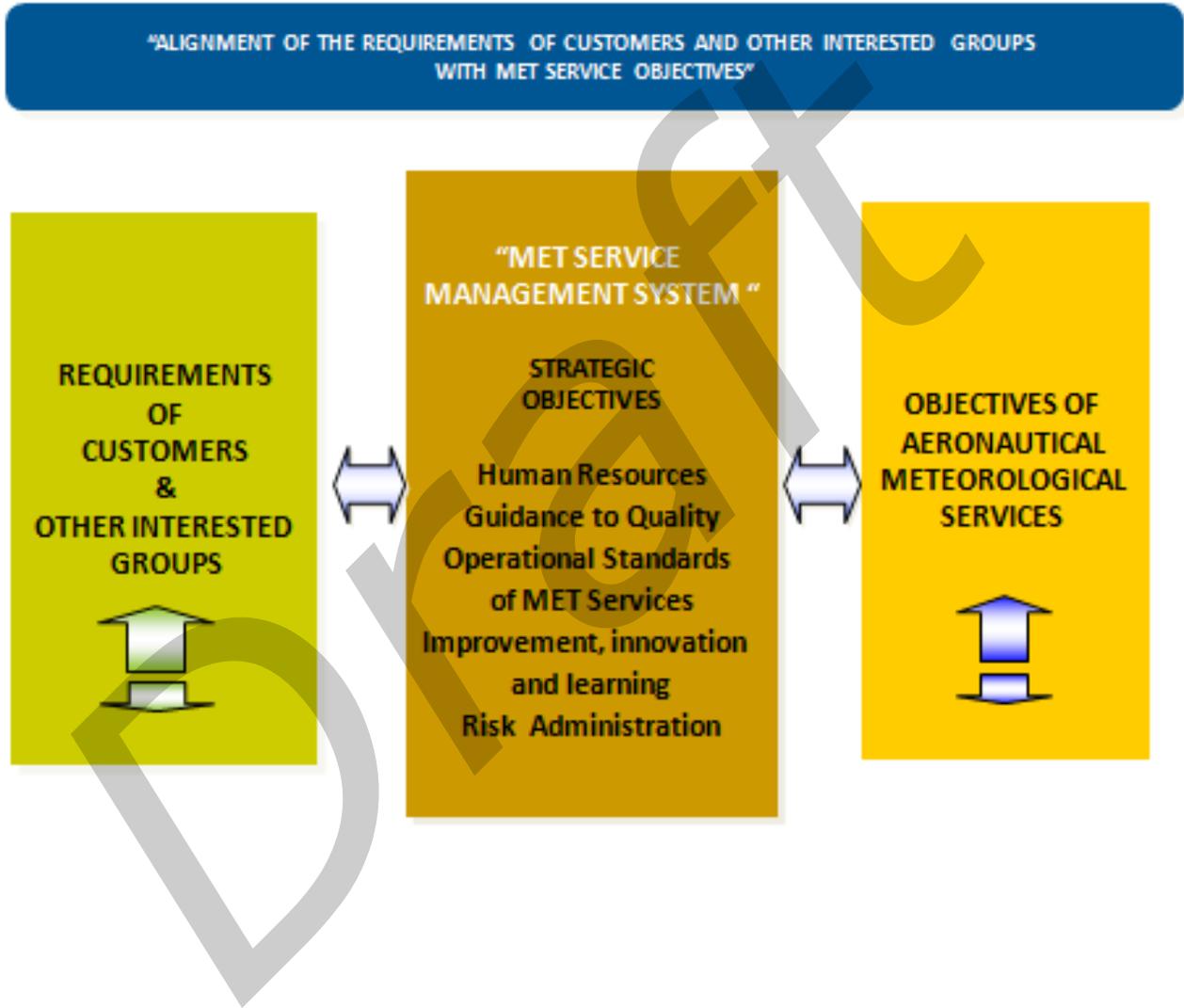
**13. MET SYSTEM: “A HOLISTIC VISION”**



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**14. ALIGNMENT OF STRATEGIC STRUCTURES OF MET SERVICE (to the needs and expectations of customers and other interested groups)**



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## CHAPTER III

### 15. TERMS AND DEFINITIONS

15.1. For the interpretation of the MET quality manual, the terms and definitions of the ISO 9000:2005 standard and those described below apply:

#### **TOP MANAGEMENT AND LINE MANAGERS**

It will be based on the organisational structure of the MET service provider.

#### **MANAGEMENT/MANAGERS GAP**

It is the difference between the required and the existing level or between the expected and the existing level.

#### **MANAGEMENT COMMITTEE**

Made up by individuals who hold an executive position in (*name of the MET service provider*); they are responsible for planning, organising, directing, controlling and maintaining the QMS/MET in the organisation.

#### **QUALITY MANAGEMENT COMMITTEE**

It is the group of individuals responsible for establishing, implementing and maintaining the QMS/MET.

#### **CONTRACT**

The requirements agreed upon with a provider and/or customer, conveyed by any means.

#### **ACCEPTANCE CRITERIA**

The concepts that must be contained and applied in each activity for good performance; internal customer requirement.

#### **VALUE CHAIN**

Integration of activities that create competitive advantage.

#### **VALUE CREATION**

Management processes designed to generate strategies so that productive processes may generate a greater value margin.

#### **FREQUENCY**

Determination of the periodicity with which each factor of the acceptance criteria of each activity is to be measured in order to establish the follow-up, progress and effectiveness of each objective.

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**VALUE GENERATION**

Productive processes designed to generate value.

**WORK INSTRUCTIONS**

Documents obtained as a result of the activities, and which determine “how” process activities are to be performed.

**CURRENT LEVEL OF QUALITY**

Actual measurements based on time and resources used in the processes applied to the products or services accepted by the customer.

**EXPECTED LEVEL OF QUALITY**

The level of acceptance established by top management for processes directly related to the objectives of [*name of the MET service provider*].

**REQUIRED LEVEL OF QUALITY**

The levels of acceptance established, based on time and resources, as a minimum requirement for compliance with acceptance criteria in order to satisfy the external customer of the processes executed.

**POLICY**

The process or activity ideologically oriented to decision-making by a group for the attainment of objectives. The ideology is the set of ideas aimed at the preservation or transformation of the existing system, and which characterise the organisation.

**PROCEDURES (PR)**

Specified way of implementing a process. A written or documented procedure generally contains the objective and scope of the process; what must be done and who must do it; when, where and how it must be done, what materials, equipment and documents must be used; and how must it be controlled and recorded.

**PROCESS**

Set of interrelated or interacting activities that turn input into outcome.

**NON-CONFORMING PRODUCT/SERVICE**

The outcome of a process that does not meet the need or expectation based on which it was produced.

**RECORDS**

They are established and kept to show compliance with requirements and the effective operation of the quality management system. Records must be easily identifiable and retrievable. R01 records indicate compliance with requirements; R02 records reflect efficacy; and R03 are continuous improvement records.

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**SAFETY**

It is the condition in which the risk of harm to people or damage to goods or to business integrity is reduced and kept at or below an **acceptable level** through a continuous process of hazard identification and risk management.

**VALUE**

In competitive terms, value is the amount that buyers are willing to pay for what the company provides.

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## CHAPTER IV

### MET MANAGEMENT SYSTEM

#### 16. GENERAL REQUIREMENTS

16.1. (Name of the MET service provider) has established a MET/MS within the framework of ISO 9001:2008 standard, based on ISO 9004:2009 guidelines, and applying the following approaches:

- a) A process-based management approach, in which process sequencing and interaction takes place at all levels of the organisation.
- b) A process-based management approach, in which process sequencing and interaction takes place at all levels of the organisation, and
- c) A risk management approach, which provides a predictive system to meet safety requirements.

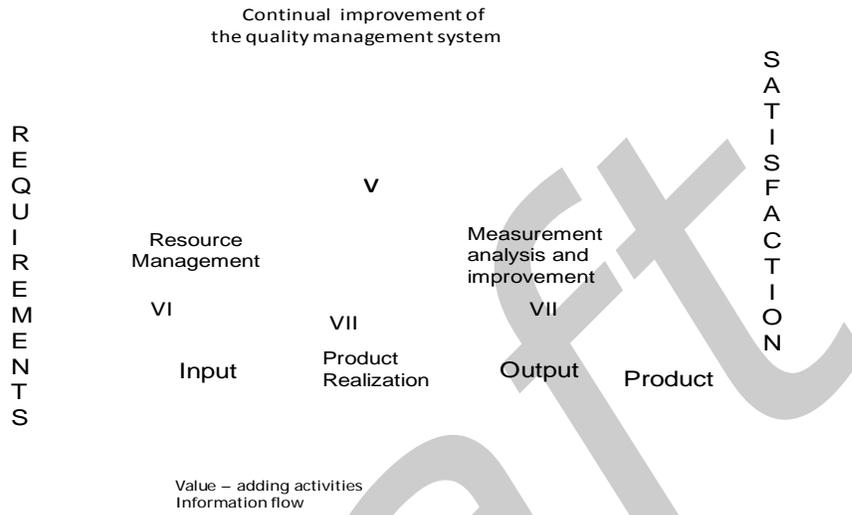
16.2. (Name of the MET service provider) shows its capacity to provide, on a regular basis, services that meet customer, legal and applicable regulatory requirements. It also seeks to increase customer satisfaction through the effective application of the system, including processes for continuous system improvement and to ensure that customer, legal and applicable regulatory requirements are met.

16.3. (Name of the organisation) generates value through the processes for the production of meteorological services for national and international air navigation. Meteorological processes are implemented in different locations, and outsourced processes are subject to the respective control. An "outsourced process" is a process required by (name of the organisation) for its quality and safety management system and which it decides will be performed externally.

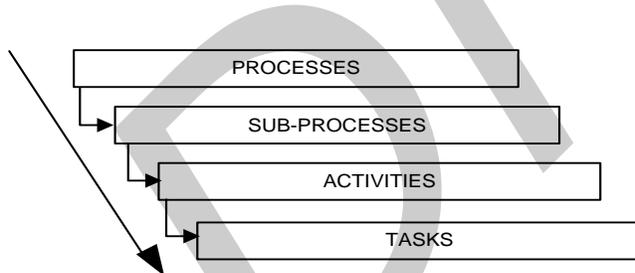
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## 17. QUALITY MANAGEMENT MODEL APPLIED BY THE ORGANISATION



Processes have the following structure, which includes the necessary variables for management follow-up, measurement and analysis:



In order to facilitate active participation and create awareness about service quality and safety, Management has determined the following:

- The creation of management committees.
- Periodic teleconferences between locations, in order to develop the knowledge, experience and skills of the members of the organisation.
- Training and refresher courses.

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## 18. CONTINUOUS IMPROVEMENT

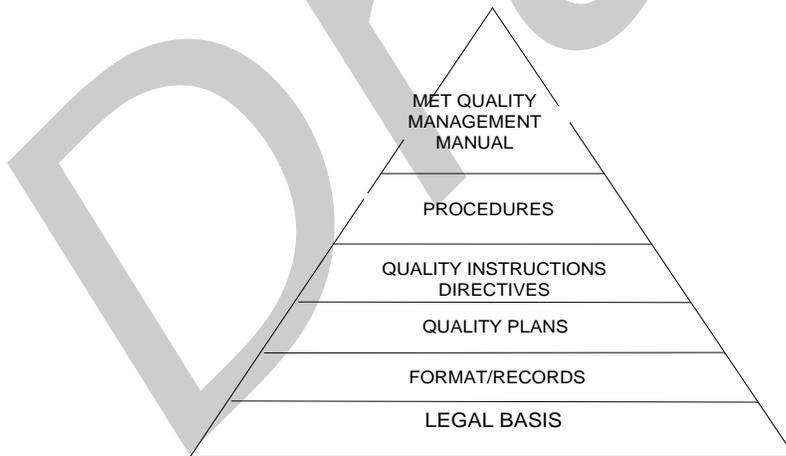
18.1. For an effective and efficient process implementation and to ensure continuous improvement, corrective and prevention action is taken to eliminate the causes of actual and potential non-conformities, as a result of:

- a. Management reviews;
- b. Internal and external audits;
- c. Customer complaint analysis;
- d. Customer satisfaction survey;
- e. Performance assessment of MET and other support service provision management processes;
- f. Risk assessment and control; and
- g. Analysis of non-conforming products and/or services.

## 19. DOCUMENTATION REQUIREMENTS

### General

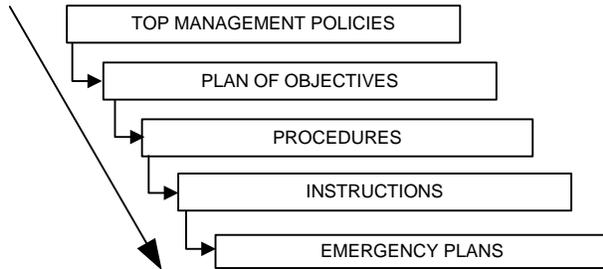
19.1. *(Name of the MET service provider)* establishes and maintains a management system that meets the standards and documentary requirements established in paragraph 3 of this manual. To this end, the following structure has been implemented for the documentary management required for process planning, operation, and effective control:



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19.2. Furthermore, in order to regulate process-based management and risk management, the following documentary structure has been implemented for all processes:



19.3. The criteria for the development of procedures and work instructions are established in the procedure for the drafting and presentation of MET/MS documents – **PR-4.2-AGC-1**

19.4. When the term “documented procedure” appears, it means that the procedure is established, documented, implemented and maintained. A single document may include the requirements for one or more procedures. A requirement related to a documented procedure may be met through more than one document.

19.5. The documentation may be in any format or medium.

### Documentary management

19.6. Documentary management is explained and responsibilities defined in the following tables:

Detail	Policies	MET Service Quality Manual/Plan of Objectives
Developed by	Parties responsible for the processes	Service staff
Reviewed by	Quality and safety management committee	Service manager
Approved by	Director General	Director General
Custody of original	Management representative	Management representative
Distribution of copies	Management representative	Management representative
Control	Management representative	Management representative

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[DD1]Detail	Procedures	Work Instructions	Formats/Records
Developed by	Personnel involved		
Reviewed by	Line manager and aeronautical MET chief		
Approved by	General manager		
Distribution of copies	Management representative		
Control	Management representative		

### Documentation control

19.7. For documentation control, *(name of the organisation)* has the following documentary structure:

- "Controlled documents" are original documents under the custody of the management representative and posted on the *(name of the organisation)* website.
- "Uncontrolled copy" is any physical copy of the original document printed with the authorisation of the head of the service for training purposes.

18.8 Documentation control will be applied through documented procedures:

- MET/MS Document Control – **PR-4.2-AGC-2.**
- MET/MS Record Control – **PR-4.2-AGC-3.**

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## CHAPTER V

### RESPONSIBILITY OF MANAGEMENT

#### 20. COMMITMENT OF MANAGEMENT

##### General

20.1. The top management of (*name of the MET service provider*) defines and establishes the quality and safety policies and objectives of the organisation, making sure that it has the necessary elements to improve efficacy and efficiency and to reduce process risks, and undertakes to:

- a. Enforce, maintain and improve the quality policy and the safety policy in order to meet customer and stakeholder expectations, providing leadership and obtaining the commitment of its workers;
- b. Make sure that procedures and work instructions are followed in a consistent manner, meeting the established customer, legal and regulatory requirements. Likewise, to ensure that issues are identified and resolved and that the organisation continuously reviews and improves its procedures and work instructions;
- c. Make sure that issues and hazards are identified and resolved through continuous review and improvement of documentary structure documents; and
- d. Provide the necessary resources for an effective and efficient implementation of the processes that provide and safeguard value.

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### Focus on stakeholders

Detail	Directives
Board of Directors	<ul style="list-style-type: none"> <li>- Meet unsatisfied market requirements</li> <li>- Sustainable financial profitability</li> <li>- Meet the established legal and regulatory requirements</li> <li>- Customer satisfaction</li> </ul>
Customer	<ul style="list-style-type: none"> <li>- Compliance with the contract</li> <li>- Compliance with acceptance criteria (requirements)</li> <li>- Quality service</li> <li>- Suitable prices</li> <li>- Safety</li> </ul>
Workers	<ul style="list-style-type: none"> <li>- Respect and recognition</li> <li>- Good working environment</li> <li>- Incentives</li> <li>- Personal development</li> <li>- Work stability</li> </ul>
Financial and credit institutions	<ul style="list-style-type: none"> <li>- Profitable projects</li> <li>- Compliance with payment schedule</li> </ul>
Providers	<ul style="list-style-type: none"> <li>- Compliance with payment schedule</li> <li>- Closer technical relationship</li> </ul>

20.2. Customer perception is analysed quantitatively through statistical reports and/or surveys containing opinion options for feedback and continuous process improvement (see IT-5.6-AGC-1).

## 21. MANAGEMENT POLICY

21.1. *[Name of the MET service provider]* applies the following policies:

- a. **Quality:** Provide MET products and services with the highest quality standards, based on the competence and integrity of its workers and their commitment to continuous process improvement in order to meet customer requirements through the provision of more clear, precise and timely MET information; and
- b. **Safety:** Provide MET services, maintaining the highest level of safety performance, with consistent and monitored procedures geared to the identification, analysis and/or mitigation of possible risks that compromise essential functions of customer and organisation processes. Accordingly, we seek to promote a safe work environment, free of risks for our customers and workers.

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## 22. POLICY CONSIDERATIONS

22.1. *(Name of the MET service provider)* policies are properly disseminated and shared by all the members of the organisation.

22.2. Policies are periodically reviewed and updated.

22.3. *(Name of the MET service provider)* defines and aligns business objectives with the established policies, and undertakes to review and modify, as necessary, the general objectives, specific objectives, and goals of the organisation, in order to improve the efficacy and efficiency of the MET/MS.

## 23. PLANNING

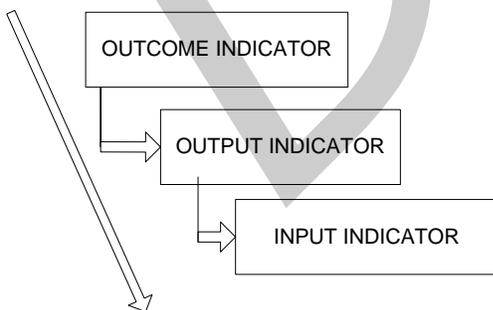
23.1. Planning of the *(name of the MET service provider)* MET/MS at MET units is based on process-based management and risk management, with a view to creating, safeguarding and generating value (management, productive and support processes). These processes are interrelated and provide measurable results, comparing them with the objectives established in this manual and a quality management programme to make sure that objectives are met.

## 24. MANAGEMENT SYSTEM OBJECTIVES

24.1. The top management of *[name of the MET service provider]* makes sure that the objectives of the MET/MS take into account what is necessary to meet the requirements of the products or services offered, as well as the requirements of the standards specified in the documentary basis of this manual. Objectives are established at the relevant levels within the organisation, and are measurable and consistent with the quality and safety management policy of *[name of the MET service provider]*.

24.2. Follow-up of objectives and goals is done during management reviews.

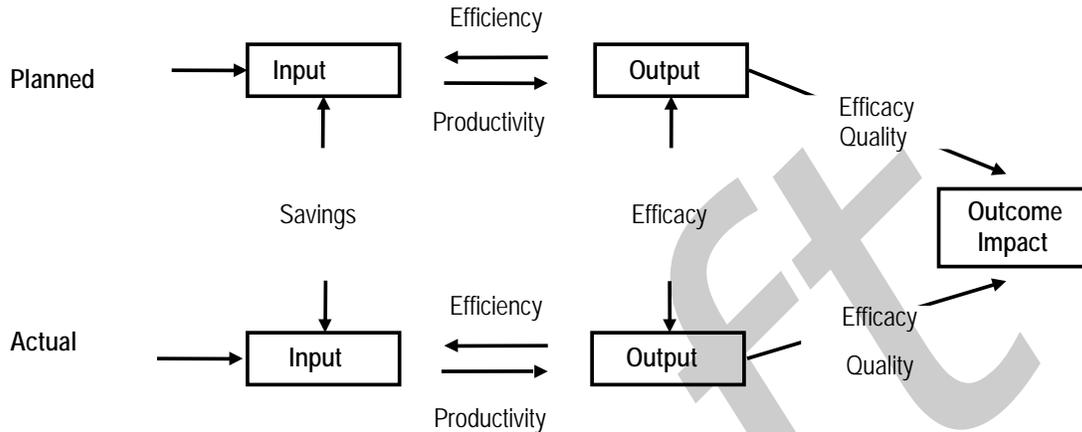
24.3. Progress made in the attainment of organisation objectives is controlled at managerial level, through process management indicators developed according to the following structure:



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24.4. This structure uses the attached flow methodology, establishing performance measurement indicators, outcome, output and input indicators, and the performance assessment indicators will be efficacy, efficiency, savings and quality.



## 25. QUALITY OBJECTIVES OF THE MET SERVICE OF [name of the MET service provider]

25.1. **Quality management:** Through compliance with the goals established in the Quality Plan

- a) Ensure the performance of human resources involved in the provision of meteorological services.
- b) Ensure the performance of MET observations, forecasts and watch
- c) Ensure the availability of MET systems and equipment, according to WMO/ICAO standards

25.2. **Safety management:** Through compliance with the goals established in the Safety Plan: To reduce or eliminate the levels of risk that might affect:

- a) Aeronautical meteorology processes
- b) The meteorological information supply chain, as part of the chain that provides information to aircraft during the various flight phases.

25.3. Quality objectives are established and controlled through management system indicators established in work instructions "QMS indicators: IT-5.6-AGC-1". These indicators permit the scheduling of yearly goals, enabling the assessment of the performance, efficacy, and efficiency of MET service processes and human resources.

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## 26. RESPONSIBILITY, AUTHORITY, AND COMMUNICATION

### Responsibility and Authority

26.1. *(Name of the MET service provider)* establishes in its procedures and work instructions the responsibility and authority for the activities carried out by all its personnel.

### Management Representative

26.2. The top management of *(Name of the MET service provider)* determines that the *(name of position)* will be the management representative before the QMS/MET.

The management representative has the responsibility and authority to:

- a. Make sure that the processes required for the QMS/MET are established, implemented and maintained;
- b. Report to top management on the performance of the QMS/MET and any improvement required;
- c. Create awareness at all levels of the organisation about customer and stakeholder requirements; and
- d. Coordinate with external parties all matters related to the quality management system.

ORGANISATION	Quality Manual	Quality Management
[Name of the MET service provider].	Management representative	Person responsible for the provision of the MET service.

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### Management Committees

	Members	Functions and responsibilities
Top management	<ul style="list-style-type: none"> <li>- Director/Manager</li> <li>- Heads of section</li> </ul>	Manage the organisation. Outside of the scope of the certification
Management committee of [name of the MET service provider]	<ul style="list-style-type: none"> <li>- General manager</li> <li>- Commercial manager</li> <li>- Financial manager</li> </ul>	Plan, organise, direct, control and maintain the management of the organisation. Party responsible: General manager. Outside of the scope of the certification
MET quality and safety management committee of [name of the MET service provider]	<ul style="list-style-type: none"> <li>- Management representative</li> <li>- Manager of aeronautical operations</li> <li>- Head of the QMS/MET</li> <li>- Head of MET section</li> </ul>	Review the quality management system. Party responsible: Management representative. Within the scope of the certification

### Internal Communication

Within (*name of the MET service provider*), the management committee interacts with those responsible for the processes, sub-processes and activities of the MET service through work meetings, e-mail and telephone communications, thus maintaining and facilitating internal communication in order to improve the efficacy and efficiency of the QMS/MET.

### Organisation Chart

Organisation chart of (*Name of the MET service provider*)

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## 27. MANAGEMENT REVIEW

### General

27.1. The assessment of the management process (clause 5.6 of ISO 9001:2008 standard) is described in procedure PR-5.6-AGC-01 and is conducted as follows:

Committee	Activities	Evidence
Management Committee of <i>[name of the MET service provider]</i>	Management review.	- Management review proceedings - Top management session
	Frequency: Before each top management meeting.	Party responsible: director/manager Outside of the scope of the certification.
Management Committee of <i>[name of the MET service provider]</i>	Review of the QMS/MET of <i>[name of the MET service provider]</i>	-Management review proceedings (clause 5.6.1 of ISO 9001:2008 standard).
	Frequency: At least two (2) times a year.	Party responsible: Management representative. Within the scope of the certification.

### Information required for the management review

- a) The findings of previous MET quality internal audits;
- b) Customer feedback;
- c) Compliance with the established MET quality policy, objectives, and goals;
- d) Process performance and product conformity;
- e) Status of corrective and preventive action;
- f) Follow-up on previous management reviews;
- g) Changes that might affect the QMS/MET;
- h) Analysis of non-conforming products and of corrective and preventive action; and
- i) Improvement recommendations.

27.2. The results of the review will include the decisions made and the action taken to improve the efficacy of the QMS/MET, to improve the product based on customer requirements, and the resources needed.

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## CHAPTER VI

### RESOURCE MANAGEMENT

#### 28. PROVISION OF RESOURCES

28.1. *(Name of the MET service provider)*, through its top management and the units involved, will provide the resources needed for:

- a) Implementing and maintaining the QMS/MET and continuously improving its efficacy and efficiency;
- b) Improving customer and stakeholder satisfaction by meeting their requirements; and
- c) Ensuring the number and quality of MET personnel, as well as the infrastructure and work environment required for MET operational processes.

#### 29. HUMAN RESOURCES

##### General

29.1. Compliance with service requirements may be directly or indirectly affected by the staff performing QMS/MET tasks. Consequently, the system focuses on continuous improvement, increasing the efficacy and efficiency of the organisation through active participation and support of individuals in:

- a) Continuous training opportunities, scheduled within the framework of a personnel training plan;
- b) The setting of objectives;
- c) Open communications;
- d) Recognition and reward systems;
- e) Dissemination of information of MET service processes and review of risks associated to the personnel;
- f) Opportunities for promoting innovation and team work; and
- g) Psychological evaluations to determine attitude gaps.

##### Competence, Training and Awareness Raising

29.2. *(Name of the MET service provider)*, through the heads of MET units, and based on the gap between the existing and the required level of competence, determines the competence of the personnel providing MET services so as not to affect compliance with the product and service. It also formulates the training plan, as applicable, and specifies other relevant actions that need to be implemented. Once the deficiency has been identified, training is immediately provided in order to develop the required competence (see PR-6.2-AGC-01).

29.3. The competence records of the operational and administrative personnel that carry out MET service activities are kept up to date (see PR-6.2-AGC-01).

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29.4. Training efficacy is assessed by MET unit officials through outcome indicators and the monitoring of operational personnel performance, as reflected in the respective records.

### 30. INFRASTRUCTURE

30.1. *(Name of the MET service provider)*, through procedure **PR-6.3-AGC-01**, performs preventive and corrective maintenance of meteorological equipment and instruments, and maintains the infrastructure required to meet MET service and information system requirements.

### 31. WORK ENVIRONMENT

31.1. *(Name of the MET service provider)*, through the heads of section involved, defines and manages the work environment required to meet product or service requirements, through:

- a) Creative work methodologies and opportunities to increase active participation, in order to identify the potential of its personnel;
- b) Safety rules and guidelines, including protection equipment;
- c) Internal communication; and
- d) Hygiene, cleanliness, comfort, and good treatment.

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## CHAPTER VII

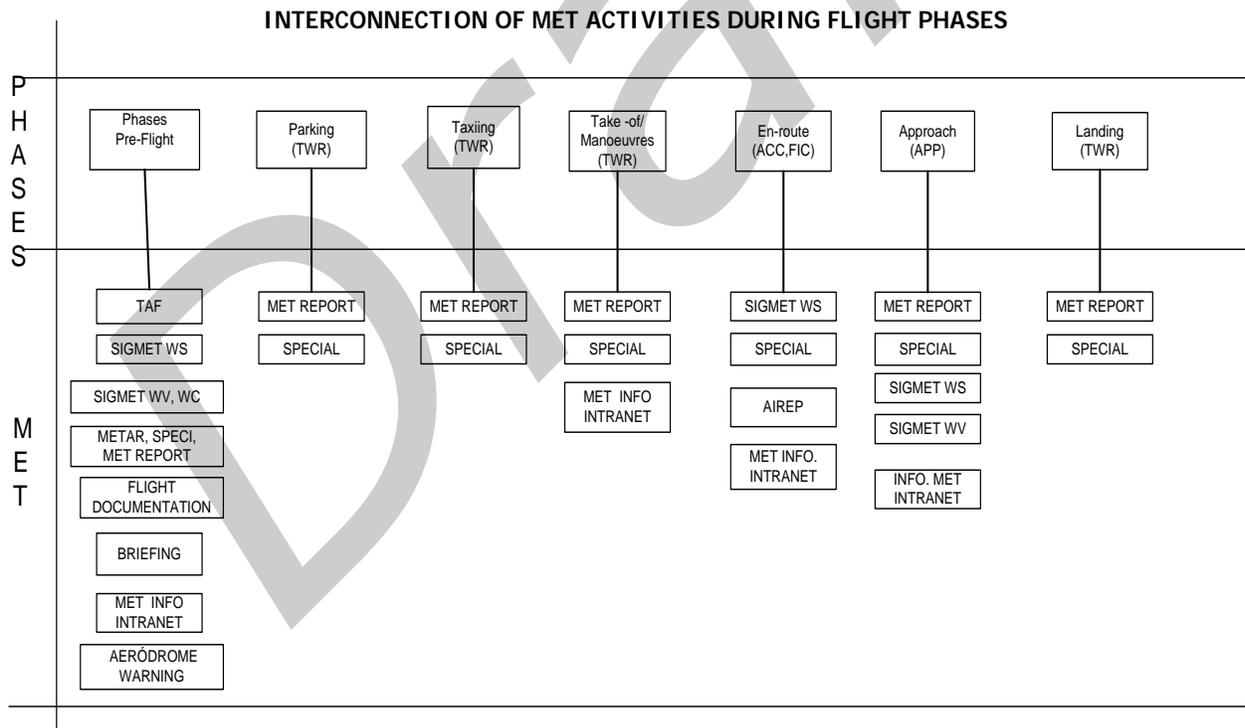
### PRODUCT/SERVICE DEVELOPMENT

#### 32. PLANNING PRODUCT/SERVICE DEVELOPMENT

32.1. The interaction among management, production, and support processes permit an effective and efficient provision of MET services, thus protecting and generating value for the organisation, and increasing stakeholder satisfaction.

32.2. Each process is implemented following a process-based management approach: “who” is responsible (responsible party), “what” is to be achieved (objective), “with what” is it to be performed (mechanism), “how” is it going to be executed (tasks), and how is it going to be controlled (control). This scheme is included in the respective documentation, together with the corresponding indicator to measure the achievement of the objective.

32.3. MET service planning permits the provision of products during the flight phases.



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**33. CUSTOMER-RELATED PROCESSES**

33.1. Through commercial management, *(name of the MET service provider)* applies an internal procedure for the conduction of activities that permit:

**Identification of service-related requirements**

33.2. *(Name of the MET service provider)* determines service provision requirements in the commercial management process; the technical specifications according to the legal and regulatory requirements applicable to the service; and other requirements that the organisation deems appropriate.

**Revision of service-related requirements**

33.3. Prior to their acceptance, *(name of the MET service provider)* reviews the requirements defined by the customer and the organisation, in coordination with the stakeholders, in order to ensure compliance; and

33.4. When service provision requirements are modified, *(name of the MET service provider)* must ensure that the documentation is modified and that the personnel are informed accordingly.

**Customer communications**

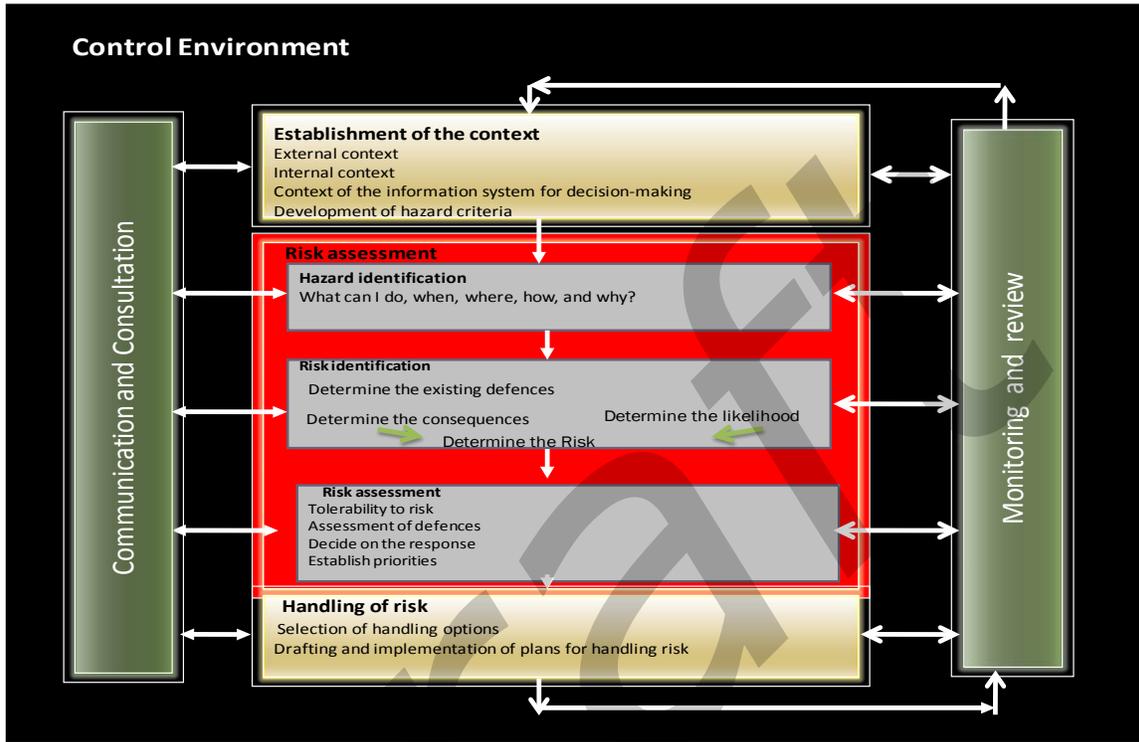
33.5. *(Name of the MET service provider)* defines the means of communication with the customer, such as: website, electronic media, landline telephone, mobile phone, fax, as well as customer satisfaction surveys and the handling of customer complaints.

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### 34. RISK ASSESSMENT

The risk assessment process is described in the following graph.



### 35. PURCHASES

#### Purchasing Process

35.1. *(Name of the MET service provider)* establishes the purchasing procedure to ensure that purchased products and outsourced services meet the specified requirements (IT-7.4-AGC-1).

35.2. *(Name of the MET service provider)* assesses and selects the providers based on their capacity to provide inputs, products or services, in keeping with the requirements of the organisation. Provider selection and assessment criteria must be established and recorded.

#### Purchasing Information

35.3. *(Name of the MET service provider)* prepares the purchase orders (with the established specifications) and does the corresponding processing.

#### Verification of Purchased Products

35.4. *(Name of the MET service provider)* will check that purchased products meet the specified purchase requirements.

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## 36. SERVICE PROVISION

### MET service provision control

36.1. *(Name of the MET service provider)*, through its respective procedures and work instructions, provides the MET service under controlled conditions, which include:

- ICAO and WMO regulatory documentation;
- Procedures and work instructions;
- Appropriate equipment;
- Calibration and measuring equipment;
- Audits;
- Quality assurance and customer satisfaction surveys; and
- Risk assessment.

### Validation of processes involved in MET service provision

36.2. The MET service can be verified through follow-up activities or subsequent measurements to validate the efficacy and efficiency of processes, with a view to attaining the expected results, using the following tools:

- a) Records of non-conformities, corrective and preventive measures taken, and defences implemented;
- b) Procedures and work instructions, validated with the quality and safety standards established by the organisation;
- c) Audits;
- d) Risk control and mitigation to acceptable or tolerable safety levels.

### Identification and Traceability

36.3. *(Name of the MET service provider)* establishes and implements the identification and traceability of MET services provided, through control processes conducted by the heads of the respective MET units, keeping record of primary and support activities, as required.

### Provision of the MET service

36.4. *(Name of the MET service provider)* ensures compliance in the provision of the MET service, by controlling activities and reporting occurrences that affect the operation of the service, so that the corresponding heads of division can make decisions.

## 37. FOLLOW-UP AND MEASURING EQUIPMENT CONTROL

37.1. *(Name of the MET service provider)* plans the maintenance and control of the equipment used in its various MET service activities, duly keeping record of compliance with requirement 7.6 of ISO 9001:2008 standard (IT-7.5-AMSM-1).

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## CHAPTER VIII

### MEASUREMENT, ANALYSIS, AND IMPROVEMENT

#### 38. GENERAL

38.1. *(Name of the MET service provider)* measures process performance, based on:

- a. The measurement and assessment of the product or service it provides;
- b. Process control;
- c. Customer satisfaction; and
- d. Continuous improvement of the efficacy of the QMS/MET.

#### 39. FOLLOW-UP AND MEASUREMENT

##### Customer Satisfaction

39.1. Customer perception is analysed qualitatively, through personal interviews, and quantitatively, through a survey containing the necessary response options for feedback and continuous process improvement.

##### Internal Audit

39.2. *(Name of the MET service provider)*, through the management representative, assesses compliance, efficacy, and continuous improvement of the quality management system through internal audits, as defined in procedure **PR-8.2-AGC-01**.

39.3. *(Name of the MET service provider)*, at planned intervals, conducts internal audits at MET units, headed by the lead quality auditor.

39.4. Internal audits permit the identification of non-conformities and the scheduling of corrective and preventive action.

39.5. The heads of the audited MET units will make sure that corrective and preventive measures are taken to eliminate the identified non-conformities and their causes.

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## 40. PROCESS MEASUREMENT AND FOLLOW-UP

40.1. The Management Committee will be responsible for reviewing and improving the system, primarily based on:

- a. Customer assessment and satisfaction;
- b. An assessment of the efficacy of the quality management system;
- c. Management review results;
- d. The follow-up on quality indicators; and
- e. The control of process **efficacy and efficiency** in order to attain the expected results.

### Follow-up and measurement of MET services provided

40.2. The MET units of *(Name of the MET service provider)* will verify, control, and measure MET products to make sure they meet existing regulations, keeping record of compliance with procedures and work instructions at each MET unit.

## 41. CONTROL OF NON-CONFORMING PRODUCTS/SERVICES

41.1. *(Name of the MET service provider)* establishes and implements documented procedure **PR-8.3-AGC-01** to make sure that products or services that do not meet the requirements are identified and controlled.

41.2. Through process quality and safety controls, top management delegates the authority and responsibility of controlling non-conforming products in any MET activity to MET personnel within the organisation for timely detection, recording and relevant treatment.

## 42. RISK CONTROL

42.1. *(Name of the MET service provider)*, through procedure **PR-8.3-AGC-2**, does the risk assessment, including hazard identification, likelihood of occurrence, severity, risk tolerance, and determines the defences required to prevent the risk from occurring.

## 43. DATA ANALYSIS

43.1. In order to demonstrate the appropriateness and efficacy of the MET/MS, *(Name of the MET service provider)*, through its MET units, collects and assesses, *inter alia*, customer satisfaction assessment results, process performance, MET service conformity, and providers, determining where should continuous process improvement be implemented.

## 44. IMPROVEMENT

### Continuous Improvement

44.1. *(Name of the MET service provider)*, through its MET units, controls QMS/MET efficacy and continuous improvement, periodically assessing the quality policy, internal and external audit findings, data analysis, corrective and preventive measures, and management reviews.

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### Corrective Action

44.2. *(Name of the MET service provider)* establishes documented procedure **PR-8.5-AGC-1** on corrective action to eliminate non-conformities and their causes, identified through customer complaints, internal and external audits, and management system reviews; it also reviews the efficacy of corrective measures taken.

### Preventive Action

44.3. *(Name of the organisation)* establishes documented procedure **PR-8.5-AGC-**, through which it identifies and assesses potential non-conformities, recording the outcome of action taken and reviewing the efficacy of preventive action taken.

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## CHAPTER IX

### APPENDIX A

#### 45. CORRESPONDENCE BETWEEN THE MANAGEMENT SYSTEM OF *(name of the MET service provider)* AND DOCUMENTARY MANAGEMENT

N°	PROCESS	ISO 9001:2008	
01	Management review • MC-4.2-AGC • PR-5.6-AGC-1	5	Responsibility of management
		5.3	Quality policy
		5.6	Management review
02	Commercial management • MC-4.2-AGC	5.4.2	Quality management system planning
		6.1	Provision of resources
		7.2	Customer-related processes
		8.2.1	Customer satisfaction
		8.2.3	Process follow-up and measurement
		8.2.4	Product follow-up and measurement
03	Control management • IT-5.6-AGC-1 • PR-7.5-OMA-1 • PR-7.5-EMA-1 • PR-5.6-AGC-1 • PR-8.2-AGC-1 • PR-8.3-AGC-1 • PR-8.5-AGC-1	8.2	Follow-up and measurement
		8.2.1	Customer satisfaction
		8.2.2	Internal audit
		8.3	Control of non-conforming products
		8.5.2	Corrective action
		8.5.3	Preventive action
04	Production planning and control • IT-5.6-AGC-01 • PR-7.5-MET-1 • PR-7.5-CLIMA-1	7.1	Product development planning
		8.2.3	Process follow-up and measurement
		8.2.4	Product follow-up and measurement
		7.5.1	Production and service provision control
05	Documentation management • MC-4.2-AGC • PR-4.2-AGC-1 • PR-4.2-AGC-2 • PR-4.2-AGC-3	4	Quality management system
		4.2	Documentation requirements
		4.2.2	Quality Manual
		4.2.3	Document control
		4.2.4	Record control
06	Personnel management • PR-6.2-AGC-1	6.2	Human resources
		8.2.3	Process follow-up and measurement
07	Logistics IT-7.4-AGC-1	7.4	Purchases
		7.5.5	Product preservation
		8.2.3	Process follow-up and measurement
08	Maintenance and ancillary services IT-7.5-AMSM-1	6.3	Infrastructure
		6.4	Work environment
		7.6	Control of follow-up and measuring equipment
		8.2.3	Process follow-up and measurement

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Strategic Objective		Assurance of the Service		Short Term		Medium Term		Long Term	Plan of Activities for 2011									
Specific Strategic Objective	Measurement (Results Indicator)	Challenge	2011	2012	2013	2014	2015		Directorate Representative	National MET Director	OMS MET Responsibilities	MET Maintenance Responsible	Internal Auditor	T1	T2	T3	T4	
Ensure the availability of MET systems and equipment under WMO/icao standards	Uncertainty and reliability levels (Note 5, 6)	Keep in uncertainty and reliability levels	reliability between 80 and 85%	reliability between 85 and 90%	reliability between 90 and 92%	reliability between 92 and 95%	reliability more than 95%	1		S		E		100%				
								2		E								100%
								3		S	E			25%	25%	25%	25%	
								4		S		E						100%
								5			E		E					100%
								6		S	S	E						100%

Note 1: **Assessment Criterion:** a) Satisfactory performance in the working facility b) Having completed all the training courses with evaluations higher than "Good"

Note 2: **Assessment Method:** a) Performance assessment b) Review of Training Records c) Percentage of compliance of the series of objectives (Per each critical position). **Frequency:** Annual Assessment.

Note 3: **Assessment Criterion:** Referred to the number of complaints compared with the number of MET products. For example, if there are 100 METAR, 1 complaint will be the maximum number to achieve the **EXCELLENT** score. **VERY GOOD:** from 1% to 5%. **GOOD:** From 5% to 10%. **PROMEDIO:** from 15% to 20% **DEFICIENT:** More than 20%. **Frequency:** Every three (3) months.

Note 4: **Assessment Method:** The collection of complaints from clients will be obtained from the application of the ISO 1002:2004

Note 5: **Assessment Criterion:** Level of uncertainty established by the WMO and the level of reliability established by the aeronautical authority

Note 6: **Assessment Method:** a) **Level of uncertainty:** Close the gaps between the required level and the observed level b) **Reliability:** Measuring the middle time between failures and the middle time between repairs

Note 7: **Assessment Criterion:** Referred to the number of operational incidents, MET products out of the thresholds stated in Annex 3 and those established in the procedures of non-compliance products. **EXCELLENT:** from 0% to 1%. **VERY GOOD:** from 1% to 2%. **GOOD:** from 2% to 3%. **AVERAGE:** from 3% to 5%. **DEFICIENT:** higher than 5%. **Frequency:** Every 3 months.

Note 8: **Assessment Method:** Referred to the treatment of the non-compliance product according to the documented procedures **PR- 8.3-AGC- 1**

<p><b>ORGANIZATION LOGOTYPE</b></p> <p><b>UNIT</b></p>	<p><b>3.2 DOCUMENT CONTROL OF THE QMS/MET</b></p> <p><b>CONTROLLED DOCUMENT</b></p>	<p><b>CODE:</b> PR-4.2-AGC-2</p> <p><b>PAGE 1 OF 14</b></p>
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**DOCUMENT CONTROL OF THE QUALITY MANAGEMENT SYSTEM  
OF THE MET SERVICE**

Revision 00

2011

PREPARED	REVISED	APPROVED

<b>REVISION</b>	<b>DATE</b>
00	30/11/11

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**SUMMARY**

- 1. Objectives**
- 2. Scope**
- 3. Responsibilities**
- 4. References**
- 5. Requirements**
- 6. Description of activities**
- 7. Records**
- 8. Glossary**
- 9. Annexes**

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## 1. OBJECTIVE

1.1 Establish the activities and responsibilities necessary for defining the following controls:

- Approval of MS documents
- Review and updating of QMS/MET documents
- Ensuring that changes and the status of revision of QMS/MET documents are identified
- Ensuring that current versions of documents are available at the point of use
- Ensuring that documents are kept legible and identifiable
- Ensuring that external documents deemed necessary by the organization for the planning and operation of the quality management system are identified and their distribution controlled
- Preventing unintentional use of obsolete documents

## 2. SCOPE

2.1 This procedure applies to all organic units of (*name of the organization*) that provide meteorological service for national and international air navigation.

## 3. RESPONSIBILITIES

3.1 The members of the organic units of the meteorological service for air navigation are responsible for:

- Preparing, reviewing and approving QMS/MET documents (Procedures and Work Instructions) for the planning, operation and control of their respective processes.
- The mandatory use of QMS/MET documents.

3.2 The unit responsible for the QMS/MET is responsible for:

- Preparing, reviewing and approving the documented procedures and the records required by ISO 9001 standard.
- Participating in the preparation, review, and approval of QMS/MET documents.
- Managing the life cycle of this procedure.
- Reviewing and approving QMS/MET documents and sending them to the higher authorities for the respective approval.
- Managing a digital QMS/MET document archive and making arrangements for printing such documents for use in basic and refresher training courses, controlling the virtual record "Control of the physical distribution of QMS/MET documents", and sending a virtual copy of such record by e-mail to the mail box of the Quality Management Area.

3.3 The Management Representative is responsible for:

- Managing and publishing MS documents on the intranet of (*name of the organization*) to ensure that current versions of QMS/MET documents are available to users in the organic units of aeronautical meteorological services.

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- 3.4 The head of Aeronautical Meteorology of (name of the organization) is responsible for:
- Reviewing and approving QMS/MET documents and sending them to higher hierarchical instances for approval.
  - Identifying and controlling external documents needed for QMS/MET planning and operation.

#### 4. REFERENCES

- 4.1 Air Navigation Meteorological Service Management Manual
- 4.2 Drafting and presentation of QMS/MET documents (PR-4.2-AGC-1).
- 4.3 Doc 9873 "Manual on the Quality Management System for the Provision of Meteorological Service to International Air Navigation. WMO Principles and Guidelines.
- 4.4 *(Name of the organization)*strategic plan

#### 5. REQUIREMENTS

- 5.1 ISO 9001:2008 (Clause 4.2.3, Document control).
- 5.2 ISO 9000:2005 (Clause 2.7.2, Types of documents used in quality management systems).

#### 6. DESCRIPTION OF ACTIVITIES

6.1 Description of activities for defining controls for: approving, reviewing and updating, identifying the revision status, availability at points of use, and distribution control.

##### 6.2 Approval and dissemination of QMS/MET documents

- a) MS documents must be approved by top management.
- b) The QMS/MET document concerning the operation of meteorological services for air navigation, as approved by top management, shall be submitted to the Director General of Civil Aviation.
- c) Top management decides on the implementation and dissemination of QMS/MET documents approved in *(name of the organization)*.
- d) The original, signed physical and digital QMS/MET document will be added to the documentary archive of the organization.
- e) The implementation of QMS/MET documents must meet contractual, legal and regulatory requirements, as well as the needs and expectations of customers and other stakeholders, if any.
- f) The management representative will make sure that the original, signed document is posted on the intranet of *(name of the organization)* through the IT management.

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**6.3 Review, update and approval of QMS/MET documents, as necessary:**

- a) The modification and update of a QMS/MET document is the result of continuous review, following changes or the introduction of new activities, and/or as a result of MS internal audits.
- b) Once the draft MS document (work procedure or instructions) has been prepared or updated as a result of the continuous review of the documentation by any member of the meteorological service for air navigation, it will be reviewed by the Head of the Meteorological Service to make sure it meets current MS procedures. These documents are sent for approval to higher authorities.
- c) Any modification or change will be written in italics for quick identification; however, when the modification involves a large portion of the document, this clause will not apply.
- d) Once the QMS/MET documents are modified, their revision status changes.
- e) The new approved revision will comply with the provisions of clause 6.1 of this procedure.

**6.4 Ensuring that changes and the revision status of QMS/MET documents are identified**

- a) The revision status control matrix must accompany each document posted on the (name of the organization) intranet.

**6.5 Ensuring that current versions of documents are available at the points of use**

- a) The original, signed document must be posted on the (*name of the organization*) intranet so that the current version is available at the organic units.
- b) For purposes of communication, training, or induction of (*name of the organization*) personnel, documents must be printed as non-controlled copies.

**6.6 Ensuring that documents remain legible and easily identifiable**

- a) The documentation system established in the procedure entitled "Development and presentation of QMS/MET documents", PR-4.2-AGC-1, through its coding, permits the traceability of the established documentation.
- b) The identification and follow-up of QMS/MET documents will be done through the follow-up and maintenance of the following matrices:
  - "General QMS/MET document matrix - Level 1", which corresponds to the quality policy, management manual, plan of objectives, and documented procedures required by 9001.
  - "General QMS/MET document matrix - Level 2", which corresponds to the procedures of the meteorological service for national and international air navigation.

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- "General QMS/MET document matrix - Level 3", which corresponds to the work instructions of the meteorological service for national and international air navigation.

**6.7 Ensuring that external documents are identified and their distribution controlled**

- a) External documents that ensure the effective planning and operation of the quality management system are identified, controlled and internally distributed through record R01-AGC.CD-06.

**6.8 Preventing unintentional use of obsolete documents, and properly identifying them if kept for any reason**

- a) The current version of the QMS/MET document is posted on the (*name of the organization*) intranet, making sure that obsolete documents are not used.
- b) The original, physical QMS/MET documents will be kept in the corresponding units and will be stamped as "Obsolete Document".

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## 7. RECORDS

<b>IDENTIFICATION</b>	<b>STORAGE</b>	<b>PROTECTION</b>	<b>RETRIEVAL</b>	<b>RETENTION</b>	<b>DISPOSAL</b>
<b>R01-AGC.CD-01</b> General MS document matrix – Level 1	Database	Printed/digital	Chronological	2 years	Eliminate
<b>R01-AGC.CD-02</b> General MET/MS document matrix – Level 2	Database	Printed/digital	Chronological	2 years	Eliminate
<b>R01-AGC.CD-03</b> General MET/MS document matrix – Level 3	Database	Printed/digital	Chronological	2 years	Eliminate
<b>R01-AGC.CD-04</b> MS document revision status control matrix	Database	Digital	Chronological	2 years	Eliminate
<b>R01-AGC.CD-05</b> Identification and control of external documents	Database	Printed/digital	Chronological	2 years	Eliminate

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## 8. GLOSSARY

**Approval:**

The formal acceptance of a document, product, service, item or activity.

**Quality:**

Degree to which a set of inherent characteristics meets the requirements.

**Data:**

Any formal knowledge used as process input, serving in general as a basis for drafting controlled documents. Controlled data include, *inter alia*, drawings and external standards.

**Document:**

Information and its support medium.

**Efficacy:**

Extent to which planned activities are carried out and planned results obtained.

**Efficiency:**

Relationship between outcome and resources used.

**Management:**

Coordinated activities for managing and controlling an organization.

**Aeronautical information:**

The result of gathering, analyzing and formatting aeronautical data.

**Work instructions:**

A procedure that describes the activities carried out by organic units.

**Quality management manual:**

A document containing the technical-administrative structure of the quality management system, which:

- Defines the scope of the system and top management commitment to the quality of its established processes, products and services.
- Provides for control tools through the development and application of procedures or work instructions, documents, formats, records, and documents related to the management of the organization.
- Serves as a guide for customer satisfaction and process optimization.

**Quality policy:**

Action criterion or guideline chosen as a guide for decision-making when implementing strategies, plans, programmes and specific quality projects within the meteorological service for national and international air navigation, formally expressed and disseminated by top management.

**Procedure:**

A specified way of carrying out an activity or process.

**Process:**

A set of interrelated or interacting activities that turn input into outcome.

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**Revision:**

The current status of the document, sequentially numbered in increasing order, starting with 00 (e.g., Revision 00, Revision 01...). An activity carried out to check the convenience, suitability and efficacy of the subject matter for the attainment of the established objectives.

**Records:**

They are established and kept for demonstrating compliance with requirements and the effective operation of the quality management system. Records must be easily identifiable and retrievable.

Records R01 indicate compliance with requirements; records R02 show efficacy; and records R03 are for continuous improvement.

**Requirement:**

An established need or expectation, generally implicit or mandatory.

**Quality Management System (QMS):**

A management system for directing and controlling an organization with respect to quality. A group of human and material resources, coordinated through the structured documents and referenced to the Safety Manual, aimed at ensuring process compliance with the recommendations of ISO 9001:2000.

**9. ANNEXES**

- Annex I: "General QMS document matrix - Level 1"  
R01-AGC.CD-01
- Annex II: "General QMS Document Matrix - Level 2"  
R01-AGC.CD-02.
- Annex III: "General QMS Document Matrix - Level 3"  
R01-AGC.CD-03
- Annex IV: "Control of physical distribution of QMS documents"  
R01-AGC.CD-04.
- Annex V: "Identification and control of external documents"  
R01-AGC.CD-06.

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**ANNEX V**

**IDENTIFICATION AND CONTROL OF EXTERNAL DOCUMENTS**

CODE: R01-AGC.CD-06

REVISION: 00/XX-XX-2011

DOCUMENT	ISSUING BODY	DISTRIBUTION CONTROL	PARTY RESPONSIBLE FOR DISTRIBUTION

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**CONTROL OF RECORDS OF THE QUALITY MANAGEMENT SYSTEM  
OF THE MET SERVICE**

**Revision 00**

**2011**

PREPARED	REVISED	APPROVED

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<p><b>SUMMARY</b></p> <ol style="list-style-type: none"> <li><b>1. Objectives</b></li> <li><b>2. Scope</b></li> <li><b>3. Responsibilities</b></li> <li><b>4. References</b></li> <li><b>5. Requirements</b></li> <li><b>6. Description of Activities</b></li> <li><b>7. Records</b></li> <li><b>8. Glossary</b></li> <li><b>9. Annexes</b></li> </ol>
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**REVISION STATUS CONTROL MATRIX**

CODE: R01-AGC.CD-05

REVISION: 00/XX-XX-2011

REVISION	PREPARED	REVISED	APPROVED	REASON FOR THE CHANGE	DATE
00					
01					

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## 1. OBJECTIVE

- 1.1 This procedure establishes guidelines for:
- Establishing and controlling the records that show compliance with requirements and effective operation of the QMS/MET.
  - Defining controls for the identification, storage, protection, retrieval, retention, and disposal of quality management system records. Records must be kept legible, easily identifiable and retrievable.

## 2. SCOPE

- 2.1 This procedure applies to all organic units of (*name of the organisation*) that provide meteorological service for international air navigation.

## 3. RESPONSIBILITIES

- 3.1 The implementation and maintenance of this procedure is the responsibility of the unit in charge of the QMS/MET.

- 3.2 The head of aeronautical meteorology and the heads of the organic units that provide meteorological service for national and international air navigation, in coordination with the personnel of such organic units, are responsible for establishing and controlling the use and maintenance of records showing the effective operation of the management system.

## 4. REFERENCES

- 4.1 The quality Manual
- 4.2 Drafting and presentation of QMS/MET documents (PR-4.2-AGC-1).
- 4.3 Board Agreement° (number), dated (date), and approved the plan for the implementation of the QMS/MET.
- 4.4 (Name of the organisation) strategic plan.
- 4.5 Doc 9873 "Manual on the Quality Management System for the Provision of Meteorological Service to International Air Navigation. WMO principles and guidelines.

## 5. REQUIREMENTS

- 5.1. Quality Manual
- 5.2 ISO 9001:2008 (Clause 4.2.4-Control of Records).

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5.3 ISO 9000:2005 standard (Clause 2.7.2 – Types of documents used in quality management systems).

## 6. DESCRIPTION OF ACTIVITIES

6.1 Every procedure has a “requirement” as an input variable, which reflects stakeholder needs and expectations. In order to meet these needs, processes are created and described in documents.

6.1.1 The documents (procedures or work instructions) contain records that reflect compliance with requirements and effective and efficient operation of the QMS/MET.

6.1.2 Records are classified as R01, R02, and R03. **R01** records show compliance with requirements, such as customer requirements and those of the standards contained in item 5 of this procedure.

6.1.3 **R02** records reflect efficacy, that is, the extent to which planned activities are implemented and planned results are obtained.

6.1.4 **R03** records refer to continuous improvement, that is, they show the efficacy of the quality management system through the quality policy, the quality objectives, audit findings, data analysis, corrective and preventive action, and management reviews.

### 6.1.5 CONTROL OF RECORDS

#### A.- Identification

- The following records are established:

- **Records that show compliance with requirements**

Examples:

- Pre-flight meteorological information
- Equipment calibration certificates
- Provider service assessment records

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- **Records that show efficacy**

Examples:

- Progress and goal achievement tables
- Report on non-conforming products or services
- Customer satisfaction assessment surveys

- **Records that reflect continuous improvement**

Example:

- Corrective or preventive action
- QMS management review

- **Identification of records**

Records will be coded as follows:

RNN – AAAAAAAAA.BBB - CC where:

R : Record

NN : 01.- Requirement compliance records  
02.- Efficacy records  
03.- Continuous improvement records

AAAAAAAA : Abbreviation of the organic unit responsible for drafting the record format.

BBB : Letters designating the document, as detailed. Do not take into account these digits for operational documents of air navigation, maintenance and logistic services.

CD Control of documents

CR Control of records

QI Quality indicators

IA Internal audit

CNP Control of non-conforming products

CPA Corrective or preventive action

TMR Top management review

Others

CC : Correlative number of a record of a given area.

The revision status of each record is:

REVISION CC/FF – EE – DDDD, which is interpreted as:

REVISION CC: Current status of the record (CC=00, 01, 02, ...n)

FF: Day in which the record is revised.

EE: Month in which the record is revised.

DDDD: Year in which the record is revised.

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**B.- Storage**

- Each record generated by the organic units of air navigation, airport, meteorological equipment and instruments maintenance, and logistic services must be kept in a given location and safeguarded by personnel designated by the corresponding head.

**C.- Protection**

- Each MS record must be preserved in physical or digital media (cabinets, drawers, shelves, or other IT media) to prevent deterioration, damage, or loss of information.
- In the case of records kept in a computer, they must have backup copies.

**D.- Retrieval**

- MS records must be stored in such a way as to provide easy access to users in their day-to-day operations and during quality audits. Each head of area is responsible for authorising the personnel that will have access to them.

**E.- Retention**

- MS records must comply with specific retention periods, in keeping with existing regulations and as established in each organic unit.

**F.- Disposal of records**

- All records will be kept for the retention period in a physical or electronic file in each organic unit. Every year, those responsible for safeguarding the records will check their files and advise the Head of the Area and the person in charge of the MS about the date in which custody expires. The latter will dispose of said records and propose their recycling, destruction, or transfer to the general archive of the organisation.

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## 7. RECORDS

IDENTIFICATION	STORAGE	PROTECTION	RETRIEVAL	RETENTION	DISPOSAL
<b>R01-AGC.CR-01</b> General matrix of MS controlled records - Level 1.	(Name of the MS organic unit)	Printed/Digital	Chronological	3 years	Eliminate
<b>R01-AGC.CR-02</b> General matrix of MS controlled records - Level2.	(Name of the MS organic unit)	Printed/Digital	Chronological	3 years	Eliminate
<b>R01-AGC.CR-03</b> General matrix of MS controlled records - Level3.	(Name of the MS organic unit)	Printed/Digital	Chronological	3 years	Eliminate
<b>R01-AGC.CR-04</b> Metric of MS controlled records in organic units.	(Name of the MS organic unit)	Printed/Digital	Chronological	3 years	Eliminate

## 8. GLOSSARY

**Quality:**

The degree to which a set of inherent characteristics meets the requirements.

**Coding:**

A mechanism for assigning an individual code to a QMS document for its identification and linkage to other documents.

**Data:**

Any formal knowledge used as process input, serving in general as a basis for drafting controlled documents. Controlled data include, *inter alia*, drawings and external standards.

**Document:**

Information and its support medium.

Example: A record, specification, documented procedure, blueprint, report, standard.

Note 1: The support medium may be paper, magnetic, optic, or electronic disc, photography or standard sample, or a combination of these.

Note 2: Frequently, a set of documents, such as specifications and records, is called "documentation".

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Note 3: Some requirements (for example, the legibility requirement) apply to all types of documents, although there may be different requirements for specifications (for example, the requirement of being controlled through reviews) and records (for example, the requirement of being retrievable).

**Conformity:**

Compliance with a requirement.

**Efficacy:**

Extent to which planned activities are carried out and planned results obtained.

**Efficiency:**

Relationship between outcome and resources used.

**Information:**

Data with a meaning.

**Work Instructions:**

A procedure that describes the activities carried out by organic units.

**Procedure:**

A specified way of carrying out an activity or process.

Note 1.- Procedures may or may not be documented.

Note 2.- When a procedure is documented, the term "written procedure" or "documented procedure" is frequently used. The document that contains a procedure may be called "procedural document".

**Process:**

A set of interrelated or interacting activities that turn input into outcome.

**Revision:**

The current status of the document, with sequential numbering in decreasing order, starting with 00 (e.g., Revision 00, Revision 01...). An activity carried out to check the convenience, suitability and efficacy of the subject matter for the attainment of the established objectives.

**Records:**

They are established and kept for demonstrating compliance with requirements and the effective operation of the quality management system. Records must be readily identifiable and retrievable.

Records R01 indicate compliance with requirements; records R02 show efficacy; and records R03 are for continuous improvement.

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## 9. ANNEXES

Annex I: General matrix of MS controlled records – Level 1.

Annex II: General matrix of MS controlled records – Level 2.

Annex III: General matrix of MS controlled records – Level 3.

Annex IV: Matrix of MS controlled records in organic units.

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<b>ORGANIZATION LOGOTYPE</b>  <b>UNIT</b>	<b>3.4 QMS/MET INTERNAL AUDIT</b>	<b>CODE: PR-8.2-AGC-1</b>  <b>PAGE 1 OF 11</b>
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**INTERNAL AUDIT OF THE QUALITY MANAGEMENT SYSTEM**

**Revision 00**

**2011**

PREPARED	REVISED	APPROVED

REVISION	DATE
00	30/11/11

<b>ORGANIZATION LOGOTYPE</b>	<b>3.4 QMS/MET INTERNAL AUDIT</b>	<b>CODE: PR-8.2-AGC-1</b>
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**SUMMARY**

- 1. Objectives**
- 2. Scope**
- 3. Responsibilities**
- 4. References**
- 5. Requirements**
- 6. Description of Activities**
- 7. Records**
- 8. Glossary**
- 9. Annexes**

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<b>ORGANIZATION LOGOTYPE</b>	<b>3.4 QMS/MET INTERNAL AUDIT</b>	<b>CODE: PR-8.2-AGC-1</b>
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## 1. OBJECTIVE

1.1 Establish, at planned intervals, the planning and implementation criteria for QMS/MET internal audits in order to determine compliance of the QMS/MET with the requirements established in ISO 9001: 2008 and in the current legislation, and its efficacy. Records of the audits and their findings will also be kept.

## 2. SCOPE

2.1 This procedure applies to all MET units of (*name of the MET service provider*).

## 3. RESPONSIBILITIES

3.1 The director/manager is responsible for:

- Approving the QMS/MET annual internal audit programme, as well as the operational plan implementation budget and the investment budget for the current fiscal year;
- Informing top management about the status of the QMS/MET of the audited MET units;
- Arranging for the adoption of corrective and preventive action at the audited MET units;
- Assigning the necessary resources for the adoption of corrective and preventive action;
- Arranging for the internal auditor of the quality management area and of the MET area to follow up on the adoption of corrective and preventive action.

3.2 The immediate superior of the head of the MET section is responsible for:

- Planning at least two internal audits of the QMS/MET, in coordination with the head of the quality management area, to ensure that all MET processes are audited;
- Advising the MET units to be audited duly in advance;
- Approving internal audit plans;
- Informing the Director/Manager of the level of compliance with the actions derived from MET audits;
- Keeping the internal audit team trained and updated.

3.3 The heads of the audited MET units are responsible for:

- Determining the root causes of identified non-conformities and/or hazards;
- Identifying possible solutions, determining the corrective action required to eliminate the root cause, and the preventive action required to prevent it from happening again;

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<b>ORGANIZATION LOGOTYPE</b>  <b>UNIT</b>	<b>3.4 QMS/MET INTERNAL AUDIT</b>	<b>CODE:</b> <b>PR-8.2-AGC-1</b>  <b>PAGE 4 OF 11</b>
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- Planning actions to correct non-conformities and/or observations identified in the final internal audit report;
- Assessing the efficacy of the corrective and preventive action for purposes of continuous improvement.

#### **4. REFERENCES**

- 4.1 MET Quality Manual
- 4.2 Drafting and presentation of QMS/MET documents(PR-4.2-AGC-1)
- 4.3 Strategic plan
- 4.4 Doc 9873 – *Manual on the Quality Management System for the Provision of Meteorological Service to International Air Navigation.*

#### **5. REQUIREMENTS**

- 5.1 MET Quality Manual
- 5.2 ISO 9001:2008 (Clause8.2.2– Internal Audit)
- 5.3 19011 standard (Guidelines for quality systems auditing)
- 5.4 ISO 9000:2005 standard (Clause 2.7.2 – Types of document used in quality management systems).

#### **6. ACTIVITIES**

- 6.1 Planning of the QMS/MET annual internal audit programme
- 6.2 Planning and preparation of the MET quality management internal audit
- 6.3 Audit implementation
- 6.4 Audit report

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<b>ORGANIZATION LOGOTYPE</b>	<b>3.4 QMS/MET INTERNAL AUDIT</b>	<b>CODE: PR-8.2-AGC-1</b>
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## 7. RECORDS

IDENTIFICATION	STORAGE	PROTECTION	RETRIEVAL	RETENTION	DISPOSAL
<b>R03-AGC.AI-01</b> MET/QMS annual audit programme	Quality management area	Printed/digital	Chronological	3years	Eliminate
<b>R03-AGC.AI-02</b> Internal audit plan	Quality management area	Printed/digital	Chronological	3years	Eliminate
<b>R03-AGC.AI-03</b> Non-conformity report	Quality management area	Printed/digital	Chronological	3years	Eliminate
<b>R03-AGC.AI-04</b> Internal audit final report	Quality management area	Printed/Digital	Chronological	3years	Eliminate

## 8. GLOSSARY

### **Audit:**

A systematic, independent, and documented process for obtaining evidence from the audit and objectively assessing it in order to determine the extent to which audit criteria are met.

Note.- Internal audits, in some cases called first party audits, are conducted by, or on behalf of, the organization itself for internal purposes, and may serve as the basis for the self-statement of conformity of an organization.

External audits include what is generally called "second or third party audits".

Second party audits are conducted by external independent organizations, such as customers and other individuals on their behalf.

Third party audits are conducted by independent external organizations. Such organizations provide the certification or record of conformity with records such as those of ISO 9001 and ISO 14001:1996 standards.

### **Corrective action:**

Action taken to eliminate the causes of **non-conformities** to prevent them from happening again.

Note 1. –A non-conformity may have more than one cause.

Note 2. – Corrective action is taken to prevent something from happening again, while preventive action is taken to prevent something from happening.

Note 3.- There is a difference between correction and corrective action.

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<b>ORGANIZATION LOGOTYPE</b>  <b>UNIT</b>	<b>3.4 QMS/MET INTERNAL AUDIT</b>	<b>CODE:</b> <b>PR-8.2-AGC-1</b>  <b>PAGE 6 OF 11</b>
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**Preventive Action:**

Action taken to eliminate the causes of potential **non-conformities** in order to prevent them from happening.

Note 1 –There may be more than one cause of a potential non-conformity.

Note 2. –Preventive action is taken to prevent something from happening, while corrective action is taken to prevent something from happening again.

**Auditor:**

An individual with the competence to conduct an audit.

**Lead auditor:**

An auditor designated to conduct a service safety and/or quality audit.

**Correction:**

Action taken to eliminate an identified non-conformity.

Note 1.-A correction can be made together with a corrective action.

Note2.- A correction can be, for example, a re-process or a re-classification.

**Conformity:**

Compliance with a requirement. Statement of facts, a condition identified during the audit that meets audit criteria.

**Competence:**

Demonstrated capacity to apply knowledge and skills.

**Audit conclusions:**

The audit results obtained by the audit team after considering audit objectives and all audit findings.

**Audit criteria:**

Set of policies, procedures or requirements used as a reference.

**Internal audit team:**

Group of internal auditors established for conducting internal quality management audits.

**Efficacy:**

Extent to which planned activities are carried out and planned results obtained.

**Efficiency:**

Relationship between outcome and resources used.

**Audit evidence:**

Records, statements of facts, or any other information relevant to audit criteria and that is verifiable.

Note.- Evidence can be qualitative or quantitative.

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**Objective evidence:**

Data supporting or confirming the existence of something.

**Non-conformity:**

Failure to comply with, or absence of, specified requirements, thus reducing the effectiveness of the MET/QMS to meet the established goals or objectives.

**Observations:**

Minor, sporadic non-compliances, or formal inadequacies, that have had no impact on MET/QMS operation and which may be easily corrected.

**Opportunities for improvement:**

Recommendations only stating that something is already being done and that it could be done in a better way. Opportunities for improvement will be treated as preventive action.

**Process:**

A set of interrelated or interacting activities that turns input into outcome.

**Procedure:**

A specified way of carrying out an activity or process.

Note 1. – Procedures may or may not be documented.

Note 2.- When a procedure is documented, the term “written procedure” or “documented procedure” is frequently used. The document that contains a procedure may be called “procedural document”.

**Audit programme:**

A set of one or more audits scheduled for a given period of time and having a specific purpose.

**Records:**

They are established and kept for demonstrating compliance with requirements and the effective operation of the quality management system. Records must be easily identifiable and retrievable.

Records R01 indicate compliance with requirements; records R02 show efficacy; and records R03 are for continuous improvement.

## 8. ANNEXES

Annex I: MET/QMS annual audit plan  
R03-AGC.AI-01

Annex II: Internal audit plan  
R03-AGC.AI-02.

Annex III: Non-conformity report  
R03-AGC.AI-03

Annex IV: Internal audit final report  
R03-AGC.AI-04.

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**ANNEX I**

**MET/QMS ANNUAL AUDIT PROGRAMME**

CODE:R03-AGC.AI-01

REVISION: 00/18-12-2011

<b>ACTIVITY TO BE AUDITED AND DATE</b>	<b>JAN</b>	<b>FEB</b>	<b>MAR</b>	<b>APR</b>	<b>MAY</b>	<b>JUN</b>	<b>JUL</b>	<b>AUG</b>	<b>SEP</b>	<b>OCT</b>	<b>NOV</b>	<b>DEC</b>
1.- DATE:												
2.- DATE:												
3.- DATE:												
4.- DATE:												

<b>LEGEND – TYPES OF AUDITS</b>	<b>OBSERVATIONS</b>
INTERNAL AUDIT	According to the MET/QMS implementation plan
EXTERNAL AUDIT	

PREPARED:	APPROVED:	UPDATED:
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<b>REVISION</b>	<b>DATE</b>
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<b>ORGANIZATION LOGOTYPE</b>  <b>UNIT</b>	<b>3.4 QMS/MET INTERNAL AUDIT</b>	<b>CODE:</b> <b>PR-8.2-AGC-1</b>  <b>PAGE 9 OF 11</b>
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**ANNEX II**  
**INTERNAL AUDIT PLAN**

**CODE: R03-AGC.AI-02**

**REVISION: 00/XX-XX-2011**

**Internal Audit Plan**

**INTRODUCTION**

This section must contain the type(s) of audit(s) to be conducted in the audit.

**PURPOSE**

The purpose, objectives, scope and criteria based on which the audit will be conducted.

**METHODOLOGY**

This section specifies the assessment techniques.

**AREAS TO BE AUDITED**

This section must clearly specify the area to be audited.

**PLANNED ACTIVITIES**

This section must identify and describe the activities to be conducted, and specify the documents that shall be available to the auditor and whether the audit will include interviews to the areas to be audited.

**PROGRAMME**

This section must include a tentative programme for each of the planned activities.

**AUDIT**

This section must introduce the members of the audit.

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### ANNEX III

### NON-CONFORMITY REPORT

CODE:R03-AGC.AI-03

REVISION: 00/XX-XX-2011

NON-CONFORMITY SHEET	
Audited area:	N°:
Organic unit audited:	Date of the audit:
Document / ISO 9001:2008 references:	
Non-conformity_____	Observation_____
(Description of the non-conformity)	
Notes:	
Severity (minor/major):	Prepared by (Auditor):
Date of acknowledgment (Audited party):	Date of acknowledgment (Audited party):

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<b>ORGANIZATION LOGOTYPE</b>  <b>UNIT</b>	<b>3.4 QMS/MET INTERNAL AUDIT</b>	<b>CODE:</b> <b>PR-8.2-AGC-1</b>  <b>PAGE 11 OF 11</b>
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**ANNEX IV**

**INTERNAL AUDIT FINAL REPORT**

**CODE:R03-AGC.AI-04**

**REVISION: 00/XX-XX-2011**

<p><b>INTERNAL AUDIT FINAL REPORT</b></p> <p><b><u>INTRODUCTION</u></b>  This section must identify the type of audit.</p> <p><b><u>NAME OF THE AUDITOR:</u></b>  Name of the lead auditor.</p> <p><b><u>AUDIT OF:</u></b>  Example: MET/QMS documentation  Management responsibilities  Resource management  Measurement, analysis, improvement, etc.</p> <p><b><u>AUDITED PERSONNEL</u></b>  List the names of audited personnel.</p> <p><b><u>AUDIT PATHS AND SOURCES OF EVIDENCE</u></b>  This section must contain the requirements of the audited quality management system and the documented procedures used in the audit.</p> <p><b><u>ASSESSMENTS AND CONCLUSIONS</u></b>  This section, in general terms, must describe non-conformities, observations, or opportunities for improvement. This section must not only address issues, but also highlight good points. At the end, write a final conclusion of the audit.</p>
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**Signatures:**

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**Lead auditor**

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**Internal auditor**

<b>REVISION</b>	<b>DATE</b>
00	30/11/11

<b>ORGANIZATION LOGOTYPE</b>  <b>UNIT</b>	<b>3.5 CONTROL OF QMS/MET NON-CONFORMING SERVICES OR PRODUCTS</b>	<b>CODE: PR-8.3-AGC-1</b>  <b>PAGE 1 OF 7</b>
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**CONTROL OF THE QUALITY MANAGEMENT MET SERVICE  
NON-CONFORMING SERVICES OR PRODUCTS**

Revision 00

2011

PREPARED	REVISED	APPROVED

REVISION	DATE
00	30/11/11

<p><b>ORGANIZATION LOGOTYPE</b></p> <p><b>UNIT</b></p>	<p><b>3.5 CONTROL OF QMS/MET NON-CONFORMING SERVICES OR PRODUCTS</b></p>	<p><b>CODE: PR-8.3-AGC-1</b></p> <p><b>PAGE 2 OF 7</b></p>
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<p style="text-align: center;"><b>SUMMARY</b></p> <ol style="list-style-type: none"> <li>1. Objectives</li> <li>2. Scope</li> <li>3. Responsibilities</li> <li>4. References</li> <li>5. Requirements</li> <li>6. Description of Activities</li> <li>7. Records</li> <li>8. Glossary</li> <li>9. Annexes</li> </ol>	
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<p><b>REVISION</b></p>	<p><b>DATE</b></p>
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ORGANIZATION LOGOTYPE	3.5 CONTROL OF QMS/MET NON-CONFORMING SERVICES OR PRODUCTS	CODE: PR-8.3-AGC-1
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**REVISION STATUS CONTROL MATRIX**

CODE: R01-AGC.CD-05

REVISION: 00/XX-XX-2011

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00					
01					

REVISION	DATE
00	30/11/11

<b>ORGANIZATION LOGOTYPE</b>  <b>UNIT</b>	<b>3.5 CONTROL OF QMS/MET NON-CONFORMING SERVICES OR PRODUCTS</b>	<b>CODE: PR-8.3-AGC-1</b>  <b>PAGE 4 OF 7</b>
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## 1. OBJECTIVE

1.1 Establish guidelines for the control and treatment of non-conforming services/products to prevent their use and to take appropriate steps for their correction.

## 2. SCOPE

2.1 This procedure applies to all organic units of (*name of the MET service provider*) that provide MET services.

## 3. RESPONSIBILITIES

3.1 The implementation and maintenance of this procedure is under the responsibility of the MET/QMS area.

3.2 All MET service employees are responsible for identifying, recording, and communicating non-conformities to their immediate supervisors and for taking immediate action as established in the operational procedures.

3.3 MET service shift supervisors are responsible for recording the identified non-conformities in the established service sheets and for delivering them to the corresponding head.

3.4 The heads of MET units document non-conformities and specify the action to be taken.

3.5 The head of the MET section is responsible for controlling the recording of non-conformities and specifying the corrective actions that have not been contemplated in the operational procedures.

## 4. REFERENCES

4.1 Top Management approves the MET/QMS implementation plan (Resolution and *date*).

4.2 Drafting and presentation of MET/QMS documents (PR-4.2-AGC-1).

4.3 Doc 9873 – *Manual on the Quality Management System for the Provision of meteorological service to international air navigation.*

4.4 (*Name of the MET service provider*) 2011-2015 strategic plan.

## 5. REQUIREMENTS

5.1 Quality Management Manual

5.2 ISO 9001:2008 (Clause 8.3 – Control of nonconforming product)

5.3 ISO 9000:2005 (Clause 2.7.2 – Types of document used in quality management systems).

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## 6. DESCRIPTION OF ACTIVITIES

### 6.1 Internal identification of non-conforming service/product in MET processes

6.1.1 Non-conformities identified in MET units by personnel shall be communicated to the supervisor for their recording in the service sheets and for the adoption of immediate corrective action.

### 6.2 Identification of non-conforming service/product by the customer

6.2.2 Non-conformities identified by customers are communicated to the supervisors and recorded based on the following criterion:

- a) If communicated verbally, by telephone, or by e-mail, it will be recorded in the corresponding service sheet during each operational shift.
- b) If communicated by mail, it will be sent to the corresponding higher instances and recorded in the service sheets.

6.2.3 Upon completing the activities mentioned in items 6.1 and 6.2, the head of the MET section completes the non-conformity reporting form according to the MET/QMS internal audit procedure, lists the non-conformities, and starts taking corrective action to eliminate the causes, according to the MET/QMS corrective and preventive action procedure.

6.2.4 After closing the non-conformity record, the head of the MET section will communicate the problems recorded and the action taken to the QMS area, which will issue a report to the corresponding head.

## 7. RECORDS

IDENTIFICATION	STORAGE	PROTECTION	RETRIEVAL	RETENTION	DISPOSAL
<b>R01-AGC.CNC-01</b> Statistics on non-conformities	(Name of the MET unit)	Printed/Digital	Chronological	03 years	Eliminate
<b>R01-AGC.CNC-02</b> Letters of complaint or claims from airlines concerning non-conforming services or products	(Name of the MET unit)	Printed/Digital	Chronological	03 years	Eliminate

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<b>ORGANIZATION LOGOTYPE</b>  <b>UNIT</b>	<b>3.5 CONTROL OF QMS/MET NON-CONFORMING SERVICES OR PRODUCTS</b>	<b>CODE: PR-8.3-AGC-1</b>  <b>PAGE 6 OF 7</b>
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## 8. GLOSSARY

**Corrective action:**

Action taken to eliminate the causes of **non-conformities** in order to prevent them from happening again.

Note 1.- A non-conformity may have more than one cause.

Note 2.- Corrective action is taken to prevent something from happening again, while preventive action is taken to prevent something from happening.

Note 3.- There is a difference between correction and corrective action.

**Quality:**

Extent to which a set of inherent characteristics meets the requirements.

**Customer:**

An organization or individual receiving a product or service.

**Conformity:**

Compliance with a requirement. Statement of facts, a condition identified during the audit that meets the audit criteria.

**Correction:**

Action taken to eliminate an identified non-conformity.

Note 1.- A correction can be made together with a corrective action.

Note 2.- A correction can be, for example, a re-process or a re-classification.

**Efficacy:**

Extent to which planned activities are carried out and planned results obtained.

**Efficiency:**

Relationship between outcome and resources used.

**Non-conformity:**

Failure to comply with, or absence of, the specified requirements, thus reducing the effectiveness of the MET/QMS to meet the established goals or objectives.

**Provider**

An organization or individual providing a product or service.

**Requirement:**

An established need or expectation, generally implicit or mandatory.

**Records:**

They are established and kept for demonstrating compliance with requirements and the effective operation of the quality management system. Records must be easily identifiable and retrievable.

Records R01 indicate compliance with requirements; records R02 show efficacy; and records R03 are for continuous improvement.

REVISION	DATE
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<p><b>ORGANIZATION LOGOTYPE</b></p> <p><b>UNIT</b></p>	<p><b>3.5 CONTROL OF QMS/MET NON-CONFORMING SERVICES OR PRODUCTS</b></p>	<p><b>CODE: PR-8.3-AGC-1</b></p> <p><b>PAGE 7 OF 7</b></p>
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**9. ANNEXES**

Not applicable.

Draft

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<b>ORGANIZATION LOGOTYPE</b>  <b>UNIT</b>	<b>3.6 QMS MET CORRECTIVE AND PREVENTIVE ACTIONS</b>	<b>CODE: PR-8.5-AGC-1</b>  <b>PAGE 1 OF 10</b>
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**CORRECTIVE AND PREVENTIVE ACTIONS OF THE  
MET QUALITY MANAGEMENT SYSTEM**

Revision 00

2011

PREPARED	REVISED	APPROVED

<b>ORGANIZATION LOGOTYPE</b>  <b>UNIT</b>	<b>3.6 QMS MET CORRECTIVE AND PREVENTIVE ACTIONS</b>	<b>CODE: PR-8.5-AGC-1</b>  <b>PAGE 2 OF 10</b>
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**SUMMARY**

- 1. Objectives**
- 2. Scope**
- 3. Responsibilities**
- 4. References**
- 5. Requirements**
- 6. Description of Activities**
- 7. Records**
- 8. Glossary**
- 9. Annexes**

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<b>ORGANIZATION LOGOTYPE</b>  <b>UNIT</b>	<b>3.6 QMS MET CORRECTIVE AND PREVENTIVE ACTIONS</b>	<b>CODE: PR-8.5-AGC-1</b>  <b>PAGE 3 OF 10</b>
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**REVISION STATUS CONTROL MATRIX**

CODE: R01-AGC.CD-05

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01					

REVISION	DATE
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<b>ORGANIZATION LOGOTYPE  UNIT</b>	<b>3.6 QMS MET CORRECTIVE AND PREVENTIVE ACTIONS</b>	<b>CODE: PR-8.5-AGC-1  PAGE 4 OF 10</b>
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## 1. OBJECTIVE

1.1 Establish guidelines for the implementation of corrective and preventive action in order to eliminate:

- The causes of non-conformities, to prevent them from occurring again; and
- The causes of potential non-conformities, to prevent their occurrence.

1.2 In both cases, the results of the action taken must be recorded, and the efficacy of the corrective or preventive action taken examined.

## 2. SCOPE

2.1 This procedure applies to all units of *(name of the MET service provider)* that provide MET services.

## 3. RESPONSIBILITIES

3.1 The implementation and maintenance of this procedure is under the responsibility of the quality management area.

3.2 All MET units employees are responsible for:

- a) Taking immediate corrective action to address non-conformities;
- b) Identifying possible solutions to actual and potential non-conformities, specifying corrective and preventive action;
- c) Implementing the actions that correspond to them or submitting them to the head of the MET section when they are beyond their reach; and
- d) Recording corrective and preventive actions.

3.3 The head of the MET section validates and records the identified non-conformities, specifies corrective or preventive action within his/her area of responsibility and informs his/her immediate superior.

3.4 If applicable, the head of the MET section, in coordination with the respective area, defines the cost of the actions.

3.5 The internal auditor of the quality management system is responsible for consolidating the degree of compliance with the corrective and preventive actions at national level.

## 4. REFERENCES

4.1 Top Management approves the MET/QMS implementation plan (Resolution and *date*).

4.2 Drafting and presentation of MET/QMS documents.

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4.2.1 Doc 9873 – *Manual on the Quality Management System for the Provision of meteorological Service to International Air Navigation.*

4.3 (Name of the MET service provider) 2011-2015 strategic plan.

## 5. REQUIREMENTS

5.1 Quality Management System;

5.2 ISO 9001:2008 (Clauses 8.5.2 and 8.5.3);

5.2.1.1 ISO 9000:2005 (Clause 2.7.2 – Types of document used in quality management systems).

## 6. DESCRIPTION OF ACTIVITIES

### 6.1 Corrective action

6.1.1 Those responsible for implementing, reporting, investigating, following up, and monitoring corrective action must identify the root causes of non-conformities, and shall adopt all the necessary measures to avoid their recurrence, taking into account:

- a) That the identification and implementation of corrective measures must be done for the short and long term;
- b) The assessment shall consider the impact on customer satisfaction, service capacity, efficacy, efficiency, and interruption of MET service activities, as well as trends in the occurrences reported in the service sheets;
- c) The corrective action implementation programme will include:
  - An analysis of the root cause(s) of the problem, applying methodologies such as the 5 Whys theory, the cause-and-effect diagram, the Ichikawa fishbone diagram, etc.;
  - The corrective action to be taken;
  - Those responsible for the actions; and
  - The action plan.

### 6.2 Preventive action

6.2.1 Those who implement, report on, investigate, follow up, and monitor preventive action must consider:

- The appropriate sources of information, trends in the occurrences reported in the service sheet, trends in safety incidents, audit reports, risk assessments. The aforementioned information analysis shall be done at least once a year; and
- The establishment of a control system to ensure its effectiveness.

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<b>ORGANIZATION LOGOTYPE</b>	<b>3.6 QMS MET CORRECTIVE AND PREVENTIVE ACTIONS</b>	<b>CODE: PR-8.5-AGC-1</b>
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### 6.3 Follow-up

6.3.1 Those who implement, report, investigate, follow up, and monitor corrective and preventive action must assess the impact of the action taken.

### 6.4 Documentation

6.4.1 The head of the MET section, in coordination with the quality management area, will send copy of the corrective and preventive action records to Top Management and to the MET/QMS internal auditor.

## 7. RECORDS

IDENTIFICATION	STORAGE	PROTECTION	RETRIEVAL	RETENTION	DISPOSAL
<b>R03-AGC.ACP-01</b> Corrective or preventive action report	(Name of the MET unit)	Printed/Digital	Chronological	03 years	Eliminate
<b>R03-AGC.ACP-02</b> Corrective action follow-up table	(Name of the MET unit)	Printed/Digital	Chronological	03 years	Eliminate
<b>R03-AGC.ACP-03</b> Preventive action follow-up table	(Name of the MET unit)	Printed/Digital	Chronological	03 years	Eliminate

## 8. GLOSSARY

### Corrective Action:

Action taken to eliminate the causes of **non-conformities** in order to prevent them from happening again.

Note 1.– A non-conformity may have more than one cause.

Note 2.– Corrective action is taken to prevent something from happening again, while preventive action is taken to prevent something from happening.

Note 3.- There is a difference between correction and corrective action.

### Preventive action:

Action taken to eliminate the cause of a **potential non-conformity** in order to prevent its occurrence.

Note 1.– A potential non-conformity may have more than one cause.

Note 2.– Preventive action is taken to prevent something from happening, while corrective action is taken to prevent something from happening again.

### Conformity:

Compliance with a requirement. Statement of facts, a condition identified during the audit that meets audit criteria.

REVISION	DATE
00	30/11/11

<b>ORGANIZATION LOGOTYPE  UNIT</b>	<b>3.6 QMS MET CORRECTIVE AND PREVENTIVE ACTIONS</b>	<b>CODE: PR-8.5-AGC-1  PAGE 7 OF 10</b>
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**Correction:**

Action taken to eliminate an identified non-conformity.

Note 1.- A correction can be made together with a corrective action.

Note 2.- A correction can be, for example, a re-process or a re-classification.

**Efficacy:**

Extent to which planned activities are carried out and planned results obtained.

**Efficiency:**

Relationship between outcome and resources used.

**Non-conformity:**

Failure to comply with, or absence of, specified requirements, thus reducing the effectiveness of the MET/QMS to meet the established goals or objectives.

**Requirement:**

An established need or expectation, generally implicit or mandatory.

**Records:**

They are established and kept for demonstrating compliance with requirements and the effective operation of the quality management system. Records must be easily identifiable and retrievable.

Records R01 indicate compliance with requirements; records R02 show efficacy; and records R03 are for continuous improvement.

**9. ANNEXES**

Annex I : Corrective or preventive action report

Annex II : Corrective action follow-up table

Annex III : Preventive action follow-up table

REVISION	DATE
00	30/11/11

<b>ORGANIZATION LOGOTYPE</b>	<b>3.6 QMS MET CORRECTIVE AND PREVENTIVE ACTIONS</b>	<b>CODE:</b> <b>PR-8.5-AGC-1</b>
<b>UNIT</b>		<b>PAGE 8 OF 10</b>

## ANNEX I

### CORRECTIVE OR PREVENTIVE ACTION REPORT

**Code: R03-AGC.ACP-01**

**Revision: 00/ XX-XX-2011**

<b>Request for Action:</b>	<b>Corrective</b>	<b>Preventive</b>	<b>Date of Issuance:</b>	<b>Number:</b>
Sub-process where the problem was identified:				
Name of the person requesting the form:				
Origin	Complaints or claims	Management review	Non-conforming product or service	Service sheet reports
	Customer satisfaction	Audit	Other: _____	

Assigned to: (Person responsible for drafting and implementing the action plan)	Date of assignment:
Area assigned:	

Description of the actual or potential problem:
Root cause of the problem:
Corrective or preventive action to be taken (use and attach additional sheets as necessary):
Controls to verify action implementation:

Follow-up dates	Plan	Actual	Observations
Starting date of the action plan			
Ending date of the action plan			
Effectiveness check			

Results of the effectiveness check:	
Closing date:	_____ Name and signature of the auditor

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ORGANIZATION LOGOTYPE  UNIT	3.6 QMS MET CORRECTIVE AND PREVENTIVE ACTIONS	CODE: PR-8.5-AGC-1  PAGE 9 OF 10
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**ANNEX II**  
**CORRECTIVE ACTION FOLLOW-UP TABLE**

Code: R03-AGC.ACP-02

Revision:00/ XX-XX-2011

Action No.	Date of issuance	FINDING	Corrective Action	Ending date	Closing date

REVISION	DATE
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<b>ORGANIZATION LOGOTYPE</b>	<b>3.6 QMS MET CORRECTIVE AND PREVENTIVE ACTIONS</b>	<b>CODE: PR-8.5-AGC-1</b>
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**ANNEX III**

**PREVENTIVE ACTION FOLLOW-UP TABLE**

Code: R03-AGC.ACP-03

Revision:00/ XX-XX-2011

Action No.	Date of issuance	FINDING	Preventive action	Ending date	Closing date

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**CAR/SAMMET/QMSGUIDE**

**DOCUMENTS FOR THE PROVISION OF THE  
MET SERVICE(MODELS)**

**PART4**

**DOCUMENTS FOR THE PROVISION  
OF THE MET SERVICE  
(MODELS)**

**Draft**

<p><b>ORGANIZATION LOGOTYPE</b></p> <p><b>UNIT</b></p>	<p><b>4.1 PROCEDURE OF THE MET INFORMATION PROCESS</b></p> <p><b>CONTROLLED DOCUMENT</b></p>	<p><b>CODE: PR-7. 5-MET-1</b></p> <p><b>PAGE 1 OF 18</b></p>
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**PROCEDURE OF THE AERONAUTICAL METEOROLOGICAL  
INFORMATION**

**Revision 00**

**2011**

<b>PREPARED</b>	<b>REVISED</b>	<b>APPROVED</b>

<b>REVISION</b>	<b>DATE</b>
00	30/11/11

<b>ORGANIZATION LOGOTYPE</b>	<b>4.1 PROCEDURE OF THE MET INFORMATION PROCESS</b>	<b>CODE: PR-7. 5-MET-1</b>
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**SUMMARY**

- 1. Objectives**
- 2. Scope**
- 3. Responsibilities**
- 4. References**
- 5. Requirements**
- 6. Description of Activities**
- 7. Records**
- 8. Glossary**
- 9. Annexes**

<b>REVISION</b>	<b>DATE</b>
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<b>ORGANIZATION LOGOTYPE</b>	<b>4.1 PROCEDURE OF THE MET INFORMATION PROCESS</b>	<b>CODE: PR-7. 5-MET-1</b>
<b>UNIT</b>	<b>CONTROLLED DOCUMENT</b>	<b>PAGE 3 OF 18</b>

## 1. OBJECTIVE

1.1 Establish the procedure for the MET information process in order to provide the operators, flight crew, air traffic service units, search and rescue service units, airport managers, and other parties interested in the operation or development of air navigation, with the meteorological information required for the performance of their respective functions, thus contributing to the safety, regularity, and efficiency of air navigation, in keeping with the requirements established by ICAO, WMO and the existing national legislation.

## 2. SCOPE

2.1 This procedure applies to (*name of the MET service provider*) / aeronautical meteorology (MET) area, aeronautical meteorological offices, meteorological watch offices, and aeronautical meteorological and climatological stations.

## 3. RESPONSIBILITIES

3.1 The head of (*name of the MET area*) is responsible for ensuring efficacy in the preparation, provision, and issuance of meteorological information for air navigation.

## 4. REFERENCES

- 4.1 MC-4.2-AGC Management Manual
- 4.2 Plan of Objectives
- 4.3 PR-4.2-AGC-01 Drafting and presentation of MET/MS documents
- 4.4 PR-4.2-AGC-02 Control of MET/MS documents
- 4.5 PR-4.2-AGC-03 Control of MET/MS records
- 4.6 Doc 9873: Manual on the Quality Management System for the Provision of Meteorological Service to International Air Navigation. WMO principles and guidelines.
- 4.7 Current ICAO documentation:
- Annex 3 –Meteorological Service for International Air Navigation;
  - Doc 7475/2 –Working Arrangements Between the International Civil Aviation Organization and the World Meteorological Organization;
  - Doc. 7910 –Location Indicators;
  - Doc 8733 - CAR/SAM Regional Air Navigation Plan, Vol. I Basic, and Vol. II FASID, Part VI MET;
  - Doc. 8896 -Manual of Aeronautical Meteorological Practices;
  - Doc. 9328 –Manual on Runway Visual Range Observing and Reporting Practices;
  - Doc. 9377 –Manual on Coordination between Air Traffic Services, Aeronautical Information Services and Aeronautical Meteorological Services;
  - Doc. 9766 –Handbook on the International Airways Volcano Watch; and
  - ICAO – South American Office – Guide for the preparation, dissemination and use of SIGMET messages in the CAR/SAM Regions
  - (*Name of the State*) AIP.

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<b>ORGANIZATION LOGOTYPE</b>	<b>4.1 PROCEDURE OF THE MET INFORMATION PROCESS</b>	<b>CODE: PR-7. 5-MET-1</b>
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4.8 Current WMO documentation:

- WMO No. 8 –Guide to meteorological instruments and methods of observation;
- WMO No 9 – Weather reporting. Volume A;
- WMO No 49 –Technical Regulations, Volume II, Meteorological Service for International Air Navigation;
- WMO No 114 –Guide to qualifications and training of meteorological personnel employed in the provision of meteorological services for international air navigation;
- WMO No 258 –Guidelines for the education and training of personnel in meteorology and operational hydrology;
- WMO No 306 - Volume I – Manual on Codes;
- WMO No 731 –Guide on meteorological observation and information distribution systems at aerodromes; and
- WMO No 732 –Guide to practices for meteorological offices serving aviation.

## 5. REQUIREMENTS

5.1 National Political Constitution

5.2 Civil Aviation Law N° (*number*)

5.3 National Aeronautical Regulations

5.4 ISO 9001:2008

5.5 Directorate Resolution N° xx, whereby the Civil Aviation Authority delegates the activities of managing, operating, and safeguarding the MET service to a provider.

## 6. DESCRIPTION OF ACTIVITIES

6.1 In the process-based approach, the coding of MET processes and sub-processes has been established taking into account ECCAIRS document ADREP 2000, where:

**ADREP** – The ICAO Accident/Incident Data Reporting system

**ECCAIRS** –European Coordination Centre for Aviation Incident Reporting Systems

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<b>ORGANIZATION LOGOTYPE</b>	<b>4.1 PROCEDURE OF THE MET INFORMATION PROCESS</b>	<b>CODE: PR-7. 5-MET-1</b>
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6.2 The processes and sub-processes identified for the MET service are the following:

- 4010000 (*Name of the MET service provider*) MET information process
- 4010270 Sub-process of aerodrome observations and meteorological reports

The coding of observation and meteorological reporting activities starts at 4100

- 4010600 Sub-process of aeronautical meteorology forecasting and surveillance

The coding of aeronautical meteorology forecasting and surveillance activities starts at 4200 and those of the MWO start at 4250

- 4010700 Aeronautical climatology sub-process

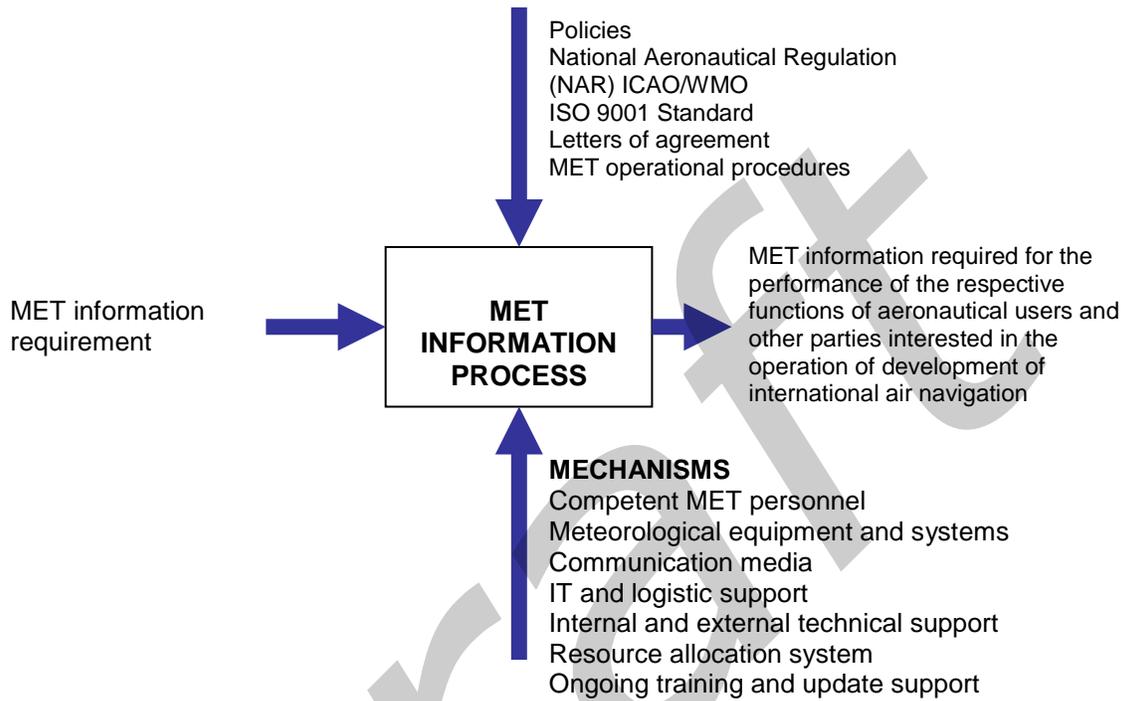
The coding of aeronautical climatology activities starts at 4300.

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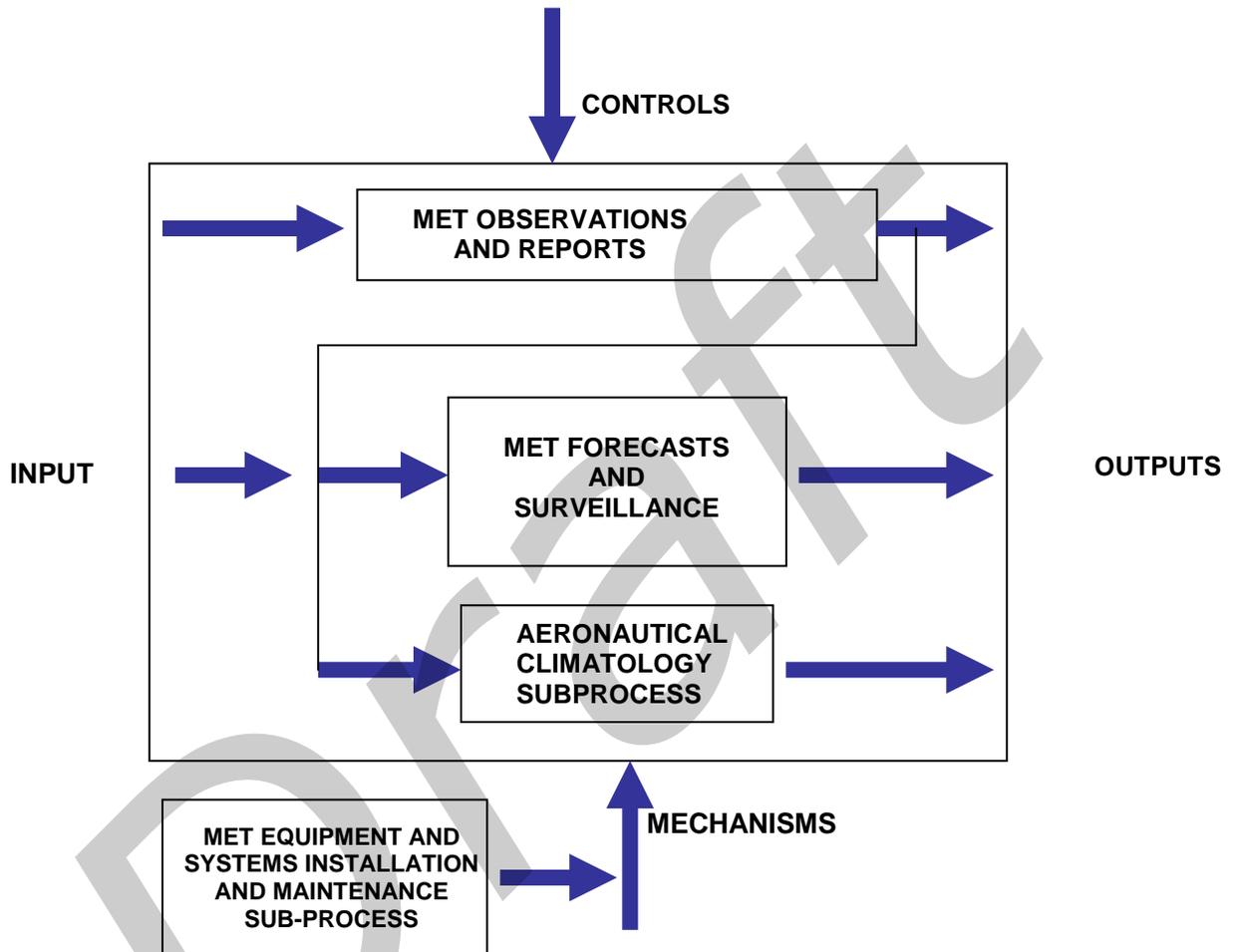
**4010000: MET INFORMATION PROCESS**



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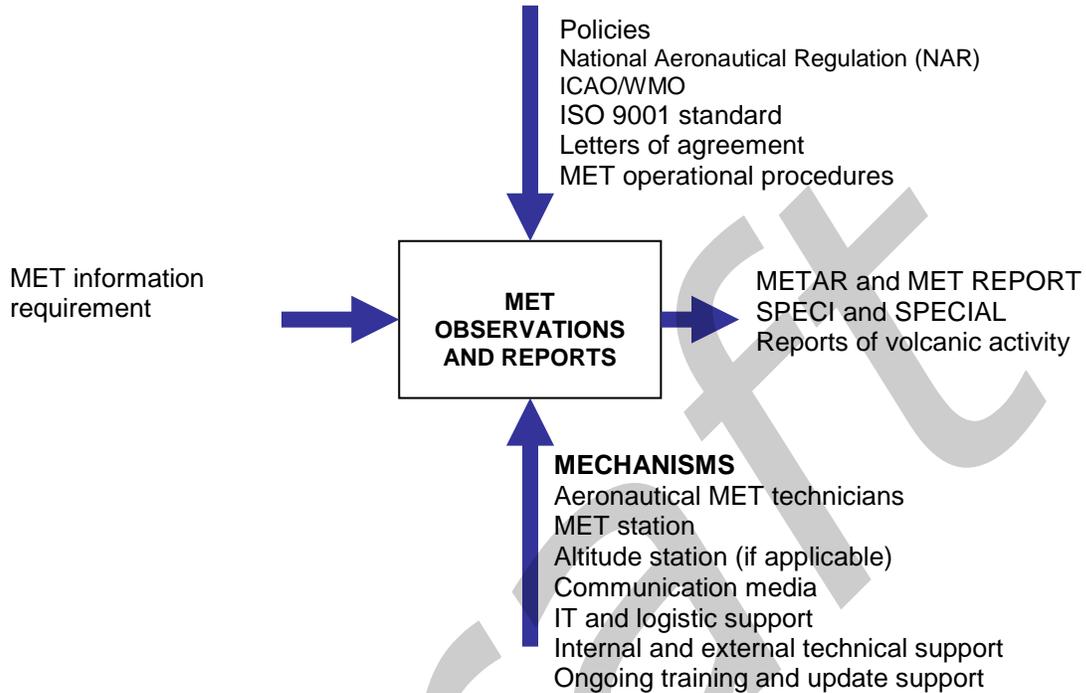
**MET INFORMATION PROCESSES AND SUB-PROCESSES**



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<b>ORGANIZATION LOGOTYPE</b>	<b>4.1 PROCEDURE OF THE MET INFORMATION PROCESS</b>	<b>CODE: PR-7. 5-MET-1</b>
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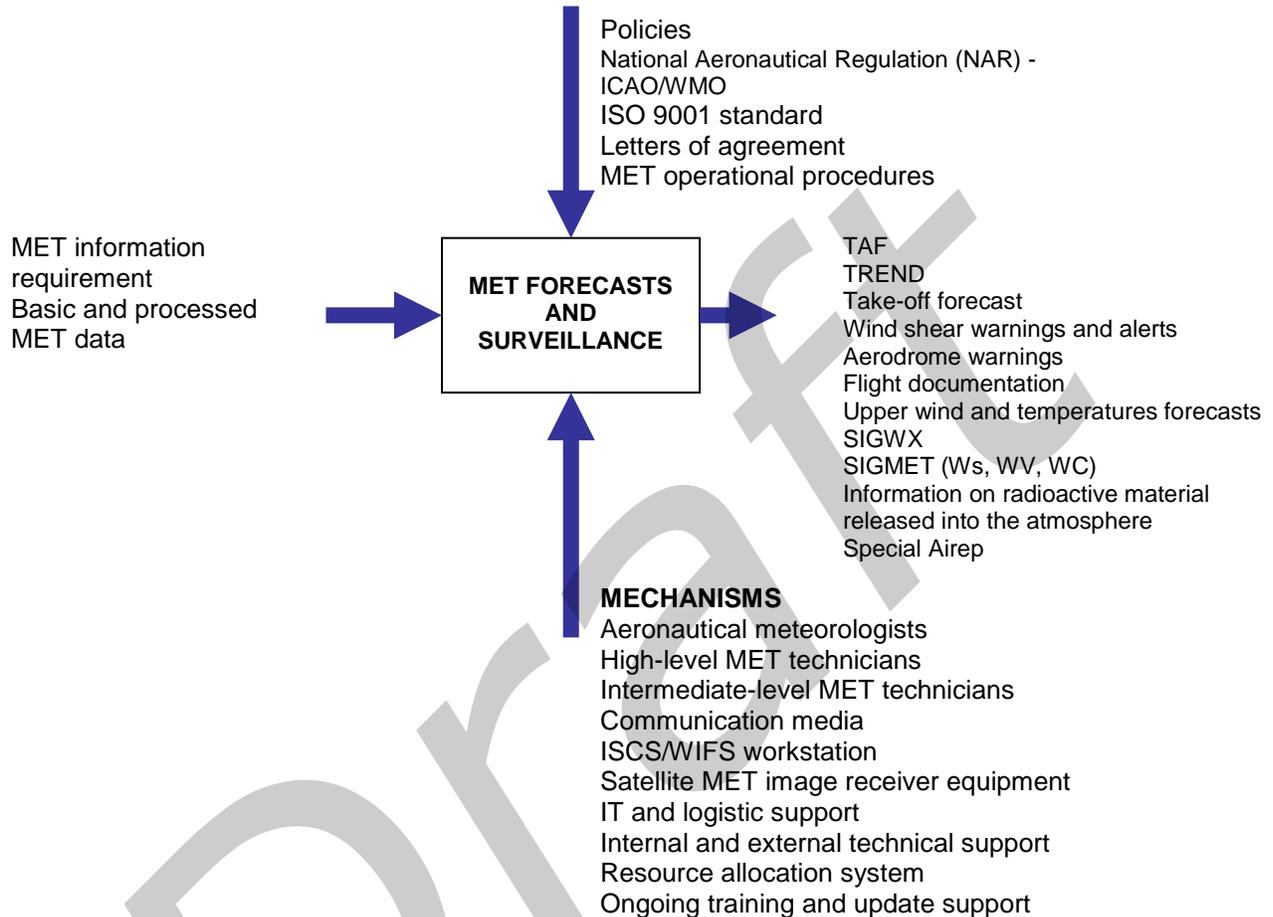
**40101000: MET OBSERVATION AND REPORTING SUB-PROCESS**



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<b>ORGANIZATION LOGOTYPE</b>	<b>4.1 PROCEDURE OF THE MET INFORMATION PROCESS</b>	<b>CODE: PR-7. 5-MET-1</b>
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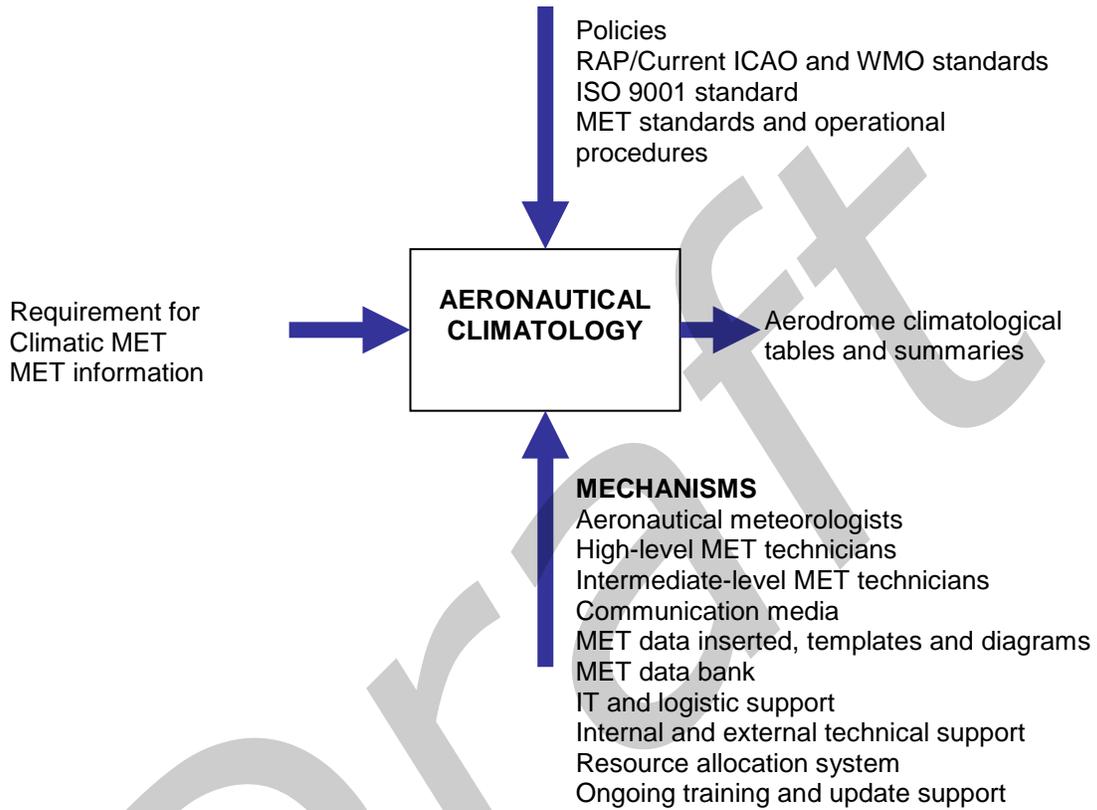
**40102000: MET FORECASTING AND SURVEILLANCE SUB-PROCESS**



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<b>ORGANIZATION LOGOTYPE</b>	<b>4.1 PROCEDURE OF THE MET INFORMATION PROCESS</b>	<b>CODE: PR-7. 5-MET-1</b>
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**40103000: AERONAUTICAL CLIMATOLOGY SUB-PROCESS**



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## 7. RECORDS

### 7.1 Records that demonstrate compliance with the established requirements

7.1.1 Record of the assessment of training requirements for competence building.R01-MET-01

### 7.2 Records that demonstrate efficacy

7.2.1 Plan of quality objectives. R02-MET-01

### 7.3 Records that demonstrate continuous improvement

7.3.1 Record of customer complaints or claims.R03-MET-01

The retrieval, protection, storage, retention, and disposal of records must be defined for each record, based on organisation policy and national legislation.

## 8. ANNEXES

- ANNEX I: Interrelationship between MET activities during flight phases
- ANNEX II: Revision status control matrix
- ANNEX III: Training requirements for competence building
- ANNEX IV: Plan of quality objectives
- ANNEX V: Record of complaints and claims

## 9. GLOSSARY

### **Meteorological authority:**

The authority providing or arranging for the provision of meteorological service for international air navigation on behalf of a Contracting State.

### **Aerodrome warning:**

Concise information on meteorological conditions that might have an adverse impact on aircraft on the ground, including parked aircraft, and on aerodrome facilities.

### **AMHS**

#### **(Aeronautical Message Handling System)**

An aeronautical message management system.

(AMHS-PE 3950 Manual – Supervision and operation of the message switching system – 2 August 2008, Vol. 1/1)

### **Air traffic area control (ACC)**

A unit established for the provision of air traffic control services to controlled flights in the control areas under its jurisdiction.

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**Flight information centre (FIC)**

A unit established to provide flight information service and alerting service.

**Flight documentation**

Written or printed documents, including charts or forms, containing meteorological information for a flight.

**Approach control unit (APP)**

A unit established to provide air traffic control service to controlled flights arriving at, or departing from, one or more aerodromes.

**Aeronautical meteorological station**

A station designated to make observations and meteorological reports for use in international air navigation.

**Briefing:**

Oral commentary on existing or expected meteorological conditions.

**Meteorological information**

Meteorological report, analysis, forecast, and any other statement relating to existing or expected meteorological conditions.

**SIGMET information:**

Information issued by a meteorological watch office concerning the occurrence or expected occurrence of specified en-route weather phenomena that may affect the safety of aircraft operations.

**Meteorological report:**

A statement of observed meteorological conditions related to a specified time and location.

**Work instructions:**

A procedure that describes the activities that are carried out by organic units.

**Foreseen chart:**

A forecast of a specified meteorological element(s) for a specified time or period and a specified surface or portion of airspace, depicted graphically on a chart.

**International NOTAM Office (NOF)**

An office designated by a State for the exchange of NOTAM internationally.

**Meteorological observation:**

An assessment of one or more meteorological elements.

**Aerodrome meteorological office (AMO):**

An office, located at an aerodrome, designated to provide meteorological service for international air navigation.

**Meteorological Watch Office (MWO):**

A meteorological watch office (MWO), designated to keep watch over the meteorological conditions affecting flight operations at the boundaries of a flight information region. Information concerning SIGMET, AIRMET, volcanic activity and accidental release of radioactive material into the atmosphere will be prepared and disseminated.

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<b>ORGANIZATION LOGOTYPE</b>	<b>4.1 PROCEDURE OF THE MET INFORMATION PROCESS</b>	<b>CODE: PR-7. 5-MET-1</b>
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**Process:**

A set of interrelated or interacting activities that turns input into outcome.

**Forecast:**

A statement of the meteorological conditions expected for a specified time or period and a specified area or portion of airspace.

**Aerodrome climatological summary:**

Concise summary of specified meteorological elements at an aerodrome, based on statistical data.

**Meteorological satellite:**

An artificial satellite making meteorological observations and transmitting these observations to Earth.

**World Area Forecast System (WAFS)**

A world-wide system by which world area forecast centres provide aeronautical meteorological en-route forecasts in uniform standardised formats.

**TAF**

Abbreviation of aerodrome forecast in meteorological code.

**World Meteorological Watch (WMW):**

A worldwide coordinated development system made up by meteorological facilities provided by its members, aimed at ensuring that all members obtain the meteorological information they need for practical and research purposes. The essential elements of the WMW are: the worldwide observation, data processing, and telecommunication system.

**Aerodrome control tower (TWR):**

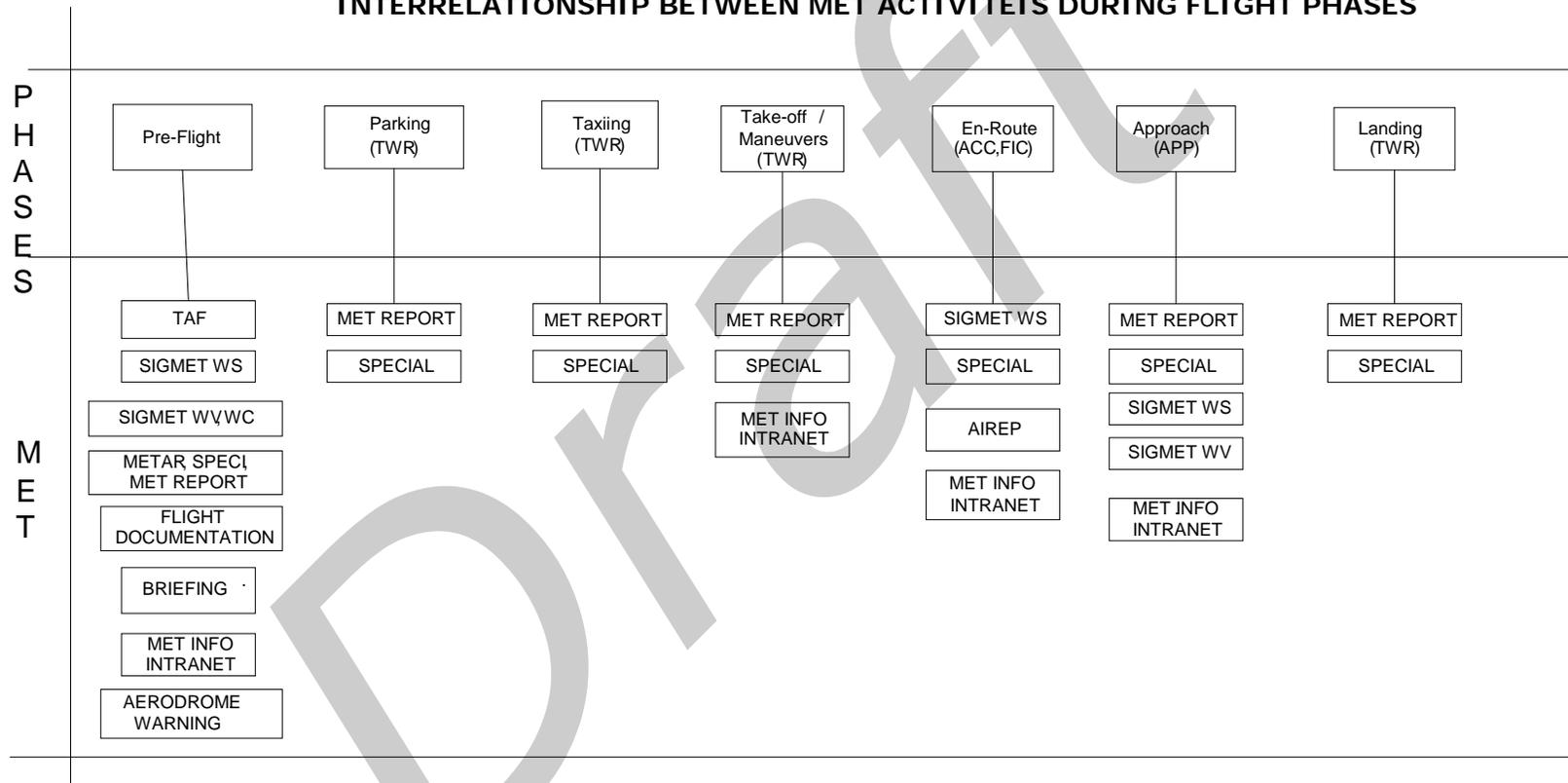
A unit established to provide air traffic control service to aerodrome traffic.

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<b>ORGANIZATION LOGOTYPE</b>	<b>4.1 PROCEDURE OF THE MET INFORMATION PROCESS</b>	<b>CODE: PR-7. 5-MET-1</b>
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## ANNEX I

### INTERRELATIONSHIP BETWEEN MET ACTIVITIES DURING FLIGHT PHASES



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### ANNEX III

#### TRAINING REQUIREMENTS FOR COMPETENCE BUILDING

CODE: R01-MET-01

REVISION: 00/XX-XX-2011

**1. Information about the employee**

Surnames and given names: .....

Code : .....

Current position : .....

Division, office, area : .....

Airport : .....

**2. Proposed courses or events**

Name of the course	Activity or skill to be strengthened	Expected outcome	Priority

**3. Evaluator**

Surnames and given names: .....

Current position : .....

\_\_\_\_\_  
Date

\_\_\_\_\_  
Signature

REVISION	DATE
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<b>ORGANIZATION LOGOTYPE</b>	<b>4.1 PROCEDURE OF THE MET INFORMATION PROCESS</b>	<b>CODE: PR-7. 5-MET-1</b>
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## ANNEX IV

### PLAN OF QUALITY OBJECTIVES

ORGANIC UNIT: .....

CODE: R02-MET-01

REVISION: 00/XX-XX-2011

Specific strategic objectives	Measurement (outcome indicator)	Measurement frequency	Goal	Date	
				Start	End

REVISION	DATE
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<b>ORGANIZATION LOGOTYPE</b>	<b>4.1 PROCEDURE OF THE MET INFORMATION PROCESS</b>	<b>CODE: PR-7. 5-MET-1</b>
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**ANNEX V**  
**RECORD OF COMPLAINTS AND CLAIMS**

**ORGANIC UNIT:** .....

**CODE:** R03-MET-01

**REVISION:** 00/XX-XX-2011

<b>N°</b>	<b>Type of information</b>	<b>Reason for claim, complaint or error (specify error, omission, or lack of procedures)</b>	<b>Employees involved</b>	<b>Date</b>	<b>Time (UTC)</b>

<b>REVISION</b>	<b>DATE</b>
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<p><b>ORGANIZATION LOGOTYPE</b></p> <p><b>UNIT</b></p>	<p><b>4.2 WORK INSTRUCTIONS ON MET OBSERVATIONS AND REPORTS CONTROLLED DOCUMENT</b></p>	<p><b>CODE: IT-7.5-EMA-1</b></p> <p><b>PAGE 1 OF 15</b></p>
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**WORK INSTRUCTIONS ON AERONAUTICAL METEOROLOGICAL  
OBSERVATIONS AND REPORTS**

**Revision 00**

**2011**

<b>PREPARED</b>	<b>REVISED</b>	<b>APPROVED</b>

<b>REVISION</b>	<b>DATE</b>
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<b>ORGANIZATION LOGOTYPE</b>  <b>UNIT</b>	<b>4.2 WORK INSTRUCTIONS ON MET OBSERVATIONS AND REPORTS CONTROLLED DOCUMENT</b>	<b>CODE: IT-7.5-EMA-1</b>  <b>PAGE 2 OF 15</b>
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**SUMMARY**

- 1. Objectives**
- 2. Scope**
- 3. Responsibilities**
- 4. References**
- 5. Requirements**
- 6. Description of Activities**
- 7. Records**
- 8. Glossary**
- 9. Annexes**

<b>REVISION</b>	<b>DATE</b>
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<b>ORGANIZATION LOGOTYPE</b>  <b>UNIT</b>	<b>4.2 WORK INSTRUCTIONS ON MET OBSERVATIONS AND REPORTS</b> <b>CONTROLLED DOCUMENT</b>	<b>CODE: IT-7.5-EMA-1</b>  <b>PAGE 3 OF 15</b>
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## 1. OBJECTIVE

1.1 Establish the guidelines for conducting observations and preparing MET reports at an aeronautical meteorological station, in order to provide the following information: MET REPORT, SPECIAL, METAR, and SPECI.

## 2. SCOPE

2.1 These work instructions apply to the aeronautical meteorological station (*location indicator*) of the (*name of the aerodrome*) airport.

## 3. RESPONSIBILITIES

3.1 The meteorology technician (MET observer) is responsible for:

- a) Verifying the operating condition of communication equipment and media for the preparation and transmission of MET information (see activity 4101);
- b) Conducting observations and preparing MET (MET, SPECIAL, METAR, and SPECI) reports and sending them, on a timely basis, *via* the aeronautical fixed communication network. Likewise, recording MET parameters in meteorological templates (record R01-EMA...-01, act. No. 4102);
- c) Coordinating with the associated AMO the inclusion of trend forecasts, based on CAR/SAM FASID Table MET 1A (Act. No. 4102);
- d) Keeping continuous watch over meteorological conditions (act. No. 4102);
- e) Informing the associated AMO (Table MET 1A of the CAR/SAM FASID) about observed meteorological conditions that might give rise to a windshear warning and alert;
- f) Completing the records specified in these work instructions;
- g) Operating the conventional MET station in case of failure at the automatic MET observing station;
- h) Reporting any equipment and observation system failures, as well as operational occurrences, on the service sheet of the Integrated Safety Reporting service.

## 4. REFERENCES

- 4.1 Quality Management Manual
- 4.2 Drafting and presentation of MET/QMS documents (PR-4.2-AGC-1)
- 4.3 Control of MET/QMS documents (PR-4.2-AGC-2)
- 4.4 Control of MET/QMS records (PR-4.2-AGC-3)

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<b>ORGANIZATION LOGOTYPE</b>	<b>4.2 WORK INSTRUCTIONS ON MET OBSERVATIONS AND REPORTS CONTROLLED DOCUMENT</b>	<b>CODE: IT-7.5-EMA-1</b>
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4.5 Doc 9873 – *Manual on the quality management system for the provision of meteorological service to international air navigation*

4.6 Latest version of ICAO Annexes:

- Annex 3 – Meteorological service for international air navigation, seventeenth edition;
- Doc 8896 – Manual of aeronautical meteorological practices;
- Doc 9837 – Manual on automatic meteorological observing systems at aerodromes;
- Doc 9328 – Manual on runway visual range observing and reporting practices; And
- Aeronautical information publication - AIP

4.7 Latest version of World Meteorological Organization (WMO) documents:

- WMO No 8 – Guide to meteorological instruments and methods of observation;
- WMO No 306, Volume I – Manual on codes;
- WMO No 731 – Guide on meteorological observation and information distribution systems at aerodromes;
- International Cloud Atlas (WMO No. 407).

Note: Or national regulatory reference.

## 5. REQUIREMENTS

5.1 National aeronautical regulations.

5.2 ISO 9001:2008

## 6. DESCRIPTION OF ACTIVITIES

6.1 Verify the operating condition of MET equipment and communication media (Activity 4101)

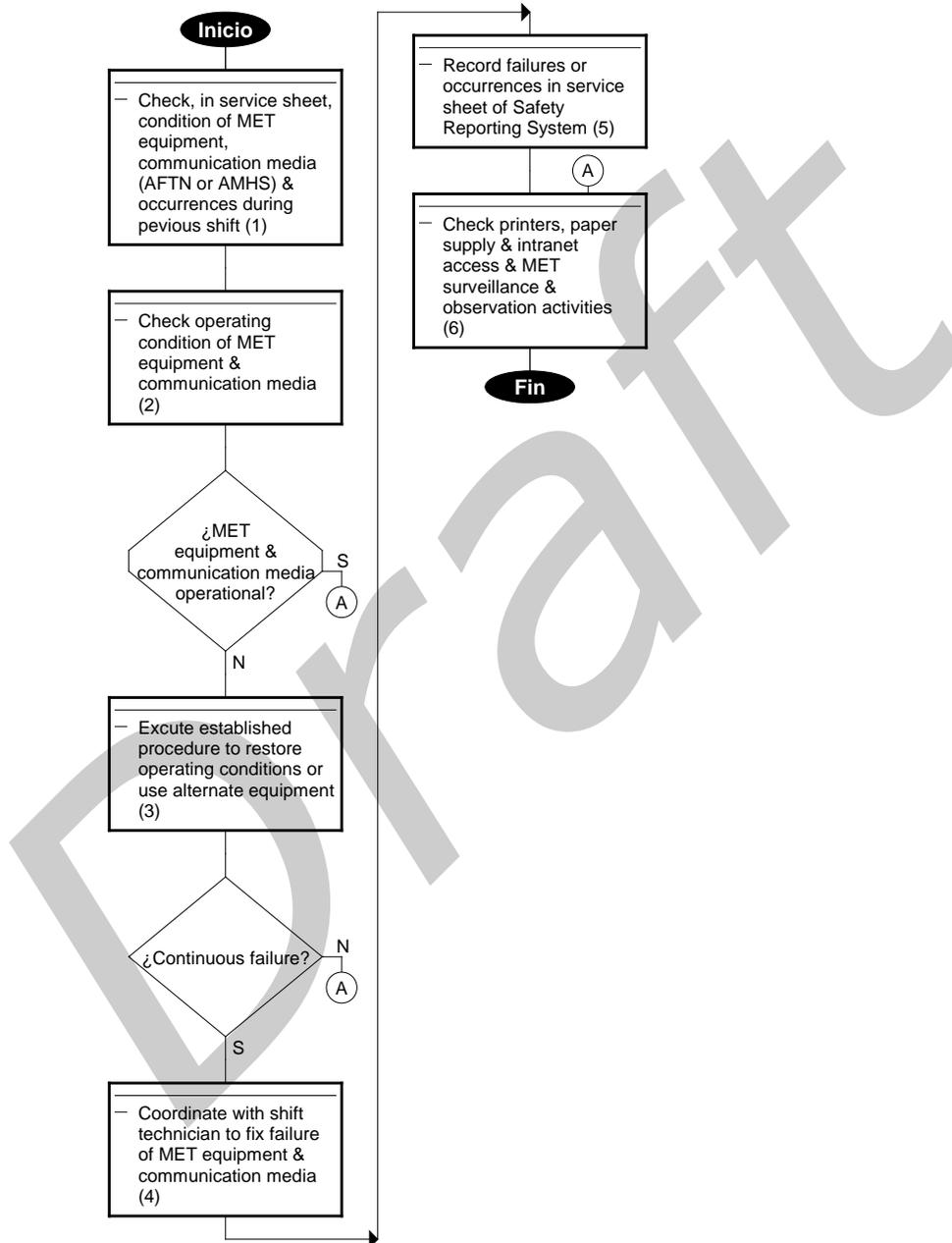
6.2 Surveillance, observation, drafting and dissemination of MET REPORT, METAR, SPECIAL, and SPECI reports; as well as recording of MET parameters in the established records (Activity 4102 and Activity 4103)

**Note.** – *The coding of the activities of the aeronautical meteorological station starts at 4100, where the first digit corresponds to meteorology processes, according to the ECCAIRS ADREP document (ADREP: the ICAO Accident/Incident Data Reporting System, and ECCAIRS: European Co-Ordination Centre for Aviation Incident Reporting Systems).*

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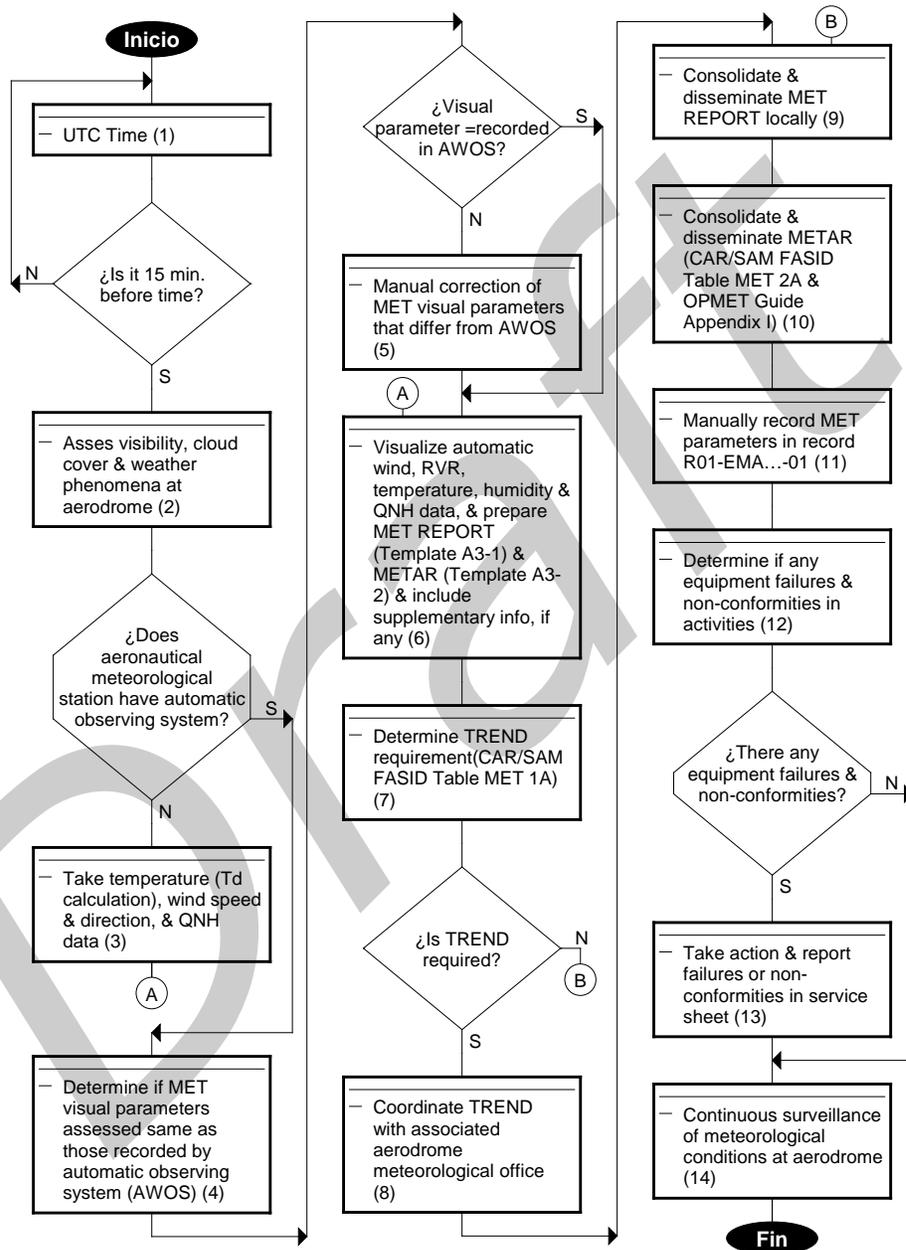
<p><b>ORGANIZATION LOGOTYPE</b></p> <p><b>UNIT</b></p>	<p><b>4.2 WORK INSTRUCTIONS ON MET OBSERVATIONS AND REPORTS CONTROLLED DOCUMENT</b></p>	<p><b>CODE:</b> IT-7.5-EMA-1</p> <p><b>PAGE 5 OF 15</b></p>
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**ACTIVITY 4101. Verify the operating condition of MET equipment and communication media - Meteorology Technician in charge**



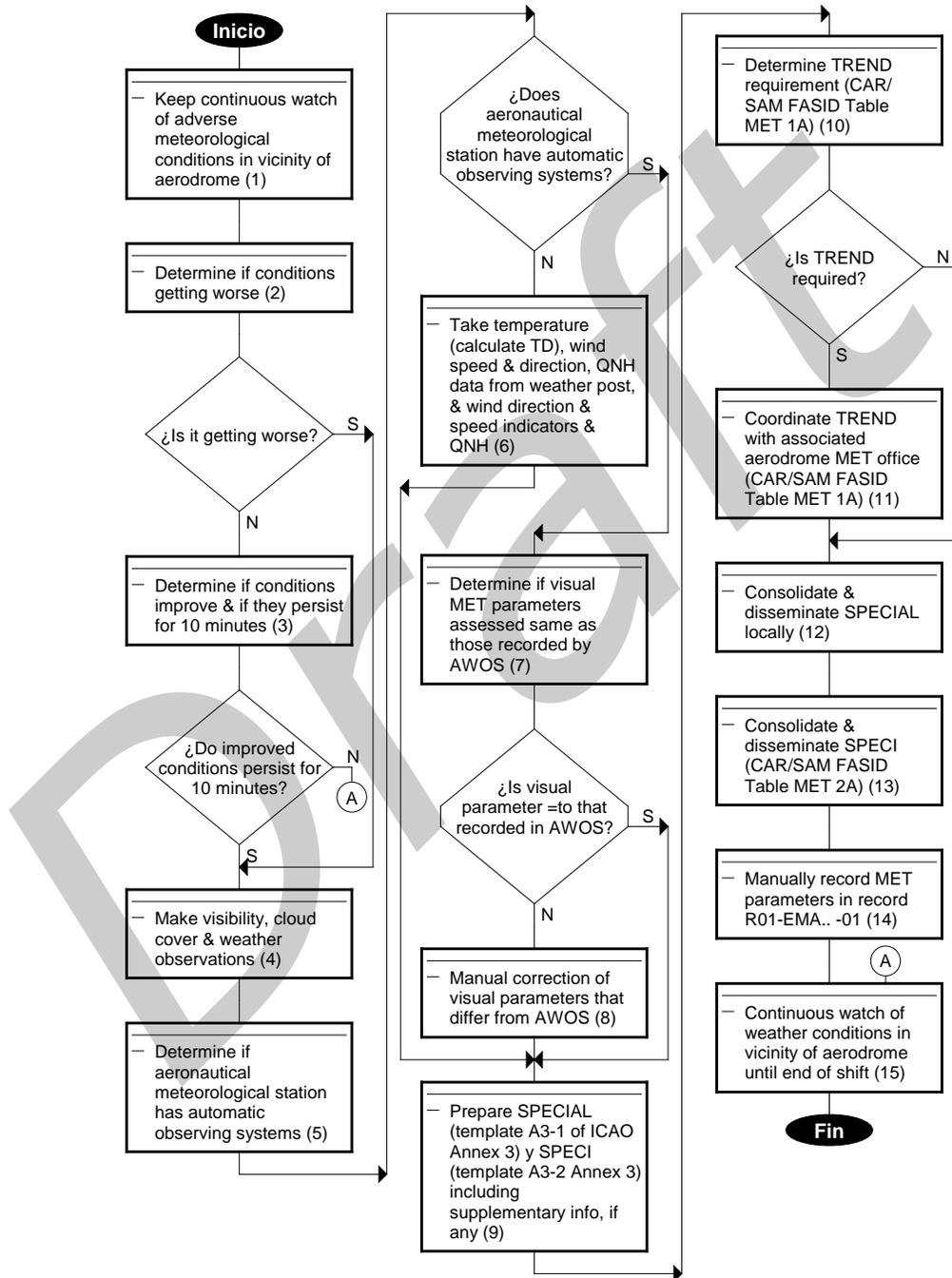
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**ACT 4102 Observation, preparation and dissemination of MET REPORTs and METARs - Meteorology technician in charge**



<p><b>ORGANIZATION LOGOTYPE</b></p> <p><b>UNIT</b></p>	<p><b>4.2 WORK INSTRUCTIONS ON MET OBSERVATIONS AND REPORTS CONTROLLED DOCUMENT</b></p>	<p><b>CODE:</b> IT-7.5-EMA-1</p> <p><b>PAGE 7 OF 15</b></p>
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**ACT 4103. Observation, preparation and dissemination of SPECIAL and SPECI report - Meteorology technician in charge**



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<b>ORGANIZATION LOGOTYPE</b>  <b>UNIT</b>	<b>4.2 WORK INSTRUCTIONS ON MET OBSERVATIONS AND REPORTS CONTROLLED DOCUMENT</b>	<b>CODE: IT-7.5-EMA-1</b>  <b>PAGE 8 OF 15</b>
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## 7. RECORDS

IDENTIFICATION	STORAGE	PROTECTION	RETRIEVAL	RETENTION	DISPOSAL
<b>R01-EMA...-01</b> Record of routine and special observations	<i>(Name of the climatological unit)</i>	Printed	Chronological	Not defined	Climatological archive
<b>R01-EMA...-02</b> METAR EMA...	Aeronautical meteorological station	Printed/Digital	Chronological	30 days	Eliminate
<b>R01-EMA...-03</b> MET REPORT EMA...	Aeronautical meteorological station	Printed/Digital	Chronological	30 days	Eliminate
<b>R01-EMA...-04</b> SPECI EMA...	Aeronautical meteorological station	Printed/Digital	Chronological	30 days	Eliminate
<b>R01-EMA...-05</b> SPECIAL EMA...	Aeronautical meteorological station	Printed/Digital	Chronological	30 days	Eliminate
<b>R02-EMA...-01</b> Service sheet EMA...	Aeronautical meteorological station	Printed/Digital	Chronological	6 months	Eliminate

## 8. GLOSSARY

### **AFTN:**

Aeronautical fixed telecommunication network. Telecommunication circuit that transmits operational messages in the form of text, according to international standards, for exclusive use of aviation.

### **AMHS:**

**(Aeronautical Message Handling System)**

An aeronautical message management system.

### **AWOS**

Automated integrated observing system for the dissemination and display of meteorological information, which provides for manual insertion of data observations, including meteorological elements that cannot be observed using automatic means.

### **Runway visual range (RVR):**

The range over which the pilot of an aircraft on the centre line of a runway can see the runway surface markings or the lights delineating the runway or identifying its centre line.

### **Meteorological parameter:**

One of the atmospheric variables or phenomena that characterise the physical state of the atmosphere related to a specified location and time.

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<b>ORGANIZATION LOGOTYPE</b>	<b>4.2 WORK INSTRUCTIONS ON MET OBSERVATIONS AND REPORTS CONTROLLED DOCUMENT</b>	<b>CODE: IT-7.5-EMA-1</b>
<b>UNIT</b>		<b>PAGE 9 OF 15</b>

**Aeronautical meteorological station:**

A station designated to make observations and meteorological reports for use in international air navigation.

**Meteorological report:**

A statement of observed meteorological conditions related to a specified time and location.

**Meteorological message:**

A message made up by a single meteorological bulletin, preceded by a preliminary line and followed by the end-of-message signals.

**METAR:**

A routine aviation weather report.

**(Meteorological) observation:**

Evaluation of one or more meteorological parameters.

**Aerodrome meteorological office:**

An office located at an aerodrome, designated to provide meteorological service for international air navigation.

**Routine observations and reports**

Meteorological observations conducted at one-hour intervals. They are disseminated in abbreviated plain language at the aerodrome of origin as local routine reports (MET REPORT) or as METARs to other aerodromes other aerodromes outside of the aerodrome of origin.

**Special observations and reports**

These are special meteorological observations made when significant changes occur in surface wind, visibility, runway visual range, current weather, clouds, or air temperature. They are disseminated at the aerodrome of origin to other aerodromes outside of the aerodrome of origin as local special reports (SPECIAL), or as SPECI to other aerodromes outside of the aerodrome of origin.

**Requirement:**

An established need or expectation, generally implicit or mandatory.

**SPECI:**

A selected special aeronautical meteorological report.

**TREND:**

A trend-type landing forecast.

**Visibility:**

Visibility for aeronautical purposes is the greater of:

- a) the greatest distance at which a black object of suitable dimensions, situated near the ground, can be seen and recognised when observed against a bright background;
- b) the greatest distance at which lights in the vicinity of 1,000 candelas can be seen and identified against an unlit background.

Note.- The two distances have different values in air of a given extinction coefficient, and the latter b) varies with the background illumination. The former a) is represented by the meteorological optical range (MOR).

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**Prevailing visibility:**

The highest visibility value observed according to the definition of "visibility", obtained within a circle that covers at least half of the horizon or at least half of the surface of the aerodrome. These areas could encompass adjacent or non-adjacent sectors.

**9. ANNEXES**

- Annex I: Revision status control matrix
- Annex II: Record of routine and special observations
- Annex III: METAR EMA... report
- Annex IV: MET REPORT EMA...
- Annex V: SPECI EMA...
- Annex VI: SPECIAL EMA...
- Annex VII: Service sheet

Draft

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**ANNEX II**

**RECORD OF ROUTINE AND SPECIAL OBSERVATIONS**

CODE: R01-EMA...-01

REVISION: 00/XX-XX-2011

Code	CCCC	GGggZ	dddfGf <sub>m</sub> f <sub>m</sub>	d <sub>n</sub> d <sub>n</sub> d <sub>n</sub> v <sub>d</sub> x <sub>d</sub> d <sub>x</sub> d <sub>x</sub> d <sub>x</sub>	VVVVD <sub>v</sub>	RVR	W'W'	N <sub>s</sub> N <sub>s</sub> N <sub>s</sub> h <sub>s</sub> h <sub>s</sub> h <sub>s</sub>	N <sub>s</sub> N <sub>s</sub> N <sub>s</sub> h <sub>s</sub> h <sub>s</sub> h <sub>s</sub>	N <sub>s</sub> N <sub>s</sub> N <sub>s</sub> h <sub>s</sub> h <sub>s</sub> h <sub>s</sub>	T'T'	T <sub>d</sub> T <sub>d</sub>	QP <sub>h</sub> P <sub>h</sub> P <sub>h</sub> P <sub>h</sub>	Supplementary Information	OBS	HR	B H	P <sub>o</sub> P <sub>o</sub> P <sub>o</sub> P <sub>o</sub>

REVISION	DATE
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<b>ORGANIZATION LOGOTYPE</b>	<b>4.2 WORK INSTRUCTIONS FOR MET OBSERVATIONS AND REPORTS CONTROLLED DOCUMENT</b>	<b>CODE: IT-7.5-EMA-1</b>
<b>UNIT</b>		<b>PAGE13OF15</b>

### ANNEX III

#### METAR REPORT EMA....

**CODE: R01-EMA...-02**

**REVISION: 00/XX-XX-2011**

**Example**

GG SPIMCOLE  
171554 SPIMZXOB  
SAPR01 SPIM 171500  
METAR SPIM 171500Z 20005KT CAVOK 26/20 Q1010 NOSIG RMK PP000=

Note: SPIMCOLE (set of AFTN addresses for sendingMETAR information)

### ANNEX IV

#### MET REPORT EMA....

**CODE: R01-EMA...-03**

**REVISION: 00/XX-XX-2011**

**Example**

GG INFOMETX  
171450 SPIMZXOB  
MET REPORT SPIM 171500Z WIND RWY 15 TDZ 200/5KT MAX 6KT RWY 33 TDZ 210/5KT MAX 6KT  
CAVOK T26 DP20 QNH 1010HPA TREND NOSIG=

Note: INFOMETX (Set of AFTN addresses for sendingMET REPORT information)

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<b>ORGANIZATION LOGOTYPE</b>  <b>UNIT</b>	<b>4.2 WORK INSTRUCTIONS FOR MET OBSERVATIONS AND REPORTS CONTROLLED DOCUMENT</b>	<b>CODE: IT-7.5-EMA-1</b>  <b>PAGE14OF15</b>
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**ANNEX V**

**SPECI EMA...**

**CODE: R01-EMA...-04**

**REVISION: 00/XX-XX-2011**

Example:

GG SPIMCOLE

061109 SPIMZXOB

SPPR01 SPIM 061110

SPECI SPIM 061110Z 19005KT 0500 R15/0350DFG OVC001 17/17 Q1011=

**ANNEX VI**

**SPECIAL EMA...**

**CODE: R01-EMA...-05**

**REVISION: 00/XX-XX-2011**

Example:

GG INFOMETX

061109 SPIMZXOB

SPECIAL SPIM 061110Z WIND RWY15 TDZ 19005KT MAX10KT VIS 500M RVR RWY15 TDZ 350M

RWY33 700M T17 DP17 QNH 1011=

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<b>ORGANIZATION LOGOTYPE</b>  <b>UNIT</b>	<b>4.2 WORK INSTRUCTIONS FOR MET OBSERVATIONS AND REPORTS CONTROLLED DOCUMENT</b>	<b>CODE: IT-7.5-EMA-1</b>  <b>PAGE15OF15</b>
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**ANNEX VII**

**SERVICE SHEET**

CODE: R02-EMA...-01

REVISION: 00/XX-XX-2011

Example:

Gerencia de Informática CORPAC SA - Localidad : LIMA - JORGE CHAVEZ [ USUARIO : ] AREA DE OBSERVACION

Hoja Servicio Salir

Fecha: 31/07/2007  
Hora: 08:55:47

**HOJA DE SERVICIO**

Areas Turno Fecha UTC

4351 ESTACION MET AERONAUTICA SF 18:00 / 02:00 22/07/2007

Posición	Nombre Trabajador	Estado
SUPERVISOR OBSERVAT	LOPEZ SANCHEZ MARCO	Sobretiempo
OBSERVADOR	TRAUCO ROJAS VICTOR	Asistió

Equipos / Documentación	Estado	Chequeo Físico	
		Inicio	Fin
ALTIMETRO DIGITAL VAISALA PISTA 15	Operativo	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
ANEMOMETRO DIGITAL VAISALA PISTA 15	Operativo	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
AWOS III:CEILOMETRO	Operativo	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
AWOS III:IMPRESORA	Operativo	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
AWOS III:MONITOR,CPU Y TECLADO	Operativo	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
AWOS III-SENSORES: VIS,RVR,T,TD,HR,0FE Y ONH	Operativo	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Hora	Ocurrencias Frecuentes	Observación Oc	Equipos
19:00	METARES NACIONALES RECIBIDOS CON ERRORES	WX 221900UTC CON ERROR EN LA HORA SPST	
22:00	METARES NACIONALES RECIBIDOS CON ERRORES	WX 222200UTC CON ERROR EN DIRECCION Y FZA DEL VIENTO SPRU	
22:00	METARES NACIONALES RECIBIDOS TARDIAMENTE	WX 222200UTC LLEGO 2159UTC SPRU	
23:00	METARES NACIONALES RECIBIDOS CON ERRORES	WX 222300UTC CON ERROR EN LA HORA SPRU	

Ready

Inicio Bandeja de entra... REV.OACI SISTEMA DE SEG... Gerencia de Info... IT-7.5-EMASPIM... ES 08:55

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<p><b>ORGANIZATION LOGOTYPE</b></p> <p><b>UNIT</b></p>	<p><b>4.3 WORK INSTRUCTIONS ON MET FORECASTS AND SURVEILLANCE CONTROLLED DOCUMENT</b></p>	<p><b>CODE: IT-7.5-OMA-1</b></p> <p><b>PAGE 1 OF 24</b></p>
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**WORK INSTRUCTIONS  
ON MET FORECASTS AND SURVEILLANCE**

**Revision 00**

**2011**

PREPARED	REVISED	APPROVED

REVISION	DATE
00	30/11/11

<b>ORGANIZATION LOGOTYPE</b>  <b>UNIT</b>	<b>4.3 WORK INSTRUCTIONS ON MET FORECASTS AND SURVEILLANCE CONTROLLED DOCUMENT</b>	<b>CODE: IT-7.5-OMA-1</b>  <b>PAGE 2 OF 24</b>
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<p><b>SUMMARY</b></p> <ol style="list-style-type: none"><li><b>1. Objectives</b></li><li><b>2. Scope</b></li><li><b>3. Responsibilities</b></li><li><b>4. References</b></li><li><b>5. Requirements</b></li><li><b>6. Description of Activities</b></li><li><b>7. Records</b></li><li><b>8. Glossary</b></li><li><b>9. Annexes</b></li></ol>
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<b>REVISION</b>	<b>DATE</b>
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<b>ORGANIZATION LOGOTYPE</b>  <b>UNIT</b>	<b>4.3 WORK INSTRUCTIONS ON MET FORECASTS AND SURVEILLANCE CONTROLLED DOCUMENT</b>	<b>CODE: IT-7.5-OMA-1</b>  <b>PAGE 3 OF 24</b>
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## 1. OBJECTIVE

1.1 Establish work instructions for forecasting activities at an aerodrome meteorological office (AMO) in order to provide:

- Forecasts of local meteorological conditions for: aerodrome (TAF) and TAF AMD, landing and take-off;
- Aerodrome forecasts received from other AMOs;
- Briefings, consultations and flight documentation;
- Display of available meteorological information;
- Aerodrome warnings;
- Wind shear warnings and alerts;

1.2 Establish the work instructions for MET surveillance activities at a meteorological watch office (MWO), for purposes of continuous monitoring of meteorological conditions within the FIR under its responsibility:

- SIGMET (WS, WV and WC) and any other information relevant to its area of responsibility;
- Information received on pre-eruption volcanic activity, volcanic eruptions or volcanic ash clouds, and cyclones, for which no SIGMET message has been issued yet;
- Volcanic ash and tropical cyclone warnings;
- Special air reports; and
- Information received on the accidental release of radioactive material into the atmosphere in the area under its surveillance or in adjacent areas;

## 2. SCOPE

2.1 These work instructions apply to the (*ICAO location indicator*) AMO and the MWO of the (*name*) FIR.

## 3. RESPONSIBILITIES

3.1 The **senior meteorologist/meteorology technician** of the **AMO** is responsible for:

- a) Checking the operating condition of MET equipment and communication media (AFTN or AMHS) and, if necessary, taking action to restore the operating condition or coordinating the correction of the failure with the shift technician;
- b) Receiving MET information and controlling the quality of MET information received and sent, checking for compliance with the requirements of ICAO Annex 3 and the existing procedures, and, if necessary, coordinating the correction of the identified errors with the respective units;
- c) Analysing existing and expected meteorological conditions in order to draft the TAF (Annex 3 templates A5-1, A5-2 and A5-3) of the aerodrome and associated aerodromes, the latter based on CAR/SAM FASID Table MET 1A.

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- d) Disseminating TAFs through aeronautical communication channels (AFTN or AMHS), or alternate channels, to national units: TWR, ACC, FIC, AMO(s), aeronautical fixed communication stations and exchange countries (2 hours before the effective period) according to Table MET 2B – Exchange of operational meteorological information in the CAR/SAM Regions;
- e) Continuously monitoring meteorological conditions for the drafting and dissemination of AMD TAFs to the associated AMS and meteorological stations under his/her responsibility;
- f) Preparing landing or trend-type (TREND) forecasts and sending them to the associated AMS for issuance of TREND when significant changes are expected;
- g) Preparing take-off forecasts at the request of the operators, with wind, temperature, QNH data and any other local element of importance. This forecast will be attached to the flight documentation for the operators or flight crews (Activity 4201);
- h) Preparing and disseminating aerodrome and wind shear warnings (according to Table A6-2 and A6-3 of Appendix 6 to ICAO Annex 3), based on adverse MET conditions observed in ATS units or an associated AMS;
- i) Briefings, upon request, for operators or flight crews on existing and expected MET conditions along the planned route;
- j) Supervising and coordinating the availability of updated MET information on the intranet and website of (MET service provider);
- k) Completing the service sheet, including operational occurrences, in the integrated safety reporting system (SIRSO);
- l) Receiving VAR forms and promptly delivering them to the MWO forecaster;
- m) Checking the activities of this work instruction and, in case of non-conformities, propose corrective and preventive actions;
- n) Providing MET information (METAR, SPECI, MET REPORT, SPECIAL, TAF, aerodrome warnings, and SIGMET) to operators and domestic flight crews, and flight documentation for international flights;
- o) Keeping the records established in these work instructions up to date;
- p) Coordinating as necessary with ATS/COM/AIS units for service efficacy;
- q) Upon completing the shift, informing his/her replacement about the evolution of meteorological conditions.

3.2 The senior MWO meteorologist/meteorology technician is responsible for:

- a) Keeping constant watch over meteorological conditions in the (*location indicator*) FIR;

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<b>ORGANIZATION LOGOTYPE</b>	<b>4.3 WORK INSTRUCTIONS ON MET FORECASTS AND SURVEILLANCE CONTROLLED DOCUMENT</b>	<b>CODE: IT-7.5-OMA-1</b>
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- b) Receiving information on volcanic activity, and/or TCAC advisories on the presence or forecast of a potentially hazardous cyclone, and/or special air-report messages;
- c) Preparing the SIGMET (WS, WV and WC) according to Table A.6-1 of Annex 3; and disseminating the SIGMET(s) through aeronautical fixed communications based on Appendix F of the CAR/SAM SIGMET Guide;
- d) Preparing, as applicable, a SIGMET (WS or WV) chart and disseminating it to the Area Control Centre and to operators upon request;
- e) Cancelling the SIGMETs according to Table A.6-1 of Annex 3;
- f) Coordinating with the NOF Office for the preparation and dissemination of VA NOTAMs/ASHTAMs, in order to be consistent with the SIGMET.
- g) Informing the associated VAAC about volcanic activity;
- h) Preparing and disseminating the SIGMET, based on the VA warning issued by the associated VAAC;
- i) Analysing, preparing, and disseminating the special air-reports, based on Appendix F of the CAR/SAM SIGMET Guide;
- j) Participating in SIGMET WV tests;
- k) Keeping updated the R01-OVM...-04 record on follow-up on SIGMET dissemination during each shift. In the absence of SIGMETs, the date and the shift shall be indicated, inserting NIL in the respective boxes;
- l) Providing the VAR form to the crews together with the flight documentation, and receiving such form when applicable;
- m) At the end of the shift, informing his/her replacement about the evolution of meteorological conditions; and
- n) Listing operational events occurred during the shift in the service sheet of the integrated safety reporting system;

## REFERENCES

- 3.3 MET quality policy
- 3.4 MC-4.2-AGC MET Management Manual
- 3.5 PR-4. 2-AGC-1 Drafting and presentation of MET/QMS documents.
- 3.6 PR-4. 2-AGC-2 Control of MET/QMS documents;
- 3.7 PR-4. 2-AGC-3 Control of MET/QMS records.

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<b>ORGANIZATION LOGOTYPE  UNIT</b>	<b>4.3 WORK INSTRUCTIONS ON MET FORECASTS AND SURVEILLANCE CONTROLLED DOCUMENT</b>	<b>CODE: IT-7.5-OMA-1  PAGE 6 OF 24</b>
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3.8 Doc 9873 –Manual on the quality management system for the provision of meteorological service to international air navigation.

3.9 Latest edition available of ICAO Annexes:

- Annex 3 – Meteorological Service for International Air Navigation;
- Amendment 75 to ICAO Annex 3;
- Doc 8896 – Manual of aeronautical practices;
- Doc 9377 – Manual on coordination between air traffic services, aeronautical information services and aeronautical meteorological services;
- Doc 9766 – Handbook on the international airways volcano watch;
- ICAO Doc 8733 – CAR/SAM Air Navigation Plan, Vol. II. Part IV MET-FASID; and
- ICAO South American Office, Guide for the preparation, dissemination and use of SIGMET messages in the CAR/SAM Regions;
- Aeronautical Information Publication (AIP)

3.10 Latest edition available of World Meteorological Organization (WMO) documents:

- WMO No 49" - Technical Regulations, Volume II, Meteorological service for international air navigation;
- WMO No 306, Volume I – Manual on codes;
- WMO N° 782 – Aerodrome reports and forecasts, a users' handbook to the codes.

3.11 Doc 4444 - Air Traffic Management.

#### **4. REQUIREMENTS**

4.1 National Aeronautical Regulations

4.2 ISO 9001:2008 international standard

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<p><b>ORGANIZATION LOGOTYPE</b></p> <p><b>UNIT</b></p>	<p><b>4.3 WORK INSTRUCTIONS ON MET FORECASTS AND SURVEILLANCE CONTROLLED DOCUMENT</b></p>	<p><b>CODE: IT-7.5-OMA-1</b></p> <p><b>PAGE 7 OF 24</b></p>
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## 5. DESCRIPTION OF ACTIVITIES

5.1 The identified activities and responsibilities of the operational positions are described in a flow chart, and are as follows:

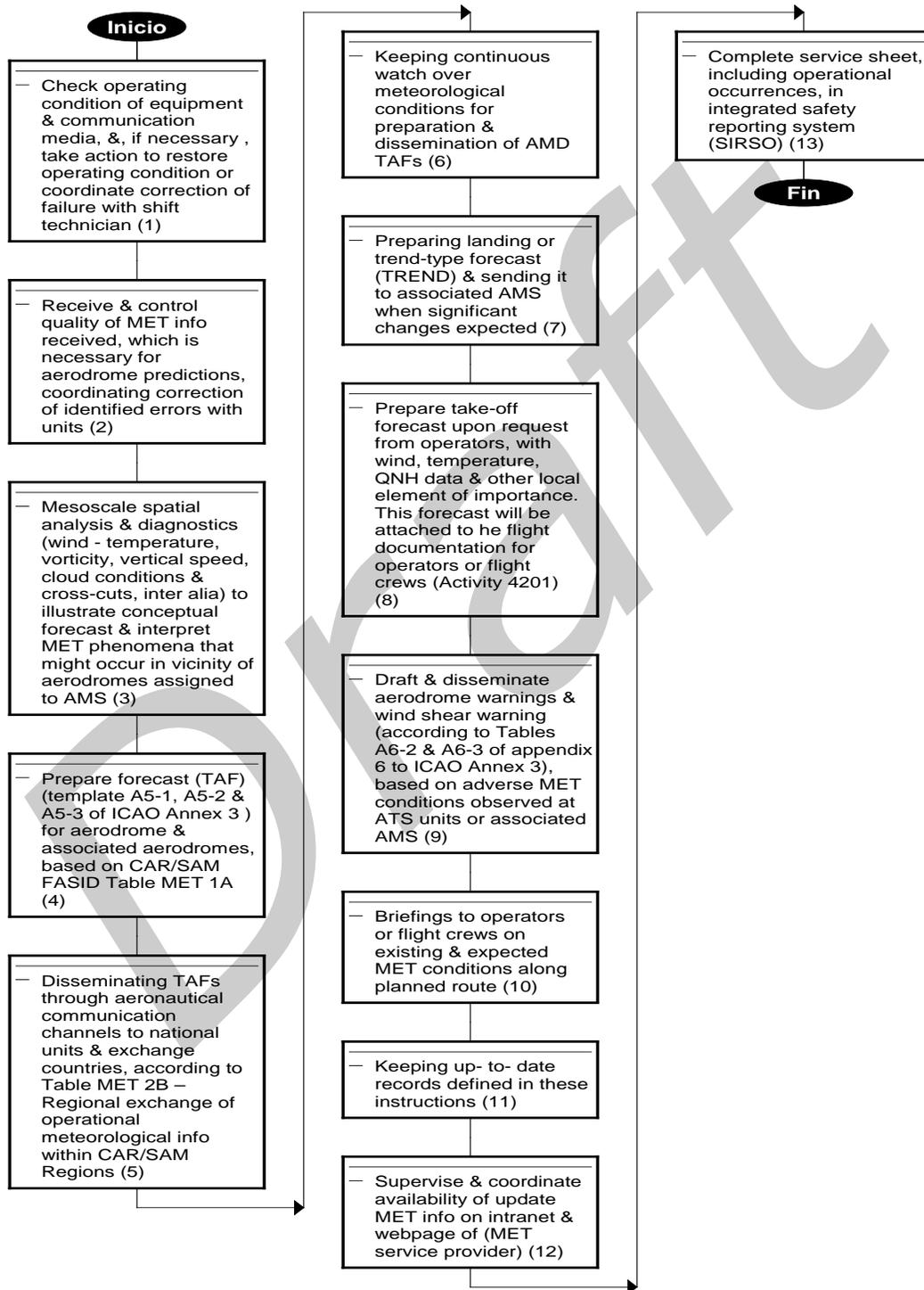
- AMO senior meteorologist / meteorology technician;
- MWO senior meteorologist / meteorology technician; and
- Activity 4201 - Provide flight documentation.

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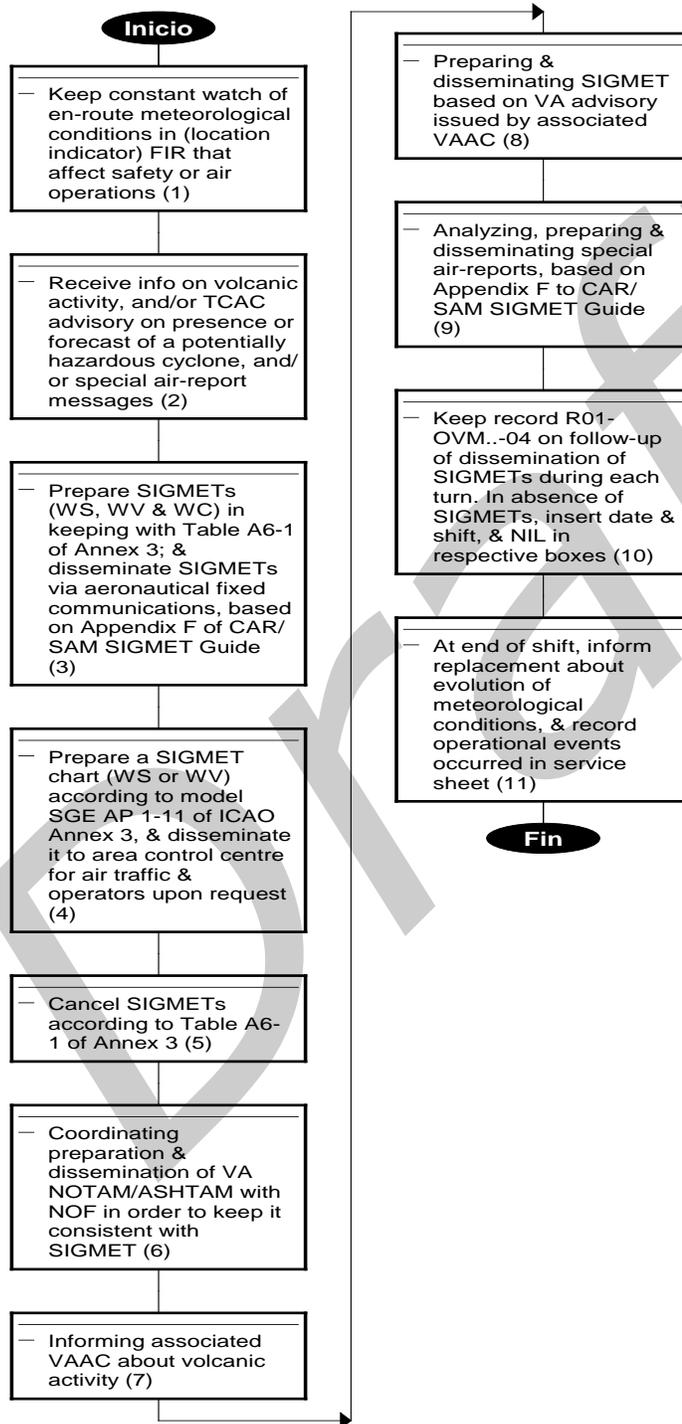
<b>ORGANIZATION LOGOTYPE</b>  <b>UNIT</b>	<b>4.3 WORK INSTRUCTIONS ON MET FORECASTS AND SURVEILLANCE CONTROLLED DOCUMENT</b>	<b>CODE: IT-7.5-OMA-1</b>  <b>PAGE 8 OF 24</b>
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**Activities of the senior meteorologist/meteorology technician of the AMO**



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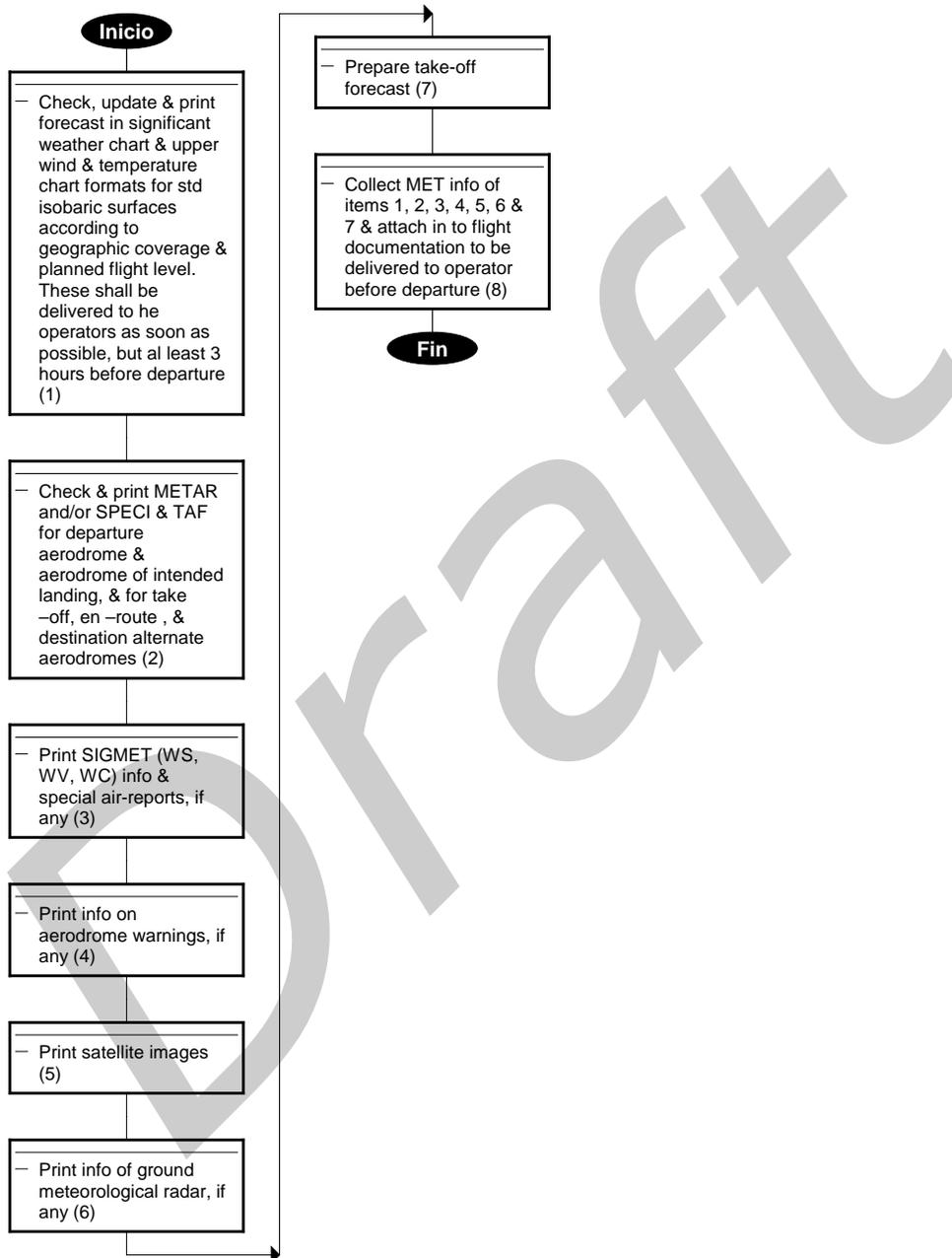
**Activities of the senior MWO meteorologist/meteorology technician**



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**Act 4201. Provide flight documentation. Responsible party: AMS Senior meteorologist/meteorology technician**



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## 6. RECORDS

IDENTIFICATION	STORAGE	PROTECTION	RETRIEVAL	RETENTION	DISPOSAL
<b>R01-AMO...-01</b> Display of foreseen upper-air charts on the Web, intranet and satellite images.	Units: MET forecast /Climatology	Printed/digital	Chronological	6 months	Eliminate
<b>R01-AMO...-02</b> Flight documentation for air operators	Units: MET forecast	Printed	Chronological	6 months	Eliminate
<b>R01-AMO...-03</b> Transmission of TAF bulletin	Units: MET forecast	Printed/Digital	Chronological	6 months	Eliminate
<b>R01-AMO...-04</b> Aerodrome or wind shear warning	Units: Forecast	Printed/Digital	Chronological	6 months	Eliminate
<b>R01-MWO...-01</b> SIGMET reports sent	Units: MET forecast	Printed/digital	Chronological	6 months	Eliminate
<b>R01-MWO...-02</b> AIREP ESPECIAL	Units: MET forecast	Printed/Digital	Chronological	6 months	Eliminate
<b>R01-MWO...-03</b> SIGMET WV or WS Graphical format	Units: MET forecast	Printed/Digital	Chronological	6 months	Eliminate
<b>R01-MWO...-04</b> Follow-up on SIGMET dissemination	Units: MET forecast	Digital	Chronological	1 year	Eliminate
<b>R02-AMO...-01</b> AMO/MWO service sheet	Units: MET forecast	Printed/Digital	Chronological	1 year	Eliminate

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## 7. GLOSSARY

### **Meteorological authority**

The authority providing or arranging for the provision of meteorological service for international air navigation on behalf of a Contracting State.

### **Special air report (UA)**

The report of an aircraft in flight, prepared in keeping with position-reporting and operational or meteorological information requirements.

### **AIREP**

Abbreviation of air-report

### **ASHTAM**

A NOTAM reporting changes in activity of a volcano that are of significance to aircraft operations, place, date, and time of volcanic eruptions or horizontal and vertical extent of volcanic ash clouds, including the direction in which they move, flight levels, and routes or route segments that might be affected.

### **ATCO**

Air Traffic Controller

### **Regional specialised meteorological centre (RSMC)**

A WMO regional specialised meteorological centre for the provision of information prepared as transportation model in response to a radiological environmental emergency. The centre sends the information to a single point of contact of the national meteorological service of each State. The International Atomic Energy Organisation (IAEO) provides information to the RSMC located in the same place as the London VAAC, which in turn informs the relevant ACCs about the release.

### **Area control centre (ACC)**

A unit established to provide air traffic control service to controlled flights in control areas under its jurisdiction.

### **Flight information centre (FIC)**

A unit established to provide flight information service and alert service.

### **Volcanic ash advisory centre (VAAC)**

A meteorological centre designated by virtue of a regional air navigation agreement to provide advisory information to meteorological watch offices, area control centres, and flight information centres serving the flight information regions in its area of responsibility, other VAACs, world area forecast centres (WAFC), international OPMET data banks, international NOTAM offices, and centres designated for the operation of aeronautical fixed service satellite distribution systems (ISCS and SADIS), regarding the lateral and vertical extent and forecast movement of volcanic ash in the atmosphere as of the moment it becomes aware of the beginning of volcano activity.

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**Tropical cyclone advisory centre (TCAC)**

A meteorological centre designated by regional air navigation agreement to provide advisory information to meteorological watch offices, world area forecast centres, and international OPMET data banks, regarding the position, forecast direction and speed of movement, central pressure and maximum surface wind of tropical cyclones.

**Flight documentation**

Written or printed documents, including charts or forms, containing meteorological information for a flight.

**Approach control unit (APP)**

A unit established to provide air traffic control service to controlled flights arriving at, or departing from, one or more aerodromes.

**Aeronautical meteorological station**

A station designated to make observations and meteorological reports for use in international air navigation

**Briefing**

Oral commentary on existing or expected meteorological conditions

**SIGMET information**

Information issued by a meteorological watch office concerning the occurrence or expected occurrence of specified en-route weather phenomena which may affect the safety of aircraft operations.

Three types of SIGMET:

- SIGMET for en-route meteorological phenomena related to TS, TURB, ICE, MTW, DS, SS and GR, **WS** designator.
- SIGMET concerning volcanic ash clouds, **WV** designator; and
- SIGMET concerning tropical cyclones, **WC** designator.

**Work instructions**

Set of instructions, rules or norms for the conduction of a process or activity.

**Expected chart**

Prediction of specified meteorological elements, for a given time or period, and with respect to a given surface or airspace portion, depicted on a chart.

**Aerodrome meteorological office (AMO)**

An office, located at an aerodrome, designated to provide meteorological service for international air navigation.

**Meteorological watch office (MWO)**

A meteorological watch office (MWO) designated to keep watch over meteorological conditions that affect flight operations at the boundaries of a flight information region. Information about SIGMET, AIRMET, volcanic activity, and accidental release of radioactive materials into the atmosphere will be prepared and disseminated.

**International NOTAM Office (NOF)**

An office designated by a State for the exchange of NOTAM internationally.

**Forecast:**

A statement of the expected meteorological conditions for a given time or period, and with respect to a given area or airspace portion.

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**World area forecast system (WAFS):**

A worldwide system by which world area forecasts centres provide aeronautical meteorological en-route forecasts in uniform standardised formats.

**Air traffic service (ATS):**

A generic term meaning variously, flight information service, alerting service, air traffic advisory service, air traffic control service (area control service, approach control service or aerodrome control service).

**Aeronautical information service (AIS):**

A service established within the defined area of coverage responsible for the provision of aeronautical information/data necessary for the safety, regularity and efficiency of air navigation.

**TAF**

Abbreviation of aerodrome forecast in meteorological code.

**Aerodrome control tower (TWR):**

A unit established to provide air traffic control service to aerodrome traffic.

**8. ANNEXES**

- Annex I: Change and revision status control matrix
- Annex II: Display of foreseen upper-air charts on the Web, intranet and satellite images.
- Annex III: Flight documentation provided to air operators
- Annex IV: Transmission of TAF bulletin
- Annex V: Aerodrome and wind shear warnings
- Annex VI: SIGMET reports sent
- Annex VII: SPECIAL AIREP
- Annex VIII: SIGMET WV or WS, graphical format.
- Annex IX: Follow-up of SIGMET dissemination
- Annex X: AMO/MWO service sheet

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## ANNEX II

### DISPLAY OF UPPER-AIR CHARTS ON THE WEB, INTRANET AND SATELLITE IMAGES

YEAR:

CODE: R01-OMA...-01

REVISION: 00/XX-XX-2011

DATE DAY/MONTH	SHIFT	MET INFORMATION AND CHARTS AVAILABLE ON THE WEB AND INTRANET		AVAILABLE SATELLITE IMAGE INFORMATION		COMMENT	SIGNATURE OF THE SUPERVISOR
		YES	NO	YES	NO		
	Morning	YES	NO	YES	NO		
	Afternoon	YES	NO	YES	NO		
	Night	YES	NO	YES	NO		
	Morning	YES	NO	YES	NO		
	Afternoon	YES	NO	YES	NO		
	Night	YES	NO	YES	NO		
	Morning	YES	NO	YES	NO		
	Afternoon	YES	NO	YES	NO		
	Night	YES	NO	YES	NO		

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### ANNEX III

#### FLIGHT DOCUMENTATION PROVIDED TO AIR OPERATORS

YEAR:

CODE: R01-AMO...-02

REVISION: 00/XX-XX-2011

DAY/MONTH	COMPANY	FLIGHT(S)	FOLDER CONTENTS				OTHER FOLDER CONTENTS	UTC TIME	COLLECTED BY - SIGNATURE
			1	2	3	4			
			1	2	3	4			
			1	2	3	4			
			1	2	3	4			
			1	2	3	4			
			1	2	3	4			
			1	2	3	4			
			1	2	3	4			
			1	2	3	4			
			1	2	3	4			

**Legend: Contents of the flight folder**

1. Aerodrome forecasts (TAF)
2. Tabular upper wind and temperature forecast
3. Upper wind and temperature chart (arrows, tabs and flags)
4. Significant weather chart

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## ANNEX IV

### TRANSMISSION OF TAF BULLETIN

**CODE: R01-OMA...-03**

**REVISION: 00/XX-XX-2011**

<p>EXAMPLE:  GG SPIMMETX  DDHHMM SPIMYMYM  FTPR SPIM DDHHMM  TAF  SPIM 281620Z 2818/2918 28007KT CAVOK TX28/2919Z TN20/2911Z    BECMG 2821/2823 19006KT    TEMPO 2900/2903 FEW010 SCT130    BECMG 2904/2906 SCT010    BECMG 2909/2910 7000 OVC010    PROB30 2911/2913 5000 BR OVC008    BECMG 2913/2914 27006KT 8000 FEW010    FM291500 27007KT CAVOK</p> <p>SPHI 281620Z 2818/2918 17015KT CAVOK TX31/2819Z TN21/2911Z    TEMPO 2820/2822 18020KT    BECMG 2903/2904 19010KT SCT030 SCT100    BECMG 2910/2912 CAVOK    BECMG 2914/2916 18014KT</p> <p>...</p>
--

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**ANNEX V**

**AERODROME OR WIND SHEAR WARNING**

**CODE: R01-AMO... -04**

**REVISION: 00/XX-XX-2011**

**Example:**

Wind shear warning:

GG SPIMYMYM SPZOZTZX SPZOZAZX  
211750 SPZOYMYX  
SPZO WS WRNG 1 191830 VALID TIL 192030  
SEV WS IN APCH RWY28  
REP AT 1810 N90WT  
SFC WIND: RWY28 360/15KT MAX27 MNM10 VRB BTN 270/ AND 020/  
RWY10 030/30KT MAX43 MNM 15 VRB BTN 300/ AND 100/

Cancellation of wind shear warning:

GG SPIMYMYM SPZOZTZX SPZOZAZX  
212030 SPZOYMYX  
CNL WS WRNG 1 191830/192030

Draft

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## ANNEX VI

### SIGMET REPORTS SENT

**CODE: R01-OVM...-01**

**REVISION: 00/XX-XX-2011**

<p>EXAMPLE OF FORMAT:</p> <p>GG SPIMWSIG 300328 SPIMYMYM WSPR31 SPIM 300330 SPIM SIGMET B5 VALID 300335/300635 SPIM- SPIM LIMA FIR EMBD TS FCST S0240 W07630 S0341 W07559 S0416 W07455 S0505 W07530 S0613 W07513 S0606 W07323 S0352 W07145 S0333 W07309 S0155 W07525 S0240 W07630 CB TOP FL 420 NW NC= OR</p> <p>GG SPIMCENV SPIMCENI 301247 SPIMYMYM WVPR31 SPIM 301248 SPIM SIGMET B1 VALID 301250/301850 SPIM- LIMA FIR VA ERUPTION MT UBINAS LOC S1621 W07054 INST GEOFISICO VA CLD OBS AT 301201Z FL200/240 MOV SW 10KMH= OR</p> <p>GG SPIMCENV SPIMCENI DDHHMM SPIMYMYM WVPR31 SPIM DDHHMM SPIM SIGMET NN VALID DDHHMM/DDHHMM SPIM- LIMA FIR VA ERUPTION MT UBINAS PSN S1621 W07054 INST GEOFISICO OBS VA CLD MOV NW FCST 1530Z VA CLD APROX SFC/FL200 S1520 W7130 - S1600 W7130 S1630 W7100 - S1710 W7130 - S1620 W7230 - S1520 W7130=</p> <p>WHERE: AFTN addresses correspond to the case of the Peruvian State.</p> <p>SPIMCENV: Contains international addresses according to Appendix F to the CAR/SAM FASID SPIMCENI: Contains domestic addresses SPIMWSIG: Contains SPIMCENV and SPIMCENI AFTN addresses</p>
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<p><b>ORGANIZATION LOGOTYPE</b></p> <p><b>UNIT</b></p>	<p><b>4.3 WORK INSTRUCTIONS ON MET FORECASTS AND SURVEILLANCE CONTROLLED DOCUMENT</b></p>	<p><b>CODE: IT-7.5-OMA-1</b></p> <p><b>PAGE 21 OF 24</b></p>
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**ANNEX VII**

**SPECIAL AIREP REPORT**

**CODE: R01-OVM...-02**

**REVISION: 00/XX-XX-2011**

EXAMPLE OF FORMAT:

GG SPIMWSIG  
301202 SPIMYMYM  
UAPR SPIM 301202  
ARS VA812 0248S07231W 1215 F310 ICE SEV =

Draft

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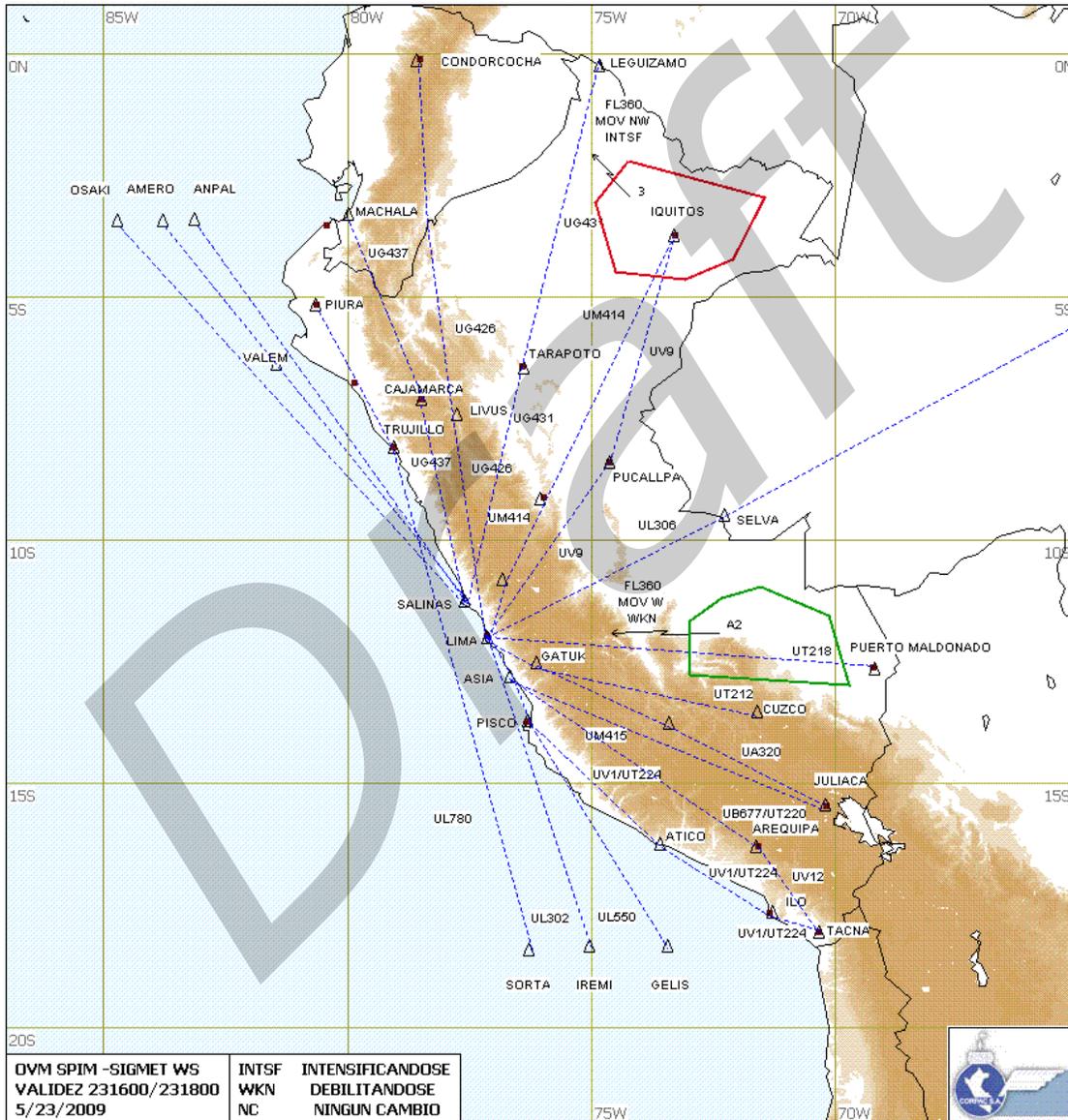
**ANNEX VIII**

**WV or WS SIGMET IN GRAPHICAL FORMAT**

**CODE: R01-OVM...-03**

**REVISION: 00/XX-XX-2011**

**Ex: WS SIGMET IN GRAPHICAL FORMAT AT WAF MESSIR TERMINAL**



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### ANNEX IX

#### FOLLOW-UP OF THE DISSEMINATION OF SIGMETS – (name) FIR

CODE: R01-OVM...-04

REVISION: 00/XX-XX-2011

Date:

Day/ Shift	SIGMET WV		SEQUENTIAL NUMBERING AND VALIDITY OF WS SIGMETS												
	No.	Validity	Status	No.	Validity	Status	A	Validity	Status	B	Validity	Status	C	Validity	Status
				1			A1								
				2			A2								
				3			A3				B1				
											B2				
											B3				
	SIGMET WV		Status	No.	Validity	Status	A	Validity	Status	B	Validity	Status	C	Validity	Status
	SIGMET WV		Status	No.	Validity	Status	A	Validity	Status	B	Validity	Status	C	Validity	Status

NOTE: Status: Valid or cancelled

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## ANNEX X

### AMO/MWO SERVICE SHEET

CODE: R02-OMA...-01

REVISION: 00/XX-XX-2011

Example:

Gerencia de Informática CORPAC SA - Localidad : LIMA - JORGE CHAVEZ [ USUARIO : ] AREA PRONOSTICOS

Hoja Servicio Salir

Fecha: 31/07/2007  
Hora: 18:41:40

**HOJA DE SERVICIO**

Areas Turno Fecha UTC

4332 PRONOSTICOS SPIM 12:00 / 18:00 21/07/2007

Posición	Nombre Trabajador	Estado
SUPERVISOR MET	CALLE MONTES VICTORIA	Asistió
PRONOSTICADOR (POSIC)	ALLASI QUISPE FERNANDO	Asistió
PRONOSTICADOR (POSIC)	CHAMOCHUMBI APONTE MARCELO	Asistió
PRONOSTICADOR (POSIC)	MARTINEZ ALVAREZ LOURDES	Asistió

Equipos / Documentación	Estado	Chequeo Físico	
		Inicio	Fin
1 TELEFONO 1181-CORPAC	Operativo	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
1 TELEFONO 3830 LAP	Operativo	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
1 TELEFONO DOS DIGITOS 68	Operativo	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
8 UPS	Operativo	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
BCO OPMET_IMPRESORA	Operativo	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
BCO OPMET_TERMINAL	Operativo	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Hora	Ocurencias Frecuentes	Observación Oc	Equipos
18:00	OTROS	contómetro 400897	
18:00	OTROS	servidor normal	SERVIDOR MET
18:00	IMAGENES DE SATELITE CON HORARIO IRREGULAR	imágenes satélites cada tres horas	

**Cierre Turno**

Cerrar

**Observacion**

A PARTIR DEL 23 DE ABRIL HORA 02:00 UTC ENTRARA EN VIGENCIA EN FORMA OBLIGATORIA EL USO DE LA HOJA ELECTRONICA SIRSO SEGUN MEMORANDUM DE LA GERENCIA DE OPERACIONES. GRACIAS

LA JEFATURA

Nuevo  
Detalle  
Botar  
Imprimir  
Grabar  
Salir

Inicio LIMA IT-7.5-OMAS... REF4211 - Mi... Reproductor ... SISTEMA DE ... Gerencia de ... E5 06:41

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<b>ORGANIZATION LOGOTYPE</b>  <b>UNIT</b>	<b>4.4 WORK INSTRUCTIONS ON AERONAUTICAL CLIMATOLOGY</b>	<b>CODE: IT-7. 5-CLIMA-1</b>  <b>PAGE 1 OF 20</b>
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**WORK INSTRUCTIONS ON  
AERONAUTICAL CLIMATOLOGY**

Revision 00

2011

PREPARED	REVISED	APPROVED

REVISION	DATE
00	30/11/11

<b>ORGANIZATION LOGOTYPE</b>	<b>4.4 WORK INSTRUCTIONS ON AERONAUTICAL CLIMATOLOGY</b>	<b>CODE: IT-7. 5-CLIMA-1</b>
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### SUMMARY

1. Objectives
2. Scope
3. Responsibilities
4. References
5. Requirements
6. Description of Activities
7. Records
8. Glossary
9. Annexes

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<p style="text-align: center;"><b>ORGANIZATION LOGOTYPE</b></p> <p style="text-align: center;"><b>UNIT</b></p>	<p style="text-align: center;"><b>4.4 WORK INSTRUCTIONS ON AERONAUTICAL CLIMATOLOGY</b></p>	<p><b>CODE:</b> <b>IT-7. 5-CLIMA-1</b></p> <p><b>PAGE 3 OF 20</b></p>
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## 1. OBJECTIVE

1.1 Establish work instructions for the provision of the aeronautical climatological information required for the planning of flight operations, accident and/or incident or other types of investigations, as well as for deferred operational analysis according to international requirements, to air operators, other aeronautical users and internal users.

## 2. SCOPE

2.1 This procedure applies to *(name of the MET service provider)*/aeronautical climatology unit of the *(name of the aerodrome)* airport.

## 3. RESPONSIBILITIES

3.1 The **Supervisor** (senior meteorologist/meteorology technician) of *(aeronautical climatology)* is responsible for:

- a) controlling and making sure that aeronautical climatology activities are carried out according to current international standards and procedures, with a view to continuous improvement based on computer system developments;
- b) checking and taking corrective and preventive action for the proper application of existing international standards and procedures;
- d) making sure that the competencies of the personnel under his/her responsibility meets the needs of the aeronautical climatological service;
- f) formulating the training requirements of the personnel under his/her responsibility, and assessing the impact of such training.
- g) coordinating activities with the head of the MET section for updating this document, ensuring their implementation, and assessing their impact;
- l) supervising, controlling, and analyzing the records to check compliance with requirements, efficiency and continuous improvement of aeronautical climatology activities.
- a) Supervising the development, updating, and quality of aerodrome climatological tables and summaries(Act. 4302);
- b) Supervising the development of specific MET studies and statistics as requested;
- c) Controlling the reception, revision, and filing of AMS meteorological templates, including the recording of templates, meteorological charts, and radiosonde data reports, as applicable. (Act. 4302).
- d) Supervising and ensuring the drafting and international transmission of monthly meteorological reports (MET) through the respective circuit, according to WMO standards (Act. 4302).

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- e) Supervising and assessing the controls for timely exchange of OPMET information through the CAR/SAM AFTN circuit, according to the established requirements (Act. 4304), and coordinating with the head of the MET section for the updating of OPMET data requirements by ICAO, according to the established procedures.
- f) Controlling the ordering and updating of aeronautical climatological information, as well as ensuring that information for the last 30 years is preserved (Act. 4301).
- g) Supervising the delivery of meteorological information to aeronautical and non-aeronautical users, according to the established provisions (Act. 4305).
- h) Providing theoretical-practical training in the specialty, as well as in equipment handling, as applicable.
- i) Maintaining control over assigned fixed assets, checking their operation and proper use, as well as keeping up-to-date inventory and forms concerning fixed asset movement, replacement or disposal.
- j) Knowing and complying with the Organizational and Functional Manual, the systems and procedures related to his/her activities, as well as the Internal Work Regulations and other administrative and/or operational provisions established by the MET service provider.
- k) Keeping the immediate superior informed about the performance of, and progress in, his/her activities.

3.3 The (*climatology*) **meteorologist** is responsible for:

- a) Conducting aeronautical climatological studies at airports, in order to provide the climatological information required for the planning of flight operations, and the remodeling or construction of new airports;
- b) Preparing aerodrome climatological tables and summaries (AOP);
- c) Preparing reports of meteorological conditions of all the airports in the country upon request (Act. 4303);
- d) Preparing special climatological summaries for the assessment and description of conditions affecting flight operations (Act. 4303).
- e) Collecting and filing MET information from the AFTN circuit, radiosonde systems and automatic stations, through the internet (Act. 4301).
- f) Ensuring the timely exchange of CAR/SAM OPMET information through the AFTN circuit, according to the established requirements (Act. 4303).
- g) Providing meteorological information to aeronautical and non-aeronautical users, according to the established provisions (Act. 4304).
- h) Keeping the climatology supervisor informed about the performance of, and progress in, his/her activities.

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<b>ORGANIZATION LOGOTYPE</b>	<b>4.4 WORK INSTRUCTIONS ON AERONAUTICAL CLIMATOLOGY</b>	<b>CODE: IT-7. 5-CLIMA-1</b>
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- 3.4 The ***Meteorology (Climatology) expertise*** responsible for:
- a) Developing AMS monthly climatological tables (Act. 4301).
  - b) Receiving and filing MET information received by e-mail (Act. 4301).
  - c) Updating the data in the climatological tables and summaries stored in computer devices (Act. 4303).
  - d) Receiving, revising, and filing the templates with AMS-generated meteorological records;
  - e) Receiving and filing TEMP (upper-air meteorological information) reports generated through the radiosonde system of the (*name of the aerodrome*) airport, if applicable; (Act. 4301).
  - f) Receiving and filing the surface meteorological charts generated at the associated AMS (Act. 4301).
  - g) Receiving and filing the CDs with satellite images from the GVAR system of the associated AMS (Act. 4301).
  - h) Keeping the information contained in the climatological file in order, up to date, and under custody (Act. 4301).
  - i) Keeping the climatology supervisor informed about the performance of, and progress in, his/her activities.

#### **4. REFERENCES**

- 4.1 MET Quality Management Manual
- 4.2 Drafting and presentation of MET/QMS documents (PR-4.2-AGC-1)
- 4.3 Control of MET/QMS documents (PR-4.2-AGC-2)
- 4.4 Control of MET/QMS records (PR-4.2-AGC-3)
- 4.5 Doc 9873 –*Manual on the quality management system for the provision of meteorological service to international air navigation*

#### **5. REQUIREMENTS**

- 5.1 Latest edition available of ICAO Annexes:
  - Annex 3–Meteorological Service for International Air Navigation;
  - Annex 14 –Aerodromes;
  - Annex 15 - Aeronautical Information Services;
  - Doc 7475/2 –Working arrangements between the International Civil Aviation Organization and the World Meteorological Organization;

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- Doc 7910–Location indicators;
- Doc 8733, Vol. II – Part IV–Air Navigation Plan;
- Doc 8896 - Manual of aeronautical meteorological practices.
- (*Name of the country*) AIP.

5.2 Latest edition available of World Meteorological Organization (WMO) documents:

- WMO No 8–Guide to meteorological instruments and methods of observation;
- WMO No 9 –Weather reporting. Volume A;
- WMO No 49–Technical Regulations, Volume II, Meteorological service for international air navigation;
- WMO No 114–Guide to qualifications and training of meteorological personnel employed in the provision of meteorological services for international air navigation;
- WMO No 100 –Guide of Climatological Practices;
- WMO No 258 –Guidelines for the education and training of personnel in meteorology and operational hydrology;
- WMO No. 306, Volume I –Manual on codes;
- WMO No. 731 –Guide on meteorological observation and information distribution systems at aerodromes;
- WMO No 732- Guide to practices for meteorological offices serving aviation.

5.3 ISO 9001:2008 standard

5.4 Internal working regulations.

## 6. DESCRIPTION OF ACTIVITIES

6.1 The activities identified in the aeronautical climatology sub-process at the (*name of the aerodrome*) aerodrome are the following:

- Activity 4301.- Collect and file aerodrome digital and documentary meteorological information.
- Activity 4302.- Analysis and quality control of meteorological information.
- Activity 4303.- Processing of meteorological information.
- Activity 4304.- Customer service.

6.2 The coding of MET processes and sub-processes has been developed taking into account document ECCAIRS **ADREP 2000**, where:

**ADREP** - the ICAO Accident/Incident Data Reporting system.

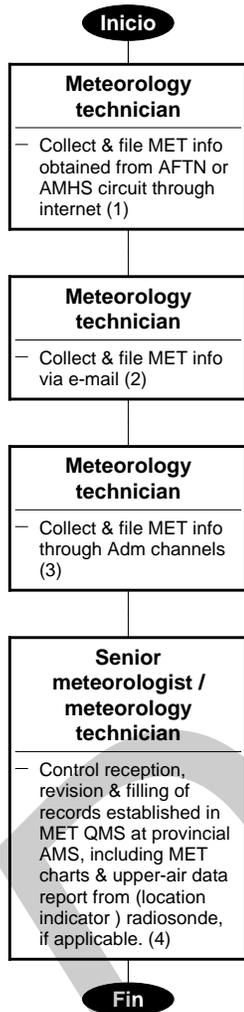
**ECCAIRS** - European Co-Ordination Centre for Aviation Incident Reporting Systems.

6.3 The coding of aeronautical climatology activities starts at 4300.

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**ACTIVITY 4301. Collect and file aerodrome digital and documentary meteorologic information**



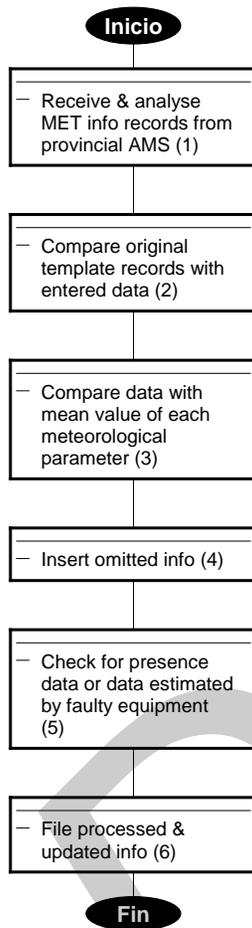
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**ACTIVITY 4302. Analysis and quality control of meteorological information.**

**Responsible: Supervisor (Senior meteorologist / meteorology technician)/**

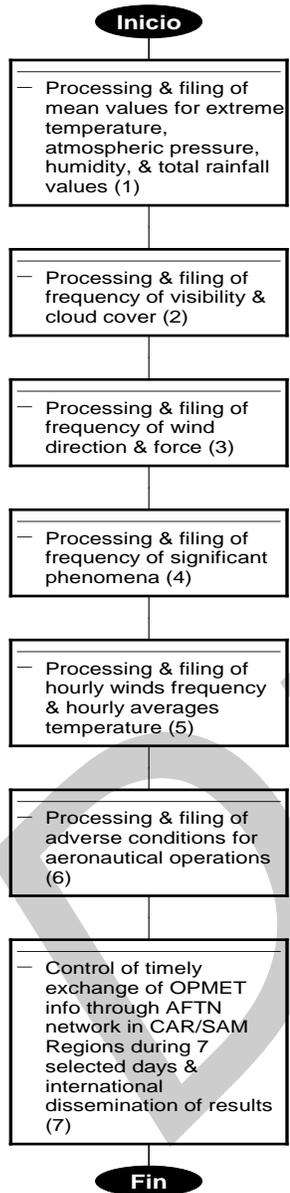
**Meteorologist/ Meteorologist technician**



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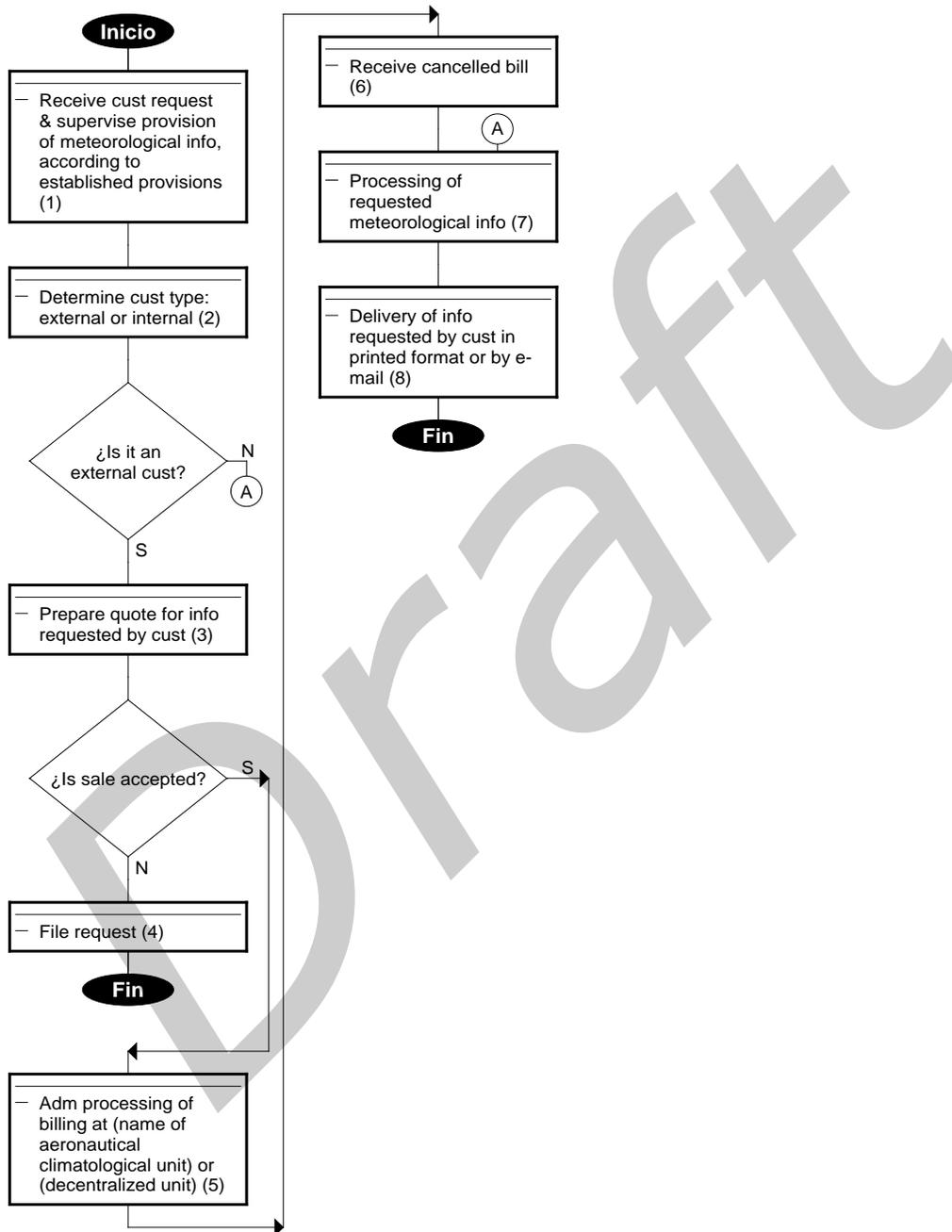
**ACTIVITY 4303. Processing meteorological information.**  
**Responsible party: Supervisor (Senior meteorologist /meteorology technician) / meteorologist / meteorologist technician**



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**ACTIVITY 4304. Customer service. Responsible party: Supervisor (Senior meteorologist / meteorology technician)**



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## 7. RECORDS

IDENTIFICATION	STORAGE	PROTECTION	RETRIEVAL	RETENTION	DISPOSAL
<b>R01-OMA CLIMA-01</b> Aerodrome climatological table	Name of the MET climatology service provider	Printed/digital	Chronological	Not defined	Eliminate
<b>R01-OMA CLIMA-02</b> Control of reception of monthly climatological tables by e-mail	Name of the MET climatology service provider	Printed/digital	Chronological	Not defined	Eliminate
<b>R01-OMA CLIMA-03</b> Control of reception of meteorological templates from the AMS	Name of the MET climatology service provider	Printed	Chronological	Not defined	Eliminate
<b>R01-OMA CLIMA-04</b> COM/MET coordinated control of OPMET exchange for the CAR/SAM Regions	Name of the MET climatology service provider	Printed/digital	Chronological	5 years	Eliminate
<b>R01-OMA CLIMA-05</b> Record of requests and provision of aeronautical climatology information upon request	Name of the MET climatology service provider	Printed/digital	Chronological	10years	Eliminate

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## 8. GLOSSARY

**Meteorological authority:**

The authority providing or arranging for the provision of meteorological service for international air navigation on behalf of a Contracting State.

**Aeronautical meteorological station (AMS):**

A station designated to make observations and meteorological reports for use in international air navigation.

**Meteorological information**

Meteorological report, analysis, forecast, and any other statement relating to existing or expected meteorological conditions.

**Work instructions:**

A procedure that describes the activities carried out by organic units.

**SIGMET information:**

Information issued by a meteorological watch office concerning the occurrence or expected occurrence of specified en-route weather phenomena which may affect the safety of aircraft operations.

**Meteorological report:**

A statement of observed meteorological conditions related to a specified time and location.

**Foreseen chart:**

A forecast of a specified meteorological element(s) for a specified time or period and a specified surface or portion of airspace, depicted graphically on a chart.

**(Meteorological) observation:**

The assessment of one or more meteorological elements.

**Meteorological office:**

An office designated to provide meteorological service for international air navigation.

**Aerodrome meteorological office (AMO):**

An office, located at an aerodrome, designated to provide meteorological service for international air navigation.

**Procedure:**

A specified way of carrying out an activity or process.

**Process:**

A set of interrelated or interacting activities to turn input into outcome.

**Forecast:**

A statement of the meteorological conditions expected for a specified time or period and a specified area or portion of airspace.

**Requirement:**

An established need or expectation, generally implicit or mandatory.

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**Aerodrome climatological summary:**

Concise summary of specified meteorological elements at an aerodrome, based on statistical data.

**Records**

They are established and kept for demonstrating compliance with requirements and the effective operation of the quality management system. Records must be easily identifiable and retrievable.

Records R01 indicate compliance with requirements; records R02 show efficacy; and records R03 are for continuous improvement.

**Meteorological satellite:**

An artificial satellite that conducts meteorological observations and sends them to earth.

**World area forecast system (WAFS):**

A world-wide system by which world area forecast centres provide aeronautical meteorological en-route forecasts in uniform standardized formats.

**Aerodrome climatological table:**

Table providing statistical data on the observed occurrence of one or more meteorological elements at an aerodrome.

**9. ANNEXES**

- Annex I: Change and revision status control matrix
- Annex II: Aerodrome climatological table (ICAO location indicator)
- Annex III: Control of reception of monthly climatological tables by e-mail
- Annex IV: Control of reception of meteorological templates from AMS
- Annex V: COM/MET coordinated control of OPMET exchange in the CAR/SAM Regions
- Annex VI: Record of requests and responses to requests for aeronautical climatological information.

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## ANNEX II

### AERODROME CLIMATOLOGICAL TABLE *(ICAO location indicator)*

CODE: R01-OMACLIMA-01

REVISION: 00/XX-XX-2011  
Month and year:.....

Day	Direction of prevailing wind	Mean wind speed (knots)	Maximum wind (degrees/knots)	Minimum visibility 2000m or less	Minimum ceiling 300m or less	Electrical storm	Fog visibility 500m or less	Maximum/minimum relative humidity (%)	Average of eight (8) synoptic observations				Temperature (°C)		Total 24-hour rainfall 1200UTC (mm)	
									Pressure at the station (hPa)	Reduced barometric pressure (hPa)	Air temperature (°C)	Dew point (°C)	Maximum	Minimum		
1																
2																
3																
4																
5																
6																
.																
.																
.																
31																

**DIRECTION OF PREVAILING WIND:**

**NUMBER OF DAYS WITH:**

<b>AVERAGE OF</b>	}	Wind speed: ..... Knots
		Pressure at the station: ..... hPa
		Reduced barometric pressure: ..... hPa
		Relative humidity: ..... %
		Air temperature and st. deviation..... °C
		Dew point: ..... °C
		Maximum temperature: ..... °C
		Minimum temperature: ..... °C

Wind of 20 knots or more: .....
Visibility of 2000m or less: .....
Ceiling of 300m or less: .....
Electrical storm: .....
Fog (visibility of 500m or less): .....
Rainfall: .....
Rainfall of 1 mm or more: .....

TOTAL RAINFALL (mm):...

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**ANNEX III**

**CONTROL OF RECEPTION OF MONTHLY CLIMATOLOGICAL TABLES BY  
E-MAIL - YEAR.....**

CODE: R01-OMACLIMA-02

REVISION: 00/XX-XX-2011

Example:

AERODROMES	IND	E	F	M	A	M	J	J	A	S	O	N	D

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### ANNEX IV

#### CONTROL OF RECEPTION OF METEOROLOGICAL TEMPLATES FROM AMS

CODE: R01-OMACLIMA-03

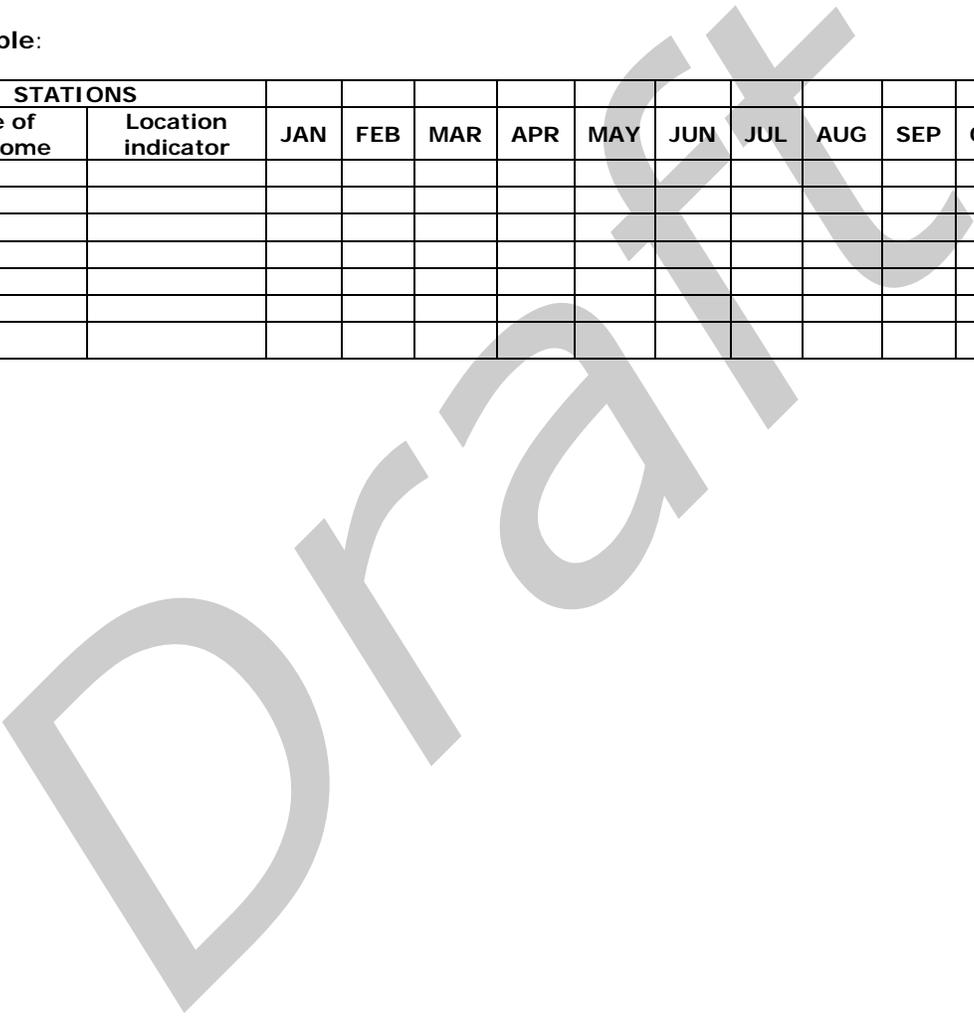
REVISION: 00/XX-XX-2011

MONTH: .....

YEAR: .....

Example:

N°	STATIONS		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
	Name of aerodrome	Location indicator												



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**ANNEX V (Cont.)**

CONTROLES COORDINADOS COM/MET DE INTERCAMBIO DE MENSAJES SIGMET/SPECI/AIREP PARA LAS REGIONES CAR/SAM							
COM/MET COORDINATED CONTROLS OF SIGMET/SPECI/AIREP EXCHANGE FOR THE CAR/SAM REGIONS							
Mensajes Meteorológicos Recibidos/Meteorological Messages Received				Periodo/Period: 10 - 16 Junio / June		Año/Year:	
ESTADO/STATE: PERÚ	AFTN:	FAX:	E-mail: pronostico@corpac.gob.pe				
Oficina de Vigilancia Meteorológica/ Meteorological Watch Office	Ind. de Lugar/Loc. Ind.	Requerimiento OPMET/OPMET Requirement <sup>1</sup>	SIGMET (WS)	SIGMET (WC)	SIGMET (WV)	AIREP (UA)	

Guía SIGMET, Apr. I / SIGMET Guide, App. I

S = SIGMET WS, WC, WV

AIREP especiales UA / special AIREP UA

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<b>ORGANIZATION LOGOTYPE</b>	<b>4.4 WORK INSTRUCTIONS ON AERONAUTICAL CLIMATOLOGY</b>	<b>CODE: IT-7. 5-CLIMA-1</b>
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## ANNEX VI

### RECORD OF REQUESTS AND RESPONSES TO REQUESTS FOR AERONAUTICAL CLIMATOLOGY INFORMATION

CODE: R01-OMACLIMA-05

REVISION: 00/XX-XX-2011

YEAR: .....

DAY /MON TH	REQUESTING PARTY	DATA REQUESTED	AERODROME REQUESTED	PLACE AND DATE OF RESPONSE	VALUE OF SALE
				Data: Invoice:	
				Data: Invoice:	
				Data: Invoice:	

DAY /MON TH	REQUESTING PARTY	DATA REQUESTED	AERODROME REQUESTED	PLACE AND DATE OF UNACCEPTED SALES

**DATA:** Wind direction: D, Wind speed: V, Visibility: VV, Clouds: N,  
Temperatures: T air, T max, T min, T dew, Atmospheric pressure: P, Relative  
humidity: HR, Met phenomena: F.MET, Copies of templates, copies of inserted data  
and others.

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<p><b>ORGANIZATION LOGOTYPE</b></p> <p><b>UNIT</b></p>	<p><b>4.5 WORK INSTRUCTIONS INSTALLATION AND MAINTENANCE OF MET EQUIPMENT AND SYSTEMS</b></p> <p><b>CONTROLLED DOCUMENT</b></p>	<p><b>CODE: IT-7. 5-AMSM-1</b></p> <p><b>PAGE 1 OF 17</b></p>
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**WORK INSTRUCTIONS  
INSTALLATION AND MAINTENANCE OF MET  
EQUIPMENT AND SYSTEMS**

**Revision 00**

**2011**

PREPARED	REVISED	APPROVED

REVISION	DATE
00	30/11/11

<b>ORGANIZATION LOGOTYPE</b>	<b>4.5 WORK INSTRUCTIONS INSTALLATION AND MAINTENANCE OF MET EQUIPMENT AND SYSTEMS</b>	<b>CODE: IT-7. 5-AMSM-1</b>
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### SUMMARY

1. Objectives
2. Scope
3. Responsibilities
4. References
5. Requirements
6. Description of Activities
7. Records
8. Annexes
9. Glossary

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<b>ORGANIZATION LOGOTYPE</b>	<b>4.5 WORK INSTRUCTIONS INSTALLATION AND MAINTENANCE OF MET EQUIPMENT AND SYSTEMS</b>	<b>CODE: IT-7. 5-AMSM-1</b>
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## 1. OBJECTIVE

1.1 Define the responsibilities and activities for achieving an effective and efficient installation and maintenance of meteorological observing instruments and systems at aerodromes, in order to ensure their operating condition according with the requirements established by ICAO, WMO and the existing national legislation.

## 2. SCOPE

2.1 These work instructions apply to the unit responsible for the installation and maintenance of meteorological equipment and systems of (name of the MET service provider).

## 3. RESPONSIBILITIES

3.1 The Director/Manager is responsible for:

- a) Approving the documentation for the allocation of resources and monitoring compliance.
- b) Reviewing and arranging for the periodic modification of these work instructions.

3.2 The head of the unit in charge of the installation and maintenance of meteorological observing equipment and systems is responsible for:

- a) Planning, scheduling, directing, and assessing the needs for installation, maintenance, and conservation of aeronautical meteorology observing equipment and systems;
- b) Preparing the annual plan concerning service, spare part, and material requirements;
- c) Preparing, in coordination with the head of the MET section, the technical specifications for the procurement and maintenance of meteorological observing instruments, spare parts and systems;
- d) Programming and supervising in-house maintenance and repair of equipment and/or spare parts of aeronautical meteorology systems.
- e) Programming and supervising the maintenance and repair of meteorological observing equipment and/or spare parts to be performed by third parties;
- f) Coordinating the installation and maintenance programme with the MET area;
- g) Programming the training of personnel under his/her responsibility.

3.3 The technicians involved in the installation and maintenance of meteorological observing equipment and systems are responsible for:

- a) Performing the activities (installation, preventive and corrective maintenance, repair), completing the records and reports established in this document;

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- b) Assisting in the drafting of the documentation for annual programmes;
- c) Supporting the drafting of technical specifications for the procurement and maintenance of meteorological observing instruments, spare parts, and systems;
- d) Calibrating meteorological equipment and instruments, conducting quality control tests to verify their proper operating condition before their transport for installation;
- e) Keeping an updated inventory of spare parts and inputs;
- f) Maintaining a record of each piece of meteorological observing equipment, instrument, or system.

#### **4. REFERENCES**

- 4.1 MET Quality Management Manual
- 4.2 Drafting and presentation of MET/QMS documents (PR.4.2-AGC-01)
- 4.3 Control of MET/QMS documents (PR.4.2-AGC-02)
- 4.4 Control of MET/QMS records (PR.4.2-AGC-03)

#### **5. REQUIREMENTS**

- 5.1 ICAO and WMO regulatory documentation and the national documentation that must be complied with for the sub-process of installation and maintenance of meteorological instruments and systems.
- 5.2 Latest edition of ICAO Annexes:
  - Annex 3 – Meteorological service for international air navigation;
  - Annex 14 – Aerodromes;
  - Doc 8896 - Manual of aeronautical meteorological practices;
  - Doc 9137 – Airport services manual;
  - Doc 9328 - Manual of runway visual range observing and reporting practices;
  - Doc 9837 - Manual on automatic meteorological observing systems at aerodromes.
- 5.3 Latest edition of World Meteorological Organization (WMO) documents:
  - WMO No. 8 – Guide to meteorological instruments and methods of observation;
  - WMO No. 622 – Compendium of lecture notes on meteorological instruments for training. Class III and IV meteorological personnel;
  - WMO No. 554 - World Watch System Handbook; and
  - WMO No. 731 – Guide on meteorological observation and information distribution systems at aerodromes.
- 5.4 User guides of meteorological equipment manufacturers.

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## 6. DESCRIPTION OF ACTIVITIES

6.1 The activities identified for the installation and maintenance of conventional or automatic MET observing equipment and systems are the following:

### 6.2 **Activity 50531.- Annual planning of the area responsible for the installation and maintenance of MET observing systems**

6.2.1 The head of maintenance of MET observing equipment and systems for planning and operational activities will prepare the following documentation for:

- Installation, renewal, transfer, and preventive or corrective maintenance
- Procurement of spare parts, components, cards, modules for meteorological equipment
- Procurement of instruments, special and conventional tools for the repair of meteorological equipment
- Civil works for the installation of meteorological equipment

6.2.2 For the performance of the aforementioned activities, the following records will be developed:

- Summarized table of annual objectives;
- Table of annual goals;
- Table of costs and timetable for the implementation of annual goals;

6.2.3 For the assignment and follow-up of the operational tasks of electronic technicians, use will be made of Work Order R02-EMSM-01 (see Annex III).

### 6.3 **Activity 50532.- Planning and drafting of technical dossiers for the procurement of meteorological observing equipment and systems, civil works, and spare parts**

6.3.1 The head of maintenance of MET observing equipment and systems, in coordination with the head of the MET section and the electronic technicians under his/her responsibility, will prepare the technical and operational specifications for the procurement of meteorological equipment, civil works, and spare parts, completing record R01-AMSM-02 (see Annex IV)

### 6.4 **Activity 50533.- Installation of the equipment for a conventional aeronautical meteorological station: Anemometer, altimeter, mercury barometer, meteorological shelter, rain gauge, and anemoscope**

6.4.1 The siting of meteorological instruments or of the sensors connected to these instruments at aerodromes must meet the requirements concerning operational representativeness and suitability, based on power supply, communication services, compliance with obstacle restrictions and obstacle clearance requirements for the construction of instrument supports (see table A2-3, see Annex VI).

6.4.2 Installation of anemometer

6.4.3 Installation of an altimeter

6.4.4 Installation of a mercury barometer

6.4.5 Installation of a weather box

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6.4.6 Installation of a rain gauge

6.4.7 Installation of an anemoscope

**6.5 Activity 50534.- Installation of remote sensors, collecting platform, and compilation and display units that make up the automated weather observing system (AWOS)**

6.5.1 The contractor of civil works for the installation of AWOS equipment, in coordination with the electronic technician of (name of the MET service provider), will carry out the civil works prior to the installation of the automated observing system. Subsequently, the technical personnel of the automated observing system manufacturer will install the electrical cables, grounding systems, supports, data transmission equipment, sensors and information displays at air traffic control and meteorology units. Then, the operating condition of the installed sensors is checked with standard referential equipment, and finally, the heads of the various areas, the contractor and the technical personnel will sign the technical conformity documents.

**6.6 Activity 50535.- Preventive maintenance of MET observing systems**

**Preventive maintenance of the anemometer**

6.6.1 The electronic technician shall do the maintenance of the anemometer twice a year in the eastern region and three times a year in coastal areas for salinity reasons. Maintenance includes the removal of wind direction and force sensors for interior and exterior cleaning purposes, as well as the inspection of rotating systems, external connectors, the data transmission unit, and the sensor control unit. Lightning rod connections and grounding systems are also inspected. Finally, the equipment history record is completed and the corresponding heads and the electronic technical personnel responsible for maintenance sign the conformity documents.

**Preventive maintenance of master and slave altimeters**

6.6.2 The electronic technician will do the preventive maintenance of the altimeter at least twice a year. Maintenance includes an inspection of the electronic components and a comparison of altimeter readings to the mercury barometer and standard referential instruments using the triangulation method, and completing the altimeter operational certification record R01-AMSM-01. The maximum allowable error is +/- 0.5 Hpa (see Annex II). Finally, the history record of the equipment is completed and the corresponding head and the electronic technician responsible for maintenance sign the conformity documents (record R02-AMSM-02 - see Annex V).

**Preventive maintenance of the anemoscope**

6.6.3 The responsible electronic technician will do the maintenance of the anemoscope at least twice a year. The rotating mechanisms (bearings) are checked and lubricated; change of bearings is expected at least every five years. Likewise, the pole and the interior and exterior of the anemoscope cap are cleaned and painted. Finally, the history record is completed and the corresponding head and the responsible electronic technician sign the conformity document.

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**Preventive maintenance of the weather box**

6.6.4 Preventive maintenance will be performed at least once a year, including the removal and cleaning of thermometers, removal of the fan for cleaning and lubrication, and washing of the shield with water and detergent; if necessary, the box will be painted white.

**Preventive maintenance of the barometer**

6.6.5 The electronic technician will do this preventive maintenance at least twice a year, which will include the removal of dust with a small brush, without altering the appropriate installation (leveling and vertical position); if necessary, correct the leveling and vertical position and record it in the history sheet.

**Preventive maintenance of the automated observing system (AWOS)**

6.6.6 The electronic technician will do this preventive maintenance at least twice a year, which will include the removal of the dust that sticks to the surface of the equipment with a vacuum cleaner, brush or flannel, taking due care of the sensors; then, automated instrument measures are checked based on the recommendations of the manufacturers, and finally, the measures of grounding systems are verified.

**6.7 Activity 50536.- Corrective maintenance of MET observing systems**

6.7.1 The corrective maintenance of conventional or automated MET observing systems will be performed in keeping with the nature of the failure, based on which the equipment will be repaired or replaced, depending on national priorities.

6.7.2 The head of the maintenance unit will receive the corrective maintenance requirements for MET observing systems, and will generate the administrative documentation to meet such requirements, in coordination with the electronic technician responsible for that region. The latter will prepare the tools, materials and spare parts to perform the task.

6.7.3 Upon completion of the corrective maintenance, the electronic technician completes the equipment history sheet, and the corresponding head and the responsible electronic technician sign the conformity document.

6.7.4 The corrective maintenance of automated observing systems (AWOS) will be outsourced, and will be done every three years.

**6.8 Activity 50537.- Calibration or verification of the meteorological equipment of aeronautical meteorological stations (MET equipment)**

6.8.1 Every year, the head of maintenance of meteorological equipment and systems will update the list of equipment at national level, as well as the calibration or verification control plan.

6.8.2 Based on the control plan, the electronic technician will do the calibration or verification, or both, of the meteorological equipment at the aeronautical meteorological station, at least every two years, based on standard measurements, and in the absence thereof, the basis used for calibration or verification will be recorded. Meteorological equipment or instrument providers also provide calibration certificates.

6.8.3 The standard equipment of the organization may be subject to calibration by a recognized external laboratory.

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<b>ORGANIZATION LOGOTYPE</b>	<b>4.5 WORK INSTRUCTIONS INSTALLATION AND MAINTENANCE OF MET EQUIPMENT AND SYSTEMS</b>	<b>CODE: IT-7. 5-AMSM-1</b>
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6.8.4 MET observing equipment and systems are checked for equipment failures and, depending on the nature of the failure, the equipment shall be repaired or replaced. Automated instruments shall be checked according to the recommendations of the manufacturers.

6.8.5 Each piece of meteorological equipment will have an identification card and a label showing its calibration/verification status.

6.8.6 If the meteorological observer sees an improper use of MET equipment or suspects that measurements are inadequate, or notes that the calibration has expired, he/she shall inform the head of MET maintenance for the corresponding action.

## 7. RECORDS

IDENTIFICATION	STORAGE	PROTECTION	RETRIEVAL	RETENTION	DISPOSAL
<b>R01-AMSM-01</b> Operational certification of the altimeter	(Name of the MET maintenance unit)	Printed/digital	Chronological	X years	Eliminate
<b>R02-AMSM-01</b> Work order	(Name of MET maintenance unit)	Printed/digital	Chronological	X years	Eliminate
<b>R01-AMSM-02</b> Technical-operational specifications of MET equipment	(Name of MET maintenance unit)	Printed/digital	Chronological	X years	Eliminate
<b>R02-AMSM-02</b> Acknowledgment of receipt	(Name of MET maintenance unit)	Printed/digital	Chronological	X years	Eliminate

## 8. GLOSSARY

### **AWOS**

Automated integrated observing system for the dissemination and display of meteorological information, which provides for manual insertion of data observations, including meteorological elements that cannot be observed using automatic means.

### **Runway visual range (RVR):**

The range over which the pilot of an aircraft on the centre line of a runway can see the runway surface markings or the lights delineating the runway or identifying its centre line.

### **Meteorological element:**

One of the atmospheric variables or phenomena that characterize the physical state of the atmosphere related to a specified location and time.

### **Meteorological verification:**

A series of operations required for ensuring that the measuring equipment meets the requirements of its expected use. This includes calibration and verification and any necessary adjustment or repair.

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**True wind direction:**

Direction from which the wind blows, measured clockwise from true north. Measuring instrument, software, measuring standard, reference material, auxiliary equipment, or combination thereof, required for a measuring process.

**Measuring process:**

A series of operations for determining a value.

**Touchdown zone (TDZ):**

The portion of a runway, beyond the threshold, where it is intended landing aeroplanes first contact the runway.

**Air temperature:**

Temperature indicated by a thermometer exposed to the air in a place protected from direct solar radiation (degrees Celsius, °C).

**Dew point temperature:**

Temperature at which a volume of air must cool down at constant pressure and humidity in order to achieve saturation; any further cooling causes condensation (degrees Celsius, °C)

**Cellometer:**

Instrument for measuring the altitude of the base of the cloud cover, with or without a recording device. Measurements are performed by calculating the time it takes for a laser pulse to return after being reflected from the base of the cloud.

**Cloud cover:**

Fraction of the sky covered by clouds of a certain type, species, variety, layer, or combination of clouds.

**Cloud base:**

The lowest level of the layer of clouds.

**Dedicated display:**

A display connected to a sensor, designated to provide direct display of operational variables.

**Current weather sensor:**

A sensor that measures the physical parameters of the atmosphere and calculates a limited set of current meteorological conditions, always including current weather related to rainfall.

**Disdrometer:**

A device used for collecting the drops of falling hydrometeors and measuring drop size distribution.

**Validation:**

Confirmation by examination and provision of objective evidence that the particular requirements for a specific intended use are fulfilled.

**Verification:**

Confirmation by examination and provision of objective evidence that specified requirements have been fulfilled.

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## 9. ANNEXES

- Annex I: Revision status control matrix
- Annex II: Operational certification of the ..... airport altimeter.
- Annex III: Work order
- Annex IV: Technical-operational specifications of MET equipment
- Annex V: Acknowledgment of receipt
- Annex VI: Table A2-3 – Siting of meteorological instruments that may constitute obstacles at aerodromes

Draft

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**ANNEX I**

**REVISION STATUS CONTROL MATRIX**

**NAME:** Work Instructions for the Installation and Maintenance of MET Observing Systems

**CODE:** R01-AGC.CD-05

**REVISION:**

REVISION	PREPARED	REVISED	APPROVED	REASON FOR THE CHANGE	DATE

REVISION	DATE
00	30/11/11

<b>ORGANIZATION LOGOTYPE</b>	<b>4.5 WORK INSTRUCTIONS INSTALLATION AND MAINTENANCE OF MET EQUIPMENT AND SYSTEMS</b>	<b>CODE: IT-7. 5-AMSM-1</b>
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## ANNEX II

### OPERATIONAL CERTIFICATION OF THE ..... AIRPORT ALTIMETER

CODE: R01-AMSM-01

REVISION: 00

STATION INFORMATION:

DATUM POINT ELEVATION:

LONG:

DATE:

LAT:

**ALTIMETER:**

<b>SWITH POSITION</b>	1	2	3	4	5	6	7	8
QNH								
QFE								
TRL								

Altimeter information:  
SERIAL No.

C.B

INV.

MAKE

**ALTIMETER:**

<b>SWITH POSITION</b>	1	2	3	4	5	6	7	8	9	10	11	12
QNH												
QFE												
TRL												

Altimeter information:  
SERIAL No.

C.B

INV.

MAKE

**MERCURY BAROMETER:**

<b>DIREC. READ.</b>	1	2	3	4	5	6	7	8
TEMP T. ADJ.								
TIME								
DATE								

M. barometer information:  
SERIAL No.

C.B

INV.

MAKE

REVISION	DATE
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<b>ORGANIZATION LOGOTYPE</b>  <b>UNIT</b>	<b>4.5 WORK INSTRUCTIONS INSTALLATION AND MAINTENANCE OF MET EQUIPMENT AND SYSTEMS</b>  <b>CONTROLLED DOCUMENT</b>	<b>CODE: IT-7. 5-AMSM-1</b>  <b>PAGE 13 OF 17</b>
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**ANNEX III**  
**WORK ORDER**

**CODE: R02-AMSM-01**

**REVISION: 00/XX-XX-2011**

<b>Work order No.:</b>		<b>Location:</b>	
<b>Date:</b>		<b>For: (name of the technician)</b>	
		<b>Objective:</b>	
Priority	Description		
1			
2			
3			
.			
.			
.....		.....	
Head of MET system maintenance		Electronic technician	

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<b>ORGANIZATION LOGOTYPE</b>	<b>4.5 WORK INSTRUCTIONS INSTALLATION AND MAINTENANCE OF MET EQUIPMENT AND SYSTEMS</b>	<b>CODE: IT-7. 5-AMSM-1</b>
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## ANNEX IV

### TECHNICAL-OPERATIONAL SPECIFICATIONS OF MET EQUIPMENT

**CODE: R01-AMSM-02**

**REVISION: 00/XX-XX-2011**

Example:

PROCUREMENT OF .....  
INVESTMENT BUDGET - YEAR.....  
TECHNICAL-OPERATIONAL SPECIFICATIONS

1. PURPOSE OF THE PROCESS
2. PROCUREMENT MODALITY
3. TERM OF DELIVERY
4. SUMMARY OF THE PROCESS

**PART A: GENERAL SPECIFICATIONS**

1. INTRODUCTION
2. OBJECTIVE
3. TECHNICAL PROPOSALS
4. PROVISION OF INSTRUMENTS AND TOOLS FOR INSTALLATION AND MAINTENANCE
5. PROVISION OF SPARE PARTS
6. TECHNICAL HANDBOOKS AND SUPPLEMENTARY INFORMATION
7. TECHNICAL GUARANTEE
8. TRAINING
9. IN-PLANT INSPECTION AND REGISTRATION
10. PACKING
11. PHYSICAL RECEPTION
12. TECHNICAL ASSISTANCE
13. TECHNICAL AND OPERATIONAL ACCEPTANCE OF THE EQUIPMENT

**PART B: SPECIAL SPECIFICATIONS**

14. PURPOSE AND TECHNOLOGY OF THE EQUIPMENT
15. EQUIPMENT CONFIGURATION
16. TECHNICAL SPECIFICATIONS

REVISION	DATE
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<p><b>ORGANIZATION LOGOTYPE</b></p> <p><b>UNIT</b></p>	<p><b>4.5 WORK INSTRUCTIONS INSTALLATION AND MAINTENANCE OF MET EQUIPMENT AND SYSTEMS</b></p> <p><b>CONTROLLED DOCUMENT</b></p>	<p><b>CODE: IT-7. 5-AMSM-1</b></p> <p><b>PAGE 15 OF 17</b></p>
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- 17. OPERATIONAL VERIFICATION (TESTING)
- 18. PORTABLE UNIT FOR EQUIPMENT MAINTENANCE
- 19. PROTECTION AGAINST ATMOSPHERIC DISCHARGES AND SURGES
- 20. POWER SUPPLY TO THE EQUIPMENT
- 21. RELIABILITY AND MAINTENANCE

Draft

REVISION	DATE
00	30/11/11

<b>ORGANIZATION LOGOTYPE</b>	<b>4.5 WORK INSTRUCTIONS INSTALLATION AND MAINTENANCE OF MET EQUIPMENT AND SYSTEMS</b>	<b>CODE: IT-7. 5-AMSM-1</b>
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## ANNEX V

### ACKNOWLEDGMENT OF RECEIPT

**CODE: R02-AMSM-03**

**REVISION: 00/XX-XX-2011**

**Example:**

#### ACKNOWLEDGMENT OF RECEIPT OF .....

At..... hours of the..... of .....of 20...., the head of the MET or operations unit, Mr. (name of the official) and the electronic technician, Mr. (name), met at the ..... Airport Office to receive/deliver the .....MET observing equipment described below:

·  
·

The Head of the MET unit or the Head of Operations is responsible for the custody, control and protection of the item received. Accordingly, its proper operating condition or installation has been verified. The person responsible for maintenance or installation hereby consigns the item described in this document.

In the absence of observations by the attendants, the act is deemed completed, and the attendants sign this document as a sign of conformity.

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<b>UNIT</b>	<b>CONTROLLED DOCUMENT</b>	<b>PAGE 17 OF 17</b>

## ANNEX VI

**Table A2-3** Siting of meteorological instruments that may represent obstacles at aerodromes:

Meteorological element to be observed	Typical equipment	Typical dimensions of the equipment	Area of operations for which the element must be representative	Siting requirements of Annex 3	Remarks
Surface wind, speed and direction	Anemometer and weather vane	Mounted on a 10m (30ft)-high, fenced or tubular pole)	Take-off area and touch down zone	No specific conditions are required if observations are representative of the area of operations	Siting will depend on obstacle limitation surfaces and prevailing surface winds in the area. Depending on local conditions, it might be necessary to place a frangible, lit pole within the runway strip. The location must not be affected by buildings, etc., or by aircraft operations. The minimum distance from the runway centre line is 192m for the 6-m pole and 220m for the 10-m pole.
Runway visual range	Front dispersion gauge	Generally, two units: transmitter and receiver. The height of the units must be less than 2 m (6.5 ft). Foundation skirting is required.	Up to three front dispersion gauges per runway: At both ends and in the midpoint of the touchdown zone.	No more than 120 m laterally from the runway centre line. For the touchdown zone, the units must be located along the runway, at 300m from the threshold.	Must be placed within 120 m laterally from the runway centre line. The structure must be frangible; for example, with tubular supports and breakable bolts in the foundation.
Altitude of the base of the cloud cover	Ceilometers	Generally, at a height of less than 1.5 m (5 ft), but with a more solid structure, including foundation skirting.	Representative of the approach area, representative of the location of the intermediate beacon.	No specific conditions are required if observations are representative of the areas of operation.	May be located at the site of the intermediate beacon or within the runway strip, but preferably without invading the obstacle-free zone.

REVISION	DATE
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<b>CAR SAM MET/QMS GUIDE</b>	<b>MET/QMS GENERAL PROCEDURES (MODELS)</b>	<b>PART 5</b>
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**MET/QMS GENERAL PROCEDURES  
(MODELS)**

Draft

<p><b>ORGANIZATION LOGOTYPE</b></p> <p><b>UNIT</b></p>	<p><b>5.1 DRAFTING AND PRESENTATION OF DOCUMENTS OF THE QMS MET</b></p> <p><b>CONTROLLED DOCUMENT</b></p>	<p><b>CODE:</b> <b>PR-4.2-AGC-1</b></p> <p><b>PAGE 1 OF 10</b></p>
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**DRAFTING AND PRESENTATION OF DOCUMENTS OF THE MANAGEMENT SYSTEM OF THE METEOROLOGICAL SERVICE FOR AIR NAVIGATION**

**Revision 00**

**2011**

PREPARED	REVISED	APPROVED

REVISION	DATE
00	30/11/11

<b>ORGANIZATION LOGOTYPE</b>	<b>5.1 DRAFTING AND PRESENTATION OF DOCUMENTS OF THE QMS MET</b>	<b>CODE: PR-4.2-AGC-1</b>
<b>UNIT</b>	<b>CONTROLLED DOCUMENT</b>	<b>PAGE 2 OF 10</b>

**SUMMARY**

- 1. Objectives**
- 2. Scope**
- 3. Responsibilities**
- 4. References**
- 5. Requirements**
- 6. Description of Activities**
- 7. Records**
- 8. Glossary**
- 9. Annexes**

<b>REVISION</b>	<b>DATE</b>
00	30/11/11

<b>ORGANIZATION LOGOTYPE</b>  <b>UNIT</b>	<b>5.1 DRAFTING AND PRESENTATION OF THE DOCUMENTS OF THE MANAGEMENT SYSTEM OF THE METEOROLOGICAL SERVICE FOR AIR NAVIGATION CONTROLLED DOCUMENT</b>	<b>CODE: PR-4.2-AGC-1</b>  <b>PAGE 3 OF 10</b>
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**REVISION STATUS CONTROL MATRIX**

CODE: R01-AGC.CD-05

REVISION: 00/XX-XX-2011

REVISION	PREPARED	REVISED	APPROVED	REASON FOR THE CHANGE	DATE
00					
01					

REVISION	DATE
00	30/11/11

<b>ORGANIZATION LOGOTYPE</b>	<b>5.1 DRAFTING AND PRESENTATION OF THE DOCUMENTS OF THE QMS MET</b>	<b>CODE: PR-4.2-AGC-1</b>
<b>UNIT</b>	<b>CONTROLLED DOCUMENT</b>	<b>PAGE 4 OF 10</b>

## 1. OBJECTIVE

1.1 This procedure establishes the guidelines for the drafting and presentation of the documents of the management system of the meteorological service for national and international air navigation in (*name of the organization*), with a methodology that mainly takes into account documented policy statements, a plan of quality objectives, the management manual, work procedures and/or instructions.

## 2. SCOPE

2.1 This procedure applies to all organic units of (*name of the organization*) that provide meteorological service (aeronautical MET) to national and international air navigation.

## 3. RESPONSIBILITIES

3.1 The implementation and maintenance of this procedure is under the responsibility of the unit in charge of the management system of the meteorological service for national and international air navigation.

3.2 Managers are responsible for reviewing and approving the work procedures or instructions developed by the organization, and the general manager and/or director is responsible for approving and implementing these documents.

3.3 Direct users of the services listed under "Scope" are responsible for generating, reviewing and updating the work procedures or instructions that correspond to them.

## 4. REFERENCES

4.1 Doc 9873 - Manual on the quality management system for the provision of meteorological service to international air navigation. WMO principles and guidelines.

## 5. REQUIREMENTS

5.1 Management manual of the meteorological service for national and international air navigation.

5.2 ISO 9001:2008 (Clause 4.2.1, paragraph d) - Documents needed by the organization to ensure the effective planning, operation and control of its processes.

5.3 9000:2005 (Clause 2.7.2) - Types of documents used in quality management systems.

## 6. DESCRIPTION OF ACTIVITIES

### 6.1 Concept for the development of the quality policy and the plan of quality objectives

6.1.1 The quality policy is a written document, published under the authority of the top management of (*name of the organization*), and is a tangible indication of leadership of the organization and its commitment to quality.

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<b>ORGANIZATION LOGOTYPE</b>	<b>5.1 DRAFTING AND PRESENTATION OF THE DOCUMENTS OF THE QMS MET</b>	<b>CODE: PR-4.2-AGC-1</b>
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6.1.2 The quality policy document will be coded:

PQ-5.3-GG-NN, where:

- PQ: Quality policy
- 5.3: corresponds to item 5.3 of ISO 9001
- GG: the highest managerial level of the organization
- NN: correlative number 01, 02...etc.

6.1.3 The Plan of Quality Objectives is established by the various units providing meteorological service to national and international air navigation, with quantifiable objectives that are consistent with the quality policy.

6.1.4 The Plan of Quality Objectives will be coded as follows:

PC-5 4-CCCCCCCC-NN, where:

- PC: Plan of Quality Objectives
- 5.4: Item 5.4 of ISO 9001
- CCCCCCCC initials of the organic unit
- NN: correlative number 01, 02...etc.

## 6.2 Concept and structure of the Quality Management Manual

6.2.1 The Management Manual of the meteorological service for national and international air navigation describes the technical, operational and administrative concept underlying the operation of the meteorological service for national and international air navigation in terms of quality and safety of operations.

6.2.2 The Management Manual will be divided into the following chapters:

- Chapter I: Introduction
- Chapter II: Process identification
- Chapter III: Terms and definitions
- Chapter IV: Quality management system
- Chapter V: Responsibility of Management
- Chapter VI: Resource management
- Chapter VII: Development of the product or service
- Chapter VIII: Measurement, analysis, and improvement
- Chapter IX: Appendix

6.2.3 The Management Manual will be coded as follows:

MC-4.2-AGC, where:

- MC: Quality Management System
- 2: Is item 4.2 of the ISO 9001:2008 standard
- AGC: Initials of the organic unit of the quality management area.

## 6.3 Concept for developing QMS work procedures or instructions

- a) Work procedures or instructions are developed in order to establish the methodology for performing activities or process.

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- b) The head of aeronautical meteorology, in coordination with his/her collaborators of the organic units, develops the work procedures or instructions for each unit. When procedures involve more than one organic unit, and if their complexity warrants it, the head of aeronautical meteorology will call upon the corresponding organic units to develop the procedures or instructions.
- c) In the drafting of the aforementioned documents, the following must prevail:
  - make sure that the process and operating methodology are described;
  - make sure that the process or activity meets the established requirements;
  - simplicity;
  - clarity;
  - objectiveness;
  - the process must reflect the current operation.
- d) The font to be used is Verdana 9 for the text and Verdana 11 for titles. Verdana 10 bold will be used for the heading of the document, and size 9 for supplementary data. Verdana 10 will be used for footnotes, revision and data, and Verdana 9 for numerical data.
- e) Record R01-AGC.CD-05 entitled "Revision status control matrix" must be posted on the intranet of the organization with each document to ensure the current version status.

### 6.3.1 Format for a work procedure or work instructions

#### Heading

It will appear on all the sheets of the procedure and must contain the following:

- Organization logotype / Unit
- The title of the work procedure or instructions.- The purpose (subject matter) of the document must be expressed in a clear and concise manner.

Example: Meteorological service for international air navigation, management manual, work instructions for meteorological forecasts by the (name of the aerodrome) aerodrome meteorological office.

- Coding.- It will serve to identify the document and has the following structure:

AA-BB-CCCCCCC-DD:

- AA: Maximum two characters to indicate the type of document
  - ✓ PR= Procedure describing the processes of the responsible organic units.
  - ✓ IT= Work instructions, which describe the activities carried out by the organic units.
- BB: Characters that indicate the number of the ISO 9001 standard clause related to the document.

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<b>ORGANIZATION LOGOTYPE</b>	<b>5.1 DRAFTING AND PRESENTATION OF THE DOCUMENTS OF THE QMS MET</b>	<b>CODE: PR-4.2-AGC-1</b>
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Example:

If it corresponds to clause 7.5 of the standard, it will appear as 7.5.

- CCCCCC : Abbreviation of the organic unit responsible for drafting the document. This abbreviation will contain no more than eight characters.

Example:

MET: Meteorology area

AMS: Aeronautical meteorological station

AMSSPIM: Aeronautical meteorological observing service of the Lima AMS.

AMO: Aerodrome meteorological office

AGC: Quality management area

- DD: Correlative number of the document

Page number

### **Footnote**

It will appear on all the sheets of the procedure and must contain the following:

- Revision: The status of the current version, numbered in ascending order, starting at 00. Example: Revision 00, Revision 01....  
When the document is modified, the revision number changes, and the modifications will be shown in cursive script.

- Date: The effective date of the procedure, in the format DD/MM/YY.

- ✓ DD: day
- ✓ MM: month
- ✓ YY : year

### **6.3.2 Structure of a work procedure or instruction**

#### **1) Objective**

Indicate precisely the purpose of the work procedure or instructions.

#### **2) Scope**

The organic units where the procedure applies.

#### **3) Responsibilities**

Identify the responsibilities of each position involved in the implementation of the procedure.

#### **4) References**

Document that serves as a guide for drafting and structuring a work procedure or instruction.

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**5) Requirements**

Identify the acceptance criteria of existing regulations that constitute an established and mandatory requirement for the implementation of the process and/or activity. Failure to comply with the acceptance criteria will constitute non-conformity.

**6) Description of activities**

Defines the form of achieving an objective and the person responsible. The process model and flow diagrams with tasks and responsible parties can be used.

**7) Records**

Records are all those data or information, stored in printed or digital format, used for demonstrating compliance with regulatory, efficacy, and continuous improvement requirements of air navigation and airport service activities.

Indicate formats, messages, reports, templates, recordings in different magnetic and other media, supplementing it with the following information: record identification, storage, protection, retrieval, retention, and disposal.

This information is required for studies, investigations and quality and safety audits.

**8) Glossary**

Word catalogue or vocabulary, with explanations.

**9) Annexes**

All the forms directly related to the document are indicated. Annexes are listed in Roman numerals.

**7. RECORDS**

Not applicable

**8. GLOSSARY**

**Activity:**

Set of actions required to complete a process.

**Approval:**

Formal acceptance of a document, product, service, activity.

**Quality:**

Extent to which a set of inherent characteristics meets the requirements.

**Coding:**

A mechanism for assigning an individual code to a QMS document for its identification and linkage to other documents.

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<b>ORGANIZATION LOGOTYPE</b>	<b>5.1 DRAFTING AND PRESENTATION OF THE DOCUMENTS OF THE QMS MET</b>	<b>CODE: PR-4.2-AGC-1</b>
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**Data:**

Any knowledge used as input for the processes used in the drafting of QMS documents.

**Document**

Information and its support medium.

**Controlled copies:**

Copy of current controlled documents of the quality management system, identified and assigned to an individual for their corresponding use.

**Efficacy**

Extent to which planned activities are carried out and planned results achieved.

**Efficiency**

Relationship between outcome and resources used.

**Technical specifications:**

Establishes the special characteristics of a required product or service; this includes outsourced products, various materials, or services that have an impact on quality.

**Management:**

Coordinated activities for directing and controlling an organization.

**Work instructions**

The detailed sequence of activities carried out by organic units.

**Aeronautical information:**

The result of grouping, analyzing, and formatting aeronautical data.

**Quality Management Manual**

A document containing the technical-administrative concept of the quality management system, so as to:

- Determine the scope of the system and the commitment of top management with respect to the quality of its established processes, products, and services.
- Provide control tools, through the development and use of work procedures or instructions, documents, formats, records, and documents related to the management of the organization.
- Serve as a guide in the search for customer satisfaction and process optimization.

**Quality policy**

Action criterion or guideline chosen as a guide for decision-making when implementing strategies, plans, programmes and specific quality projects within the meteorological service for national and international air navigation, formally expressed and disseminated by top management.

**Quality plan**

Establishes the methodology for monitoring the provision of services through indicators, in order to achieve objectives and attain a high level of quality. A plan for exceeding customer expectations and the quality standards established by the organization.

**Procedure:**

A specified way of carrying out an activity or process.

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Note 1.- The procedures may or may not be documented.

Note 2.- When a procedure is documented, the term "written procedure" or "documented procedure" is frequently used. The document that contains a procedure may be called "procedural document".

**Process:**

A set of interrelated or interacting activities to turn input into outcome.

**Requirement:**

An established need or expectation, generally implicit or mandatory.

**Revision:**

The current status of the document, with sequential numbering in decreasing order, starting with 00 (e.g., Revision 00, Revision 01...). An activity carried out to check the convenience, suitability and efficacy of the subject matter for the attainment of the established objectives.

**Records:**

They are established and kept for demonstrating conformity with requirements and the effective operation of the quality management system. Records must be readily identifiable and retrievable.

Records R01 indicate conformity with requirements; records R02 show efficacy; and records R03 are for continuous improvement.

**Quality Management System (QMS):**

A management system for directing and controlling an organization with respect to quality. A group of human and material resources, coordinated through the structured documents and referenced to the Safety Manual, aimed at ensuring process compliance with the recommendations of ISO 9001:2000.

**Sub-process:**

A series of related activities within the framework of a process.

**9. ANNEXES**

Not applicable.

REVISION	DATE
00	30/11/11

<p><b>ORGANIZATION LOGOTYPE</b></p> <p><b>UNIT</b></p>	<p><b>5.2 MANAGEMENT REVIEW OF THE MS CONTROLLED DOCUMENT</b></p>	<p><b>CODE: PR-5.6-AGC-1</b></p> <p><b>PAGE 1 OF 8</b></p>
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**MANAGEMENT REVIEW OF THE MS**

Revision 00

2011

PREPARED	REVISED	APPROVED

REVISION	DATE
00	30/11/11

<b>ORGANIZATION LOGOTYPE</b>  <b>UNIT</b>	<b>5.2 MANAGEMENT REVIEW OF THE MS CONTROLLED DOCUMENT</b>	<b>CODE: PR-5.6-AGC-1</b>  <b>PAGE 2 OF 8</b>
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**SUMMARY**

- 1. Objectives**
- 2. Scope**
- 3. Responsibilities**
- 4. References**
- 5. Requirements**
- 6. Description of Activities**
- 7. Records**
- 8. Glossary**
- 9. Annexes**

REVISION	DATE
00	30/11/11

<p><b>ORGANIZATION LOGOTYPE</b></p> <p><b>UNIT</b></p>	<p><b>5.2 MANAGEMENT REVIEW OF THE MS CONTROLLED DOCUMENT</b></p>	<p><b>CODE:</b> PR-5.6-AGC-1</p> <p><b>PAGE 3 OF 8</b></p>
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**REVISION STATUS CONTROL MATRIX**

CODE: R 01-AGC.CD-05

REVISION: 00/XX-XX-2011

REVISION	PREPARED	REVISED	APPROVED	REASON FOR THE CHANGE	DATE
00					
01					

REVISION	DATE
01	XX/XX/XX

<b>ORGANIZATION LOGOTYPE</b>  <b>UNIT</b>	<b>5.2 MANAGEMENT REVIEW OF THE MS CONTROLLED DOCUMENT</b>	<b>CODE: PR-5.6-AGC-1</b>  <b>PAGE 4 OF 8</b>
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## 1. OBJECTIVE

1.1 This procedure establishes guidelines for the revision, by the direction of the quality management system of the meteorological service for national and international air navigation of (name of the organization), at planned intervals, to ensure its convenience, suitability and continuous efficacy. It also enables the assessment of opportunities for improvement and of the need to make changes to the QMS, the quality policy and objectives, and ISO 9001:2008 requirements.

## 2. SCOPE

2.1 This procedure applies to all organic units that provide the meteorological service to national and international air navigation of (*name of the organization*).

## 3. RESPONSIBILITIES

3.1 The management representative is responsible for reviewing the management system during team work sessions with the management committee.

3.2 As management quality coordinator, the management representative is responsible for collecting all the documentation required to serve as a basis for the review of the management system by Management.

3.3 The head of the aeronautical MET unit is responsible for presenting the main preventive actions to management for review.

3.4 The head of the aeronautical MET unit, in coordination with the heads of the organic units of the aeronautical MET service, is responsible for developing and implementing the necessary corrective/preventive management actions.

3.5 The head of the aeronautical MET unit is responsible for filing and distributing management review documents.

## 4. REFERENCES

4.1 Drafting and presentation of QMS documents (PR-4.2-AGC-1).

4.2 Doc 9873 – Manual on the quality management system for the provision of meteorological service to international air navigation. WMO principles and guidelines.

4.3 (*Name of the organization*) strategic plan.

## 5. REQUIREMENTS

5.1. Management Manual

5.2 ISO 9001:2008 (Clause 5.6.1 Management review general)

5.3 QMS internal audit procedure

REVISION	DATE
00	30/11/11

<b>ORGANIZATION LOGOTYPE</b>	<b>5.2 MANAGEMENT REVIEW OF THE MS CONTROLLED DOCUMENT</b>	<b>CODE: PR-5.6-AGC-1</b>
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5.4 QMS non-conforming service or product control procedure

5.5 QMS corrective and preventive action procedure

## 6. DESCRIPTION OF ACTIVITIES

6.1 Management meetings to review the management system must be held at least twice a year, and can be conducted at any time as is deemed necessary, always with a view to continuously improving the quality management system for the aeronautical MET service.

### Management system review by Management

6.2 The management representative conducts reviews on behalf of the director of the MS, during work meetings held jointly with the management committee of (*name of the organization*) and will draft the Management Review Document (record R01-AGC.RD-01) based on the following aspects:

- The results of the quality audits
- Customer feedback
- Process performance (management indicators – results)
- The status of preventive and corrective action
- Follow-up actions concerning previous management reviews
- Planned changes that may affect the MS
- Recommendations for improving the MS
- Other documents deemed relevant by Management.

### Recording the results of the management review

6.3 The results of the management review will be recorded in duly identified proceedings (record R01-AGC.RD-01), where all the decisions and actions related to the following aspects may be included:

- a) Improved efficacy of the quality management system and its processes;
- b) Improved aeronautical MET service with respect to customer requirements;
- c) Improved aeronautical MET service with respect to efficiency and customer satisfaction; and
- d) Resource requirements

### Recommendations by management

6.4 Recommendations shall be recorded in the proceedings. For each recommendation, the type of action (corrective or preventive) and the area responsible for its implementation, name of the individual responsible for the area, and the deadline for implementing the recommendation will be indicated.

### Checking the adoption of actions

6.4.1 The management representative (quality coordinator) will send a copy of the proceedings to the General Manager and to the head of the aeronautical MET unit, with the recommended action, so that relevant action may be taken, and will verify the adoption of the cited action at the following management review meeting.

6.4.2 In case the recommendation has not been implemented by the established deadline, the management representative will issue a non-conformity within the QMS.

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<b>ORGANIZATION LOGOTYPE</b>  <b>UNIT</b>	<b>5.2 MANAGEMENT REVIEW OF THE MS CONTROLLED DOCUMENT</b>	<b>CODE: PR-5.6-AGC-1</b>  <b>PAGE 6 OF 8</b>
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## 7. RECORDS

IDENTIFICATION	STORAGE	PROTECTION	RETRIEVAL	RETENTION TIME	DISPOSAL
<b>R01-AGC.RD-01</b> Management review proceedings	<i>(Name of the organic unit of the management representative)</i>	Printed/digital	Chronological	3 years	Eliminate

## 8. GLOSSARY

### **Corrective Action:**

An action taken to eliminate the causes of **non-conformities** in order to prevent them from happening again.

Note 1. – A non-conformity may have more than one cause.

Note 2. – Corrective action is taken to prevent something from happening again, while preventive action is taken to prevent something from happening.

Note 3.- There is a difference between correction and corrective action.

### **Preventive Action:**

Action taken to eliminate the cause of a **potential non-conformity** in order to prevent it from happening.

Note 1. – A potential non-conformity may have more than one cause.

Note 2. – Preventive action is taken to prevent something from happening, while corrective action is taken to prevent something from happening again.

### **Top Management:**

An individual or group of individuals who control an organization at the highest level.

### **Quality:**

Extent to which a set of inherent characteristics meets the requirements.

### **Conformity:**

Compliance with a requirement. Statement of facts, a condition identified during the audit that meets the audit criteria.

### **Document:**

Information and its support medium.

### **Efficacy:**

Extent to which planned activities are carried out and planned results obtained.

### **Efficiency:**

Relationship between outcome and resources used.

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<b>ORGANIZATION LOGOTYPE</b>  <b>UNIT</b>	<b>5.2 MANAGEMENT REVIEW OF THE MS CONTROLLED DOCUMENT</b>	<b>CODE:</b> <b>PR-5.6-AGC-1</b>  <b>PAGE 7 OF 8</b>
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**Management:**

Coordinated activities for managing and controlling an organization.

**Final report of the internal audit:**

General conclusions of the audit, and which include forms concerning deviations and corrective and preventive action.

**Non-conformity report:**

A form listing unmet requirements, probable causes and corrective action.

**Management review of the QMS:**

Periodic activity to assess the relevance, suitability and effectiveness of the QMS with respect to its objectives, quality policy and continuous improvement.

**Quality Management System (QMS):**

A set of human and material resources, coordinated through structured documents, which uses the Quality Management Manual as a reference, and seeks to ensure that quality system processes are consistent with the recommendations of ISO 9001.

**9. ANNEXES**

Annex I: Management review proceedings.

Draft

REVISION	DATE
00	30/11/11

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**ANNEX I**

**MANAGEMENT REVIEW PROCEEDINGS**

Day/month/year

**R01-AGC.RD-01**

**REV: 00/X-XX-2011**

- I. INTRODUCTION
- II. LIST OF REFERENCED DOCUMENTS
- III. BACKGROUND
- IV. ANALYSIS
  - (a) Audit results
  - (b) Customer feedback
  - (c) Concerning process performance
  - (d) According to the degree of compliance with the objectives
  - (e) Status of corrective and preventive action
  - (f) Concerning the quality policy
  - (g) Follow-up to previous management review actions
  - (h) Concerning planned changes that might affect the QMS
  - (i) Recommendations for improvement and resource requirements

Signature of the members of the management committee.

REVISION	DATE
00	30/11/11

<p><b>ORGANIZATION LOGOTYPE</b></p> <p><b>UNIT</b></p>	<p><b>5.3 MET MANAGEMENT INDICATORS</b></p> <p><b>CONTROLLED DOCUMENT</b></p>	<p><b>CODE:</b> <b>IT-5.6-AGC-1</b></p> <p><b>PAGE 1 OF 13</b></p>
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**MET MANAGEMENT INDICATORS**

**Revision 00**

**2011**

<b>PREPARED</b>	<b>REVISED</b>	<b>APPROVED</b>

<b>REVISION</b>	<b>DATE</b>
00	30/11/11

<b>ORGANIZATION LOGOTYPE</b>	<b>5.3 MET MANAGEMENT INDICATORS</b>	<b>CODE: IT-5.6-AGC-1</b>
<b>UNIT</b>	<b>CONTROLLED DOCUMENT</b>	<b>PAGE 2 OF 13</b>

**SUMMARY**

- 1. Objectives**
- 2. Scope**
- 3. Responsibilities**
- 4. References**
- 5. Requirements**
- 6. Description of Activities**
- 7. Records**
- 8. Glossary**
- 9. Annexes**

<b>REVISION</b>	<b>DATE</b>
00	30/11/11

<b>ORGANIZATION LOGOTYPE</b>	<b>5.3 MET MANAGEMENT INDICATORS</b>	<b>CODE: IT-5.6-AGC-1</b>
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**REVISION STATUS CONTROL MATRIX**

CODE: R01-AGC.CD-05

REVISION: 00/XX-XX-2011

REVISION	PREPARED	REVISED	APPROVED	REASON FOR THE CHANGE	DATE
00					
01					

<b>REVISION</b>	<b>DATE</b>
00	30/11/11

<b>ORGANIZATION LOGOTYPE</b>	<b>5.3 MET MANAGEMENT INDICATORS</b>	<b>CODE: IT-5.6-AGC-1</b>
<b>UNIT</b>	<b>CONTROLLED DOCUMENT</b>	<b>PAGE 4 OF 13</b>

## 1. OBJECTIVE

1.1 This procedure establishes guidelines for measuring MET management indicators based on quality objectives, and which are required for the management review of the quality management system of (*name of the MET service provider*).

## 2. SCOPE

2.1 This procedure applies to all organic units that provide the MET service of (*name of the MET service provider*).

## 3. RESPONSIBILITIES

3.1 The implementation and maintenance of these work instructions are under the joint responsibility of the head of Quality Management and the head of the MET section.

3.2 The head of the MET section, in coordination with MET units, is responsible for defining and assessing quality management indicators, and the frequency, form, and goals of the measurements.

3.3 MET units are responsible for collecting the data necessary for measuring the indicators and presenting the results to the head of the MET section, indicating, where applicable, the causes of (actual or potential) deviations.

3.4 The head of the MET section, together with the heads of the MET organic units, is responsible for developing and implementing the necessary corrective and/or preventive actions, based on follow-up of the indicators.

3.5 The head of the MET section and the heads of the MET organic units are responsible for the inclusion of quality management indicators, using record R01-AGC.IG-02

3.6 The Director/Manager is responsible for approving the indicators and their goals.

## 4. REFERENCES

4.1 Top management, through Resolution N° (*number and date of resolution*), approves the MET/QMS implementation plan.

4.2 Drafting and presentation of MET/QMS documents (PR-4.2-AGC-1).

4.3 Doc 9873 – *Manual on the quality management system for the provision of meteorological service to international air navigation*.

4.4 (*Name of the MET service provider*) strategic plan for the 2011-2015 period.

## 5. REQUIREMENTS

5.1 MET quality management manual

5.2 ISO 9001:2008 standard (Clause 5.6.1 Management Review General)

REVISION	DATE
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<b>ORGANIZATION LOGOTYPE</b>	<b>5.3 MET MANAGEMENT INDICATORS</b>	<b>CODE: IT-5.6-AGC-1</b>
<b>UNIT</b>	<b>CONTROLLED DOCUMENT</b>	<b>PAGE 5 OF 13</b>

## 6. DESCRIPTION OF ACTIVITIES

6.1 (Name of the MET service provider) establishes and maintains the table for the measurement of indicators (**see Annex I**), such as management indicators for MET service activities (input, output and outcome) within the framework of the quality management system. This table will be modified as new indicators are created.

6.2 The formula for the indicator may be modified, as necessary, as a result of team work at MET units, and will be recorded in the quality management indicator registry (**see Annex II**).

### Results of indicator measurement and review

6.3 The results of indicator measurements for the established periods will allow the head of the MET section to update the indicator follow-up table (**see Annex III**) and the indicator measurement table (**see Annex I**).

6.4 When a deviation from the established result and/or goal is detected, the quality coordinator will coordinate with the corresponding heads for the adoption of preventive or corrective actions to improve or maintain the result.

6.5 Indicators must be fine-tuned with the established frequency, and the results analyzed by the head of the MET section, in coordination with its units.

6.6 In case of modification of the goal or the indicator formula, it must be recorded in the indicator critical analysis table (**see Annex IV**).

### 6.7 Formulae for measuring the quality management indicator

#### 6.7.1 Input indicator formula

Example:

- Amount of continuous stationery;
- Number of printer tapes;
- Number of synoptic surface charts;
- Amount of cardboard for flight dossiers;
- Number of man-hours per training event;

#### 6.7.2 Output indicator formula

Example:

- Number of METAR messages issued at national level
- Number of TAF messages issued at national level
- Number of SIGMET messages issued at national level
- Number of flight dossiers delivered to flight crews

#### 6.7.3 Outcome indicator formula

Example:

- % METAR delay per aerodrome (AD)
  - % METAR delay per AD =  $\frac{\text{\# of delayed METARs}}{\text{total \# of METARs}} \times 100$
  - % METAR errors per aerodrome (AD)

REVISION	DATE
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<b>ORGANIZATION LOGOTYPE</b>	<b>5.3 MET MANAGEMENT INDICATORS</b>	<b>CODE: IT-5.6-AGC-1</b>
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$$\% \text{ METAR errors per AD} = \frac{\# \text{ of METAR errors}}{\text{total \# of METARs}} \times 100$$

- % TAF efficacy per parameter per aerodrome

$$\% \text{ TAF efficacy per parameter per AD} = \frac{\# \text{ of (operationally suitable) TAFs}}{\text{(total \# of TAFs)}} \times 100$$

- % TAF untimeliness per aerodrome

$$\% \text{ TAF untimeliness per AD} = \frac{\# \text{ of TAFs (beyond acceptable time)}}{\text{(total \# of TAFs)}} \times 100$$

- Customer satisfaction survey (see Annex V)

Index: "Satisfactory".

## 6.8 Results of the assessment of quality management indicators

6.8.1 The assessment of indicators is done upon completion of the actions, checking, *inter alia*, compliance with the objectives and the level of customer satisfaction. In sum, the goal is to assess how the unit is being managed in order to take relevant action to improve management.

## 7. RECORDS

IDENTIFICATION	STORAGE	PROTECTION	RETRIEVAL	RETENTION	DISPOSAL
<b>R01-AGC.IC-01</b> MET management indicator measuring table	(Name of the MET unit)	Printed/digital	Chronological	3 years	Eliminate
<b>R01-AGC.IC-02</b> MET management indicator insertion table	(Name of the MET unit)	Printed/digital	Chronological	3 years	Eliminate
<b>R01-AGC.IC-03</b> Indicator critical analysis table	(Name of the MET unit)	Printed/digital	Chronological	3 years	Eliminate
<b>R01-AGC.IC-04</b> Indicator follow-up table	(Name of the MET unit)	Printed/digital	Chronological	3 years	Eliminate
<b>R01-AGC.IC-05</b> Customer satisfaction survey	(Name of the MET unit)	Printed/digital	Chronological	3 years	Eliminate

REVISION	DATE
00	30/11/11

<b>ORGANIZATION LOGOTYPE</b>	<b>5.3 MET MANAGEMENT INDICATORS</b>	<b>CODE: IT-5.6-AGC-1</b>
<b>UNIT</b>	<b>CONTROLLED DOCUMENT</b>	<b>PAGE 7 OF 13</b>

## 8. GLOSSARY

**Approval:**

The formal acceptance of a document, product, service, item or activity.

**Quality:**

Extent to which a set of inherent characteristics meets the requirements.

**Data:**

Any formal knowledge used as process input, serving in general as a basis for drafting controlled documents. Controlled data include, *inter alia*, drawings and external standards.

**Conformity:**

Compliance with a requirement. Statement of facts, a condition identified during an audit that meets the audit criteria.

**Correction:**

Action taken to eliminate an identified non-conformity.

Note 1.- A correction can be made together with a corrective action.

Note 2.- A correction may be, for example, a re-process or a re-classification.

**Document:**

Information and its support medium.

**Efficacy:**

Extent to which planned activities are carried out and planned results obtained.

**Efficiency:**

Relationship between outcome and resources used.

**Management:**

Coordinated activities for managing and controlling an organization.

**Input indicator:**

Quantifies the physical, human and economic resources used for the implementation of actions. It is usually expressed in terms of amount of expenditure assigned, number of members in the work team, number of hours or days worked. By itself, it does not indicate the extent of the progress made in the achievement of the objectives.

**Output indicator:**

It reflects quantifiable goods and services produced and/or expected from a given intervention and, thus, in a given institution. It is the result of the combination and use of the aforementioned inputs and, consequently, is expected to be clearly associated to them. They are important for the systematic follow-up of actions being carried out. By itself, it does not indicate the extent of the progress made in the achievement of the objectives.

REVISION	DATE
00	30/11/11

<b>ORGANIZATION LOGOTYPE</b>	<b>5.3 MET MANAGEMENT INDICATORS</b>	<b>CODE: IT-5.6-AGC-1</b>
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**Outcome indicator:**

It indicates the progress made in achieving the purpose of the actions. Outcome indicators reflect the defined (general and specific) objectives of the project. In general, the outcome of the actions cannot be measured until after the completion of the tasks involved (in the case of projects, which, by definition, have a defined time) or until the tasks have reached a level of maturity required for ongoing activities.

**Non-conformity:**

Failure to comply with, or absence of, specified requirements, thus reducing the effectiveness of the MET/QMS to meet the established goals or objectives.

**Requirement:**

An established need or expectation, generally implicit or mandatory.

**Records:**

They are established and kept for demonstrating compliance with requirements and the effective operation of the quality management system. Records must be easily identifiable and retrievable.

Records R01 indicate compliance with requirements; records R02 show efficacy; and records R03 are for continuous improvement.

**9. ANNEXES**

Annex I: Table for measuring MET management indicators

Annex II: Table for the inclusion of MET management indicators

Annex III: Table for the follow-up of indicators

Annex IV: Table for critical analysis of indicators

Annex V: Customer satisfaction survey

REVISION	DATE
00	30/11/11

<b>ORGANIZATION LOGOTYPE</b>	<b>5.3 MET MANAGEMENT INDICATORS</b>	<b>CODE: IT-5.6-AGC-1</b>
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## ANNEX I

### TABLE FOR MEASURING QUALITY MANAGEMENT INDICATORS

CODE: R01-AGC.IC-01

REVISION: 00/XX-XX-2011

Objective	Management indicator	Measurement formula	Measuring frequency	Goal
EFFICIENCY OF THE MET/QMS	Number of teletype rolls	Number of teletype paper rolls by area, per month, x 12 months	Annual	480 rolls (A.MET)
EFFICIENCY OF THE MET/QMS	Number of Okitada printer tapes	Number of Okidata printer tapes by area, per month, x 12 months	Annual	432 tapes (A.MET)
EFFICACY OF THE MET/QMS	Number of TAFs issued at national level	Total # of TAF messages at national level, per month	Annual	
COMPLIANCE WITH TECHNICAL SPECIFICATIONS	% delayed METARs per aerodrome	$\frac{\# \text{ delayed METARs}}{\text{Total \# of METARs/month}} * 100$	Monthly	Less than 1%
COMPLIANCE WITH TECHNICAL SPECIFICATIONS	% METAR errors per aerodrome	$\frac{\# \text{ of METAR errors}}{\text{Total \# of METARs/month}} * 100$	Monthly	Less than 1%
COMPLIANCE WITH TECHNICAL SPECIFICATIONS	% TAF efficacy per parameter and per aerodrome	$\frac{\# \text{ of (operat. suitable) TAFs}}{\text{Total \# of TAFs/month}} * 100$	Monthly	More than 70%
COMPLIANCE WITH TECHNICAL SPECIFICATIONS	% untimely TAFs per aerodrome	$\frac{\# \text{ of untimely TAFs}}{\text{Total \# of TAFs/month}} * 100$	Monthly	Less than 10%
COMPLIANCE WITH TECHNICAL SPECIFICATIONS	Customer satisfaction index	Customer satisfaction survey	Annual	Satisfactory

REVISION	DATE
00	30/11/11

<b>ORGANIZATION LOGOTYPE</b>	<b>5.3 MET MANAGEMENT INDICATORS</b>	<b>CODE: IT-5.6-AGC-1</b>
<b>UNIT</b>	<b>CONTROLLED DOCUMENT</b>	<b>PAGE 10 OF 13</b>

## ANNEX II

### TABLE FOR THE INSERTION OF QUALITY MANAGEMENT INDICATORS

CODE: R01-AGC.IC-02

REV: 00/XX-XX-2011

<b>LOGOTYPE</b>	<b>(name of the unit) Quality Coordination</b>	
<b>TABLE FOR THE INSERTION/REVISION OF INDICATORS</b>	<b>Insertion:</b>	
	<b>Revision:</b>	
<p>Process:  Name of the indicator:  Objective:  Frequency:  Measurement formula:  Measuring unit:  Input data:</p> <p>-Source(s):  -Frequency of data collection:  -Responsible area:</p> <p>-Goal:  -Factors:</p>		
SIGNATURE OF THE RESPONSIBLE PARTY		SIGNATURE OF APPROVING PARTY

<b>REVISION</b>	<b>DATE</b>
00	30/11/11

<b>ORGANIZATION LOGOTYPE</b>	<b>5.3 MET MANAGEMENT INDICATORS</b>	<b>CODE: IT-5.6-AGC-1</b>
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### ANNEX III

CODE: R01-AGC.IC-03

REV: 00/XX-XX-2011

Example:

TABLE FOR THE FOLLOW-UP OF INDICATORS														
INDICATOR	GOAL	YEAR 2009												TOTAL
		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	
% delayed METARs per aerodrome														
% METAR errors per aerodrome														
% TAF efficacy per parameter and per aerodrome														
% untimely TAFs per aerodrome														
Customer satisfaction index														

REVISION	DATE
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<b>ORGANIZATION LOGOTYPE</b>	<b>5.3 MET MANAGEMENT INDICATORS</b>	<b>CODE: IT-5.6-AGC-1</b>
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**ANNEX IV**

**TABLE FOR CRITICAL ANALYSIS OF INDICATORS**

**CODE: R01-AGC.IC-04**

**REVISION: 00/XX-XX-2011**

<b>LOGOTYPE</b>	<b>Goal</b>	<b>CRITICAL ANALYSIS OF INDICATOR</b>
NAME OF INDICATOR:		
<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="border: 1px solid black; padding: 5px;">Period:</div> <div style="border: 1px solid black; padding: 5px;">Result:</div> </div>		
CRITICAL ANALYSIS		
Date:	Signature of Manager/Head:	
NAME OF UNIT		

<b>REVISION</b>	<b>DATE</b>
00	30/11/11

<b>ORGANIZATION LOGOTYPE</b>	<b>5.3 MET MANAGEMENT INDICATORS</b>	<b>CODE: IT-5.6-AGC-1</b>
<b>UNIT</b>	<b>CONTROLLED DOCUMENT</b>	<b>PAGE 13 OF 13</b>

**ANNEX V**  
**CUSTOMER SATISFACTION SURVEY**

**CODE: R01-AGC.IC-05**

**REVISION: 00/XX-XX-2011**

<b>SUBJECT</b>	<b>Excellent</b>	<b>Satisfactory</b>	<b>Needs to improve</b>	<b>Unsatisfactory</b>	<b>REMARKS</b>
<u>QUALITY</u> 1. How would you rate the precision of the meteorological observations of the MET service?					
2. How would you rate the precision of meteorological forecasts?					
<u>TIMING</u> 3. How would you rate the timeliness in the delivery of METAR, MET REPORT and SPECI meteorological reports?					
4. How would you rate the timeliness in the delivery of TAF and SIGMET information and flight dossiers?					
<u>SAFETY</u> 5. Did the MET service contribute to the safety of air operations in an acceptable manner?					
6. Was the level of competence of MET service personnel during briefings acceptable for the safety of air operations?					
<u>CUSTOMER SERVICE</u> 7. Were the customer service area and the treatment of customers by MET personnel appropriate?					

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<p><b>ORGANIZATION LOGOTYPE</b></p> <p><b>UNIT</b></p>	<p><b>5.4 COMPETENCE AND ONGOING TRAINING IN THE QMS MET</b></p> <p><b>CONTROLLED DOCUMENT</b></p>	<p><b>CODE:</b> <b>PR-6.2-AGC-1</b></p> <p><b>PAGE 1 OF 20</b></p>
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**COMPETENCE AND ONGOING TRAINING IN THE MS**

**Revision 01**

**2011**

<b>PREPARED</b>	<b>REVISED</b>	<b>APPROVED</b>

<b>REVISION</b>	<b>DATE</b>
00	30/11/11

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**SUMMARY**

- 1. Objectives**
- 2. Scope**
- 3. Responsibilities**
- 4. References**
- 5. Requirements**
- 6. Description of Activities**
- 7. Records**
- 8. Glossary**
- 9. Annexes**

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### REVISION STATUS CONTROL MATRIX

CODE: R01-AGC.CD-05

REVISION: 00/XX-XX-2011

REVISION	PREPARED	REVISED	APPROVED	REASON FOR THE CHANGE	DATE
00					
01					

REVISIÓN	FECHA
00	30/11/11

<b>ORGANIZATION LOGOTYPE</b>	<b>5.4 COMPETENCE AND ONGOING TRAINING IN THE QMS MET</b>	<b>CODE: PR-6.2-AGC-1</b>
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## 1. OBJECTIVE

1.1 To establish the procedure for assessing the competencies of aeronautical MET personnel and implementing, as applicable, ongoing training and other actions for achieving the required competencies, with a view to technical and personal development; and assessing the efficacy of actions taken to make sure that the personnel is aware of the importance of their activities for the achievement of quality objectives.

## 2. SCOPE

2.1 This procedure applies to all organic units of (*name of the organization*) that provide meteorological (aeronautical MET) service for national and international air navigation.

## 3. RESPONSIBILITIES

3.1 The implementation and maintenance of this procedure is under the responsibility of the head of the aeronautical MET area.

3.2 The head of the aeronautical MET area, in coordination with the heads of its organic units, is responsible for defining the competencies of the personnel under his/her responsibility that has an impact on compliance with the requirements established for the provision of the aeronautical MET service; and assessing, on an annual basis, the competency of the personnel under his/her responsibility.

3.3 The heads of the organic units of the aeronautical MET service, in coordination with the heads of operations in the provinces, are responsible for identifying the training requirements of their personnel so that they can develop the competencies required by the existing regulations and legislation.

3.4 The head of the aeronautical MET section, together with the heads of the organic units of the MET service, is responsible for planning and providing the resources for ongoing training activities.

3.5 The heads of the organic units of the aeronautical MET service are responsible for developing and controlling the annual training plan, and assessing the entities that provide training, as applicable.

3.6 The heads of the organic units of the aeronautical MET service are responsible for assessing the effectiveness of the training provided and recording such activities.

## 4. REFERENCES

4.1 Drafting and presentation of QMS documents (PR-4.2-AGC-1).

4.2 Doc 9873 – Manual on the quality management system for the provision of meteorological service to international air navigation. WMO principles and guidelines.

4.3 (*Name of the organization*) strategic plan.

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## 5. REQUIREMENTS

- 5.1. Management Manual
- 5.2. ISO 9001:2008 (Clause 6.2.2, Competence, training and awareness)
- 5.3. ISO 9000:2005 (Clause 2.7.2, Types of document used in quality management systems)
- 5.4. Guidelines for the education and training of personnel in meteorology and operational hydrology. Volume I: Meteorology, Fourth edition. WMO N° 258.

## 6. DESCRIPTION OF ACTIVITIES

### 6.1 Competence profile by position

6.1.1 The management system of (*name of the organisation*) defines the competencies required in the various positions in the organisation for the performance of the activities that affect the quality of the service and/or product of the aeronautical MET service.

6.1.2 In the competence profile for each position, (*name of the organisation*) must use record R01-AGC.CF-01, taking into account the following aspects:

- a) Education
- b) Training
- c) Skills
- d) Attitude
- e) Experience

6.1.3 The minimum competence required for the personnel of the organic units of the aeronautical MET service shall be 0.80 points, and the maximum shall be 1.00 points.

### 6.2 Assessment of competencies and training needs

6.2.1 The competencies of the aeronautical MET service personnel are assessed during the second semester of each year by the heads of the organic units at headquarters, and by the head of operations in the provinces, and by the immediate superior manager in the case of the head of the aeronautical MET section, taking into account the weighting tables established in item 6.1.

6.2.2 Following the assessment, the head of the aeronautical MET section, in coordination with the heads of the MET organic units, formulates the training requirements, taking into account the training deficiencies, qualification, performance and activities of each individual, using the competence training requirement assessment form (see record R01-AGC.CF-02).

### 6.3 Drafting of the training plan

6.3.1 The heads of the aeronautical MET organic units will draft the training plan, which must be duly approved, indicating, as necessary, the cost of the events requested, according to record R01-AGC.CF-03.

### 6.4 Implementation of the training and teaching plan

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6.4.1 The teaching and training plan is implemented based on the courses offered by external or internal institutions, as foreseen by the unit.

6.4.2 The head of the aeronautical MET section will execute the annual training plan, coordinating and documenting the requests to the units responsible for training in (*name of the organisation*); and will also promote other types of training, such as on-the-job training, in-house conferences, and others.

#### 6.5 **Follow-up on the implementation of the training plan**

6.5.1 The implementation of the training plan will be supervised by the heads of the MET organic units and, based on budget guidelines, adjustments will be made to reduce the number of participants and/or limit the number of courses, also taking into account the priorities defined on the basis of competence assessment.

6.5.2 If necessary, the foreseen training events may be modified based on a new timetable and/or cancellations, which must be duly justified, documented and recorded in the annual training plan.

#### 6.6 **Teaching and training in the quality management system**

6.6.1 Training in the quality management system is related to the deficiencies identified during the competence assessment, and to MS documentation, and occurs when:

- a) New versions of MS documents are issued
- b) New personnel is hired in the unit
- c) Specific competencies need to be provided to old personnel, following a competence assessment.

#### 6.7 **Assessment of the training provided**

6.7.1 External or internal training and teaching events that last more than 8 hours in total shall be assessed by the trainee immediately upon completion, while the heads of the organic units shall assess the entity that provided the training. To that end, the form "Report on participation in, and assessment of, events" shall be used (see record R01-AGC.CF-04).

6.7.2 The heads of the aeronautical MET organic units will monitor and control the conduction of teaching and training events, as well as the attendance by participants (see record R01-AGC.CE-05).

6.7.3 Copies of training certificates will be kept in the file of each participant by the heads of the MET organic units.

#### 6.8 **Training efficacy**

6.8.1 Three months after the completion of a training event, the heads of the MET organic units will assess the practical results obtained by the personnel under his/her responsibility, and its effectiveness.

## 7. **RECORDS**

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IDENTIFICATION	STORAGE	PROTECTION	RETRIEVAL	RETENTION	DISPOSAL
<b>R01-AGC.CF-01</b> Competence profile, by position	(Name of the MET organic unit)	Printed/digital	Chronological	3 years	Eliminate
<b>R01-AGC.CF-02</b> Assessment of training requirements to build competence	(Name of the MET organic unit)	Printed/digital	Chronological	3 years	Eliminate
<b>R01-AGC.CF-03</b> Annual training and teaching plan	(Name of the MET organic unit)	Printed/digital	Chronological	3 years	Eliminate
<b>R01-AGC.CF-04</b> Event attendance and assessment report	(Name of the MET organic unit)	Printed/digital	Chronological	3 years	Eliminate
<b>R01-AGC.CF-05</b> Control of attendance by participants	(Name of the MET organic unit)	Printed/digital	Chronological	3 years	Eliminate

## 8. GLOSSARY

### Attitude

A settled way of thinking or feeling, reflected in a person's behaviour. Conducts that are necessary to succeed at work, such as conceptual capacity, analytical capacity, creativity, innovation, initiative, leadership, etc.

### Quality:

Extent to which a set of inherent characteristics meets the requirements.

### Competence:

All those personal attributes required to perform at the highest level in a position or activity. According to Spencer & Spencer, competencies are fundamental human attributes that reflect "behaviour or way of thinking". Competencies result from education, training, skills, attitudes and experience.

### Conference/seminar:

A method of teaching and providing ongoing training that consists of attending such events in order to profit from the knowledge of others.

### Relationship building:

Implies a constant effort to improve training and development of both the own individual and others, based on an analysis of the needs of both the individual and the organization.

### Training:

A method that is used for improving the skills and quality of personnel for the performance of individual tasks, making sure that competence training is provided.

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**Internal training:**

A teaching and training activity conducted by (*name of the organization*), with in-house instructors or qualified employees, that may or may not be provided at the unit of (*name of the organization*).

**External training:**

Conducted by companies, specialized institutions or independent professionals, and may or may not be provided at the unit of (*name of the organization*).

**Occasional training:**

Training that is provided but not foreseen in the Annual Training Plan.

**Education:**

The basis of scholastic knowledge, involving, for example, primary, secondary, technical and college education.

**Experience:**

Knowledge acquired through use, practice or life itself.

**Formation:**

The acquisition of physical or moral skills. It is the basis of the specific technical knowledge required for performing in a given position, such as: management, information technology, numerical models for meteorological prediction, quality management systems, automated observing systems, meteorological radar systems, etc.

**Management:**

Coordinated activities for managing and controlling an organization.

**Skill:**

The ability to perform a given physical or mental task. The capability of applying the knowledge acquired during the education and training stages.

**Honesty:**

An ethical and professional way of treating customers, agents, employees, shareholders and the community in general to whom our service is geared.

**Independent – Initiative:**

Quick response to minor difficulties or problems that arise in the daily execution of the activity. It also implies the ability to suggest improvements, making decisions, and using initiative and speed as a competitive advantage.

**Leadership:**

The ability to guide the actions of a human group in a given direction, inspiring values and anticipating the evolution of the actions of said group.

**Concern for order and clarity:**

The continuous concern for control over work and information. It also implies insistence in clarity in the assigned responsibilities and functions.

**Teamwork:**

The capability of actively participating in a common goal. It supposes the ability to establish an inter-personal relationship.

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**Verification:**

Confirmation by examination and provision of objective evidence that specified requirements have been fulfilled.

**9. ANNEXES**

Annex I: Competence profile, by position

Annex II: Assessment of training needs for competence building

Annex III: Training and teaching plan

Annex IV: Event participation and assessment report

Annex V: Control of attendance

Draft

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### ANNEX I – COMPETENCE PROFILE, BY POSITION

CODE: R01-AGC.CF-01

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PROFILE: .....HEAD OF THE MET AREA.....

NAME: .....

N°	Weighted 1	Item	Description	Weighted 2	Rating (0 to 1)	Partial Score (Weighted 2 x Rating)	Total Score (Weighted 1 x Σ Partial Score)
1	0.20	Education	- Aeronautical meteorologist	1			
2	0.20	Training	- Meteorological service management	0.3			
			- Regulatory documentation – ICAO, WMO and ISO 9001	0.3			
			- MET equipment and instruments, and MET information management	0.2			
			- Training methodologies	0.2			
3	0.25	Skill	- Capacity to establish goals, coordinate, follow up and verify	0.3			
			- Capacity to manage MET units	0.1			
			- Actions to improve the talent and capacity of others	0.15			
			- Clear and precise communication, and sensitivity to the concerns of the team	0.1			
			- Identification of changes in the setting and business opportunities	0.15			
			- Compliance with obligations and consideration of the interests of other areas	0.2			
4	0.25	Attitude	- Guiding actions towards the objectives	0.3			
			- Dynamism and hard work with different groups and in different locations	0.2			
			- Continuous improvement of the MET service	0.2			
			- Seeking benefits for the customer	0.1			
			- Sharing of knowledge and experience	0.2			
5	0.1	Experience	- 3 years in similar activities	1			
						Total Score	

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<b>ORGANIZATION LOGOTYPE</b>	<b>5.4 COMPETENCE AND ONGOING TRAINING IN THE QMS MET</b>	<b>CODE: PR-6.2-AGC-1</b>
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PROFILE: ..... MET FORECAST SUPERVISOR.....

NAME: .....

N°	Weighted 1	Item	Description	Weighted 2 Description	Rating (0 to 1)	Partial Score (Weighted 2 x Rating)	Total Score (Weighted 1 x Σ Partial Score)
1	0.20	Education	Aeronautical meteorologist	1			
2	0.20	Training	Organization and management	0.3			
			Aeronautical meteorology and numerical models for weather prediction	0.3			
			MET equipment and instruments, and information management	0.2			
			Regulatory documentation – ICAO, WMO and ISO 9001	0.2			
3	0.25	Skill	Capacity to establish goals and do follow-up	0.3			
			AMO and MWO process management	0.1			
			Management of work infrastructure and environment	0.15			
			Actions to develop the talent and capabilities of the team	0.1			
			Clear and precise communication, and implementation of improvements at the suggestion of the team	0.15			
			Compliance with obligations and service to other areas	0.2			
4	0.25	Attitude	Guiding actions toward objectives	0.3			
			Dynamism and work with different groups	0.2			
			Continuous improvement of AMO and MWO services	0.2			
			Seeking benefits for the customer	0.1			
			Cooperation for the achievement of objectives	0.2			
5	0.1	Experience	3 years in aeronautical meteorology forecasting activities	1			
<b>Total Score</b>							

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PROFILE:.....MET STATION SUPERVISOR.....

NAME: .....

N°	Weighted 1	Item	Description	Weighted 2 Description	Rating (0 to 1)	Partial Score (Weighted 2 x Rating)	Total Score (Weighted 1 x Σ Partial Score)
1	0.20	Education	-Aeronautical meteorologist or .....	1			
2	0.20	Training	-Organization and management	0.3			
			-MET equipment and instruments, and information management	0.3			
			-Regulatory documentation – ICAO, WMO and ISO 9001	0.2			
			-Training methodologies				
3	0.25	Skill	-Ability to establish goals and do follow-up	0.3			
			-Management of national AMS processes	0.1			
			-Management of AMS infrastructure and work environment	0.15			
			-Actions to develop the talent and capabilities of the team	0.1			
			-Clear and precise communication, and implementation of improvements at the suggestion of the team	0.15			
			-Compliance with obligations and service to other areas	0.2			
4	0.25	Attitude	-Guiding actions toward objectives	0.3			
			-Dynamism and work with different groups	0.2			
			-Continuous improvement of AMS services	0.2			
			-Seeking benefits for the customer	0.1			
			-Sharing of knowledge and experience	0.2			
5	0.1	Experience	-6 years of surface and upper air MET observations	1			
<b>Total Score</b>							

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PROFILE:.....MET AND MWO FORECASTER .....

NAME: .....

Nº	Weighted 1	Item	Description	Weighted 2 Description	Rating (0 to 1)	Partial Score (Weighted 2 x Rating)	Total Score (Weighted 1 x Σ Partial Score)
1	0.20	Education	- Senior or intermediate-level aeronautical meteorologist or meteorology technician	1			
2	0.20	Training	- Aeronautical meteorology and weather prediction	0.3			
			- Numerical models for weather prediction	0.3			
			- Information management, computer programming and display	0.2			
			- ICAO, WMO and ISO 9001 documents	0.2			
3	0.25	Skill	- Analytical capacity for MET forecasting	0.3			
			- Proper use of MET systems and equipment	0.1			
			- Capacity to learn and implement current procedures and instructions	0.15			
			- Capacity to report operational occurrences	0.1			
			- Ability to control TAF quality	0.15			
			- Proposing and implementing service improvements	0.2			
4	0.25	Attitude	- Analytical thinking for optimum performance of MET forecasting activities	0.3			
			- Alerting flight crews, ATS personnel about adverse MET conditions	0.2			
			- Search for, and sharing of, information	0.2			
			- Easy transfer of knowledge and experience to team members	0.1			
			- Cooperates in the attainment of objectives	0.2			
5	0.1	Experience	- 3 years in similar activities	1			
						<b>Total Score</b>	

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PROFILE:.....METEOROLOGICAL OBSERVER.....

NAME: .....

N°	Weighted 1	Item	Description	Weighted 2	Rating (0 to 1)	Partial Score (Weighted 2 x Rating)	Total Score (Weighted 1 x Σ Partial Score)
1	0.20	Education	- Aeronautical meteorology technician – Initial level	1			
2	0.20	Training	- Aeronautical MET information observing, coding and distribution procedures	0.3			
			- Telecommunications and aeronautical information systems	0.3			
			- Aeronautical MET equipment and instruments and basic maintenance	0.2			
			- ICAO, WMO and ISO 9001 regulatory documentation	0.2			
3	0.25	Skill	- Handling of MET instruments and equipment	0.3			
			- Ability in the observation of adverse phenomena for air navigation	0.1			
			- Capacity to control MET information quality and timing	0.15			
			- Reporting of MET operational occurrences	0.1			
			- Capacity to learn and implement current procedures and instructions	0.15			
			- Propose improvements in the AMS process	0.2			
4	0.25	Attitude	- Analytical thinking for MET observations	0.3			
			- Alerting the forecaster and aerodrome ATC about adverse MET conditions	0.2			
			- Search for, and sharing of, information	0.2			
			- Transfer of experience to team members	0.1			
			- Cooperation for the attainment of objectives	0.2			
5	0.1	Experience	- 1 year in meteorological observing activities	1			
						<b>Total Score</b>	

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**ANNEX II**

**ASSESSMENT OF TRAINING REQUIREMENTS FOR COMPETENCE BUILDING**

**AREA:** \_\_\_\_\_

**CODE:** R01-AGC.CF-

**REVISION:** 00/XX-XX-2011

<b>ITEM</b>	<b>NAME OF COURSE</b>	<b>PRIORITY</b>	<b>NAME OF EMPLOYEE</b>	<b>POSITION</b>	<b>REASON FOR THE REQUEST</b>

\_\_\_\_\_  
**DATE**

\_\_\_\_\_  
**TRAINING SECTOR**

\_\_\_\_\_  
**REQUESTING AREA**

**Legend of priorities:**

00	Urgent and indispensable
01	Urgent and necessary
02	Normal and indispensable
03	Normal and necessary
04	Normal and recommendable

**REMARKS:**

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**ANNEX III**  
**TRAINING AND TEACHING PLAN**

**CODE: R01-AGC.CF-03**

**REV: 00/XX-XX-2011**

<b>LOGOTYPE</b>	<b>TRAINING AND TEACHING PLAN</b>
AREA:	
TRAINING IN:	
OBJECTIVE:	
INTENDED DATE:	
<input type="checkbox"/> INTERNAL <span style="margin-left: 200px;"><input type="checkbox"/> EXTERNAL</span>	
ENTITY:	
LOCATION:	
TIME REQUIRED:	
COST:	

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## ANNEX IV

### EVENT PARTICIPATION AND ASSESSMENT REPORT

**CODE: R01-AGC.CF-04**

**REVISION: 00/XX-XX-2011**

**INSTITUTION:**

**EVENT:**

**EMPLOYEE:**

- 1) Were the objectives of the event attained?  
 Yes  No
- 2) Were your expectations met?  
 Yes  No
- 3) Duration of the event:  
 Adequate  Insufficient
- 4) Professional who provided the training  
 Optimum  Good  Fair  Unsatisfactory
- 5) The technical, teaching resources and equipment used were:  
 Essential for motivation.  
 Not used objectively.  
 Properly used by instructors, and enriched the topic.
- 6) Contents of the programme:  
 Optimum  Good  Fair  Unsatisfactory

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7) Venue and organization of the event  
 Optimum     Good     Fair     Unsatisfactory

8) What types of theoretical knowledge and/or practical experience did you acquire and which of them will be important for your professional activities in this organization?

\_\_\_\_\_

9) Suggestion/Comments (you may use the back of this sheet):

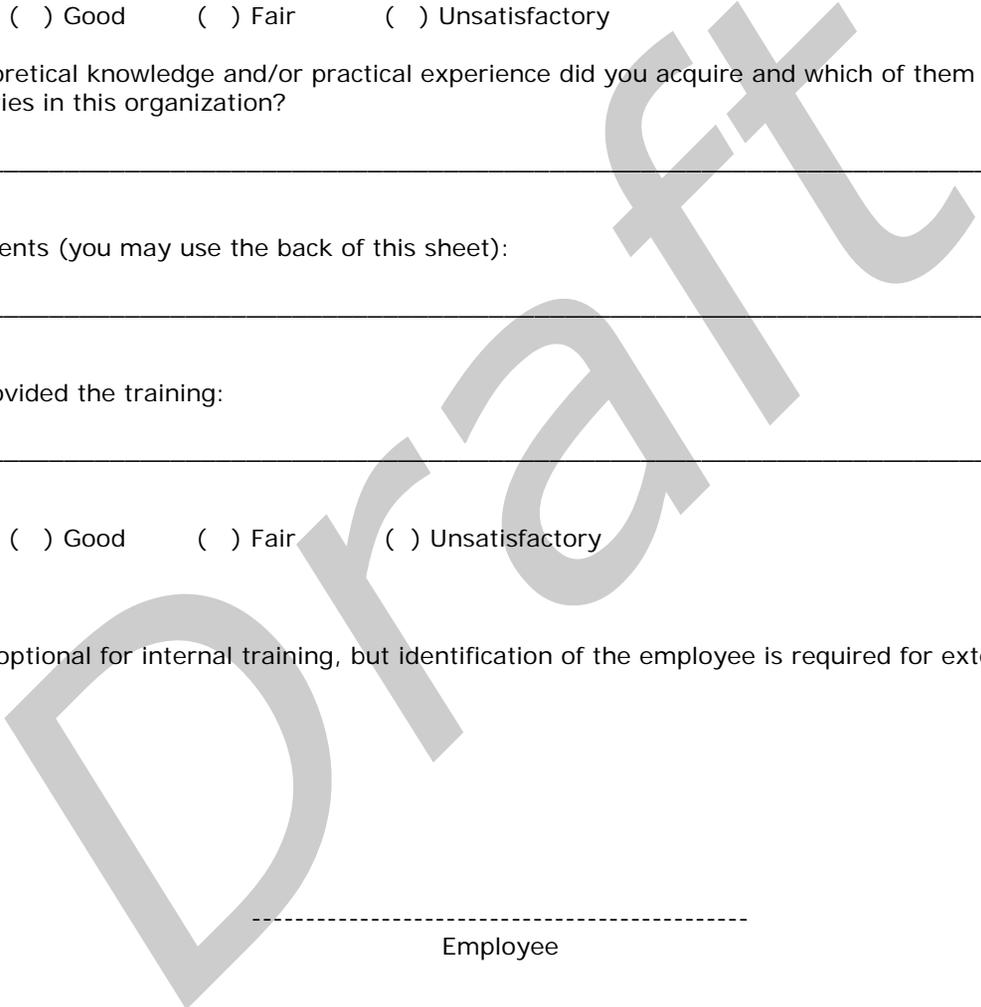
\_\_\_\_\_

10) Institution that provided the training:

\_\_\_\_\_

Optimum     Good     Fair     Unsatisfactory

OBS: The signature is optional for internal training, but identification of the employee is required for external training.



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Employee

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**ANNEX V  
CONTROL OF ATTENDANCE**

**CODE: R01-AGC.CF-05**

**REVISION: 00/XX-XX-2011**

<b>LOGOTYPE</b>	<b>NAME OF THE UNIT</b>	
PARTICIPATION SHEET		
EVENT:		
INSTRUCTOR / SPEAKER:		
DATE:	DURATION:	
LOCATION:		
PARTICIPANTS		
<b>NAME</b>	<b>UNIT</b>	<b>SIGNATURE</b>

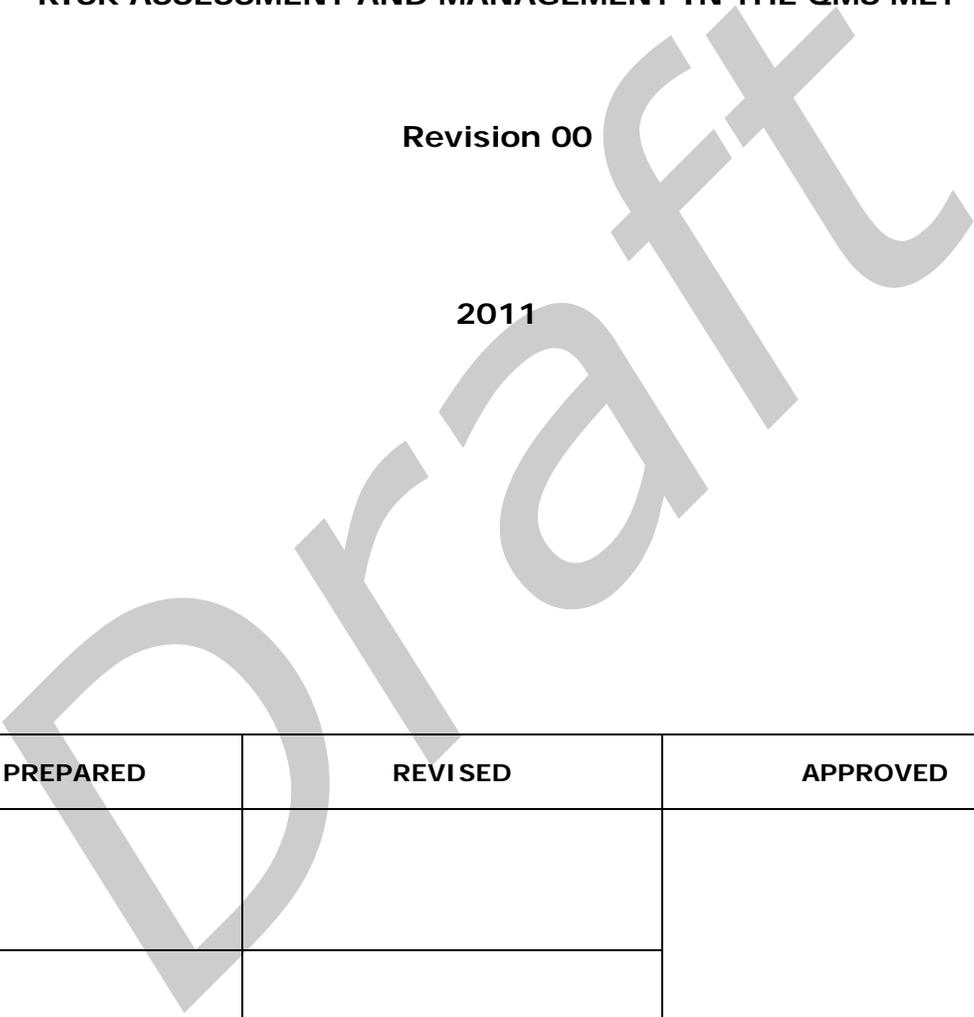
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**RISK ASSESSMENT AND MANAGEMENT IN THE QMS MET**

**Revision 00**

**2011**



PREPARED	REVISED	APPROVED

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**SUMMARY**

1. Objectives
2. Scope
3. Responsibilities
4. References
5. Requirements
6. Conceptual Framework
7. Description of Activities
8. Records
9. Glossary
10. Annexes

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**REVISION STATUS CONTROL MATRIX**

CODE: R01-AGC.CD-05

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## 1. OBJECTIVE

1.1 Define the authority, responsibilities, and guidelines for hazard identification (alerts) and risk management in services, assessment of control barriers or defenses to mitigate the impact on the organization and/or services.

## 2. SCOPE

2.1 This procedure applies to all MET units of *(name of the MET service provider)*.

## 3. RESPONSIBILITIES

3.1 The Director/Manager of *(name of the MET service provider)* is responsible for:

- a) Ensuring that the safety and quality committee, the head of the quality management section and the head of the MET section identify the hazards and assess potential risks leading to non-conformities or undesired acts in the organization and/or MET services.
- b) Developing plans and establishing defenses for the identified non-conformities or undesired acts.
- c) Managing the necessary resources for the implementation of the established plans or defenses.

3.2 The internal quality auditor is responsible for taking into account, in his/her audit plans, the assessment of the risks identified in the organization, in order to verify or identify new hazards affecting the MET service.

3.3 MET units are responsible for:

- a) Cooperating with Management in the implementation of quality and safety policies; and
- b) Informing the head of the MET section about any non-conformity or undesired act that jeopardizes individuals, facilities or MET information.

3.4 The implementation and maintenance of this procedure is under the joint responsibility of the head of quality management and the head of the MET section.

## 4. REFERENCES

4.1 Resolution No. *(number and date of the resolution)* issued by Top Management approves the implementation of the MET/QMS.

4.2 Drafting and presentation of MET/QMS documents (PR-4.2-AGC-1).

4.3 Doc 9873 – *Manual on the quality management system for the provision of meteorological service to international air navigation.*

4.4 *(Name of the MET service provider)* strategic plan for the 2011-2015 period.

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## 5. REQUIREMENTS

- 5.1 MET Quality Management Manual
- 5.2 ISO 9001:2008 (Clause 8.3 – Control of non-conforming product)
- 5.3 Procedure PR-8.5-AGC-1 – MET/QMS Corrective and Preventive Actions

## 6. CONCEPTUAL FRAMEWORK

- 6.1 (*Name of the MET service provider*) adopts the safety concept as meaning:
- a) no incidents, accidents or non-conformities in the services it provides;
  - b) control of hazards or risks in services;
  - c) keeping risks at an “acceptable” level;
  - d) employees, as part of the safety culture of the organization, have an attitude of not permitting unsafe conditions.

6.2 The MET/QMS of (*name of the MET service provider*) takes into account the following:

### Safety

6.3 A condition in which the risk of harm or damage to goods or the integrity of the organization is reduced and kept at or below an **acceptable level**, through a continuous process of hazard identification and risk management.

6.4 The introduction of the acceptable level of safety concept responds to the need of supplementing the current approach of the organization, which is based on measuring the **efficacy** of compliance with applicable regulations and requirements.

6.5 The **acceptable level of safety** expresses the safety objectives (or expectations) of the organization.

6.6 In order to determine an **acceptable level**, the following factors must be considered: level of risk, cost and benefits of system improvements, and stakeholder expectations. This **acceptable level** must be expressed through two measurements or parameters:

- safety efficacy indicators
- safety efficacy objectives.

6.7 (*Name of the MET service provider*) classifies the risks that may affect the organization as follows:

- environmental risks
- process risks
- information risk for decision-making.

6.8 The risk assessment process starts with the identification of hazards. Most hazards are generated by the operational interaction of the various activities of the organization.

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6.9 (Name of the MET service provider) analyses and determines that the whole range of hazards is related to the following causes:

- **Design factors:** The hazard assessment procedure must be applied to all operational activities and/or environmental restrictions; otherwise, hazards would result in non-compliance with agreements or financial loss.
- **Operational procedures and practices:** The procedures for assessing customers, providers and service provision must be adjusted to the performance of the operations. Otherwise, service provision activities might be improperly designed and associated costs wrongly estimated.
- **Organizational factors:** An appropriate personnel selection, training, and sensitization policy, as well as a timely allocation of resources, contribute to the proper operation of the designed controls or defenses. Otherwise, the implemented controls or defenses will be just an academic exercise and the risk will become an undesired incident;
- **Regulatory factors:** The applicability of, and compliance with, laws, regulations, and procedures, as well as an appropriate supervision are important for service provision. Otherwise, the likelihood of occurrence of a hazard would be high and the consequences for the organization would also be catastrophic;
- **Defenses:** The establishment of controls (procedures, technology, and/or training) is aimed at reducing the likelihood of occurrence of an undesired act and avoiding errors and/or failures.

## 7. DESCRIPTION OF ACTIVITIES

6.10 The hazard is an uncertainty that must become a risk for it to be measured and controlled. In this sense, the risk associated to a hazard depends on two (2) variables:

- the likelihood of occurrence; and
- the degree of severity of its consequences.

6.11 The safety assessment of (name of the service provider) is based on those concepts and is essentially a process for answering three (3) fundamental questions: What can be wrong? What could be its consequences? and how frequently does it occur?

6.12 The risk assessment of (name of the service provider) is a systematic process. The whole process is divided into seven (7) steps or activities, which must be carried out by the quality and safety committee, the head of quality management and the head of the MET section.

6.13 These steps and/or activities are the following:

- 1: Conceptualizing the process to be assessed, its interaction with other processes and the environment in which it operates or will be operating;
- 2: Identifying hazards;
- 3: Estimating the severity of the consequences if the hazard occurs;
- 4: Estimating the likelihood of occurrence of the hazard;
- 5: Risk assessment;
- 6: Risk mitigation;
- 7: Developing the safety assessment documentation.

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**1: Description of the system**

During the conceptualization phase, the organization must consider: a) the purpose of the assessment of the process; b) how the process operates or will operate; c) the definition of the process and how it relates to other processes, and d) the environment in which it operates or will operate;

**2: Hazard identification:** Hazard identification considers all possible sources of process failure, such as: a) the equipment (hardware and software); b) the operating environment; c) the operators; d) the service provision procedures; e) maintenance procedures; f) third party services; etc.

**3: Identification of hazard consequences and establishment of hazard severity:** Once the hazard has been identified, the nature of its consequences must be identified, which in turn define the urgency of the safety measure required. If there is a significant hazard with very severe consequences, or if the hazard of severe injury or damage to goods or the environment is high, urgent follow-up measures are warranted.

Based on the consequences identified, which are really "value judgments", those in charge of assessing the hazards will work in groups to quantify the **severity** of the consequences as a whole, in a **scale from 1 to 10**.

Severity is classified as:

- **Catastrophic**, if the severity is between 9 and 10:
  - destruction of the equipment; and
  - multiple deaths
- **Dangerous**, if the severity is between 7 and 8.9:
  - a significant reduction in safety margins, physical damage or a workload such that operators cannot perform their tasks in a precise and complete manner;
  - severe injury or death
  - major damage to the equipment
- **Significant**, if the severity is between 5 and 6.9:
  - A significant reduction in safety margins, a reduction in the ability of the operator to respond to adverse operating conditions as a result of increased workload or as a result of conditions that hinder his/her efficiency.
  - serious incident
  - harm to individuals
- **Of minor significance**, if the severity is between 3 and 4.9:
  - Interference
  - Operating limitations
  - Use of emergency procedures
  - Minor incidents
- **Insignificant**, if the severity is between 1 and 2.9:
  - Minor consequences

**4: Estimation of the likelihood of occurrence of the hazard:** After defining the consequences and their degree of severity, the likelihood of occurrence of the identified hazard must be assessed. **The likelihood will be quantified from 0 to 1.**

The likelihood quantification criteria are the following:

- **Likely** to occur, from **0.8 to 1**: These hazards reflect a type of physical or logical failure that has not been corrected yet. Also, given the empirical evidence of some

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aspects of human performance, it may be foreseen with some certainty that repetitive errors and undesired results will occur.

- **May occur**, from **0.6 to 0.79**: Failures that “may occur” result from hazards that show a reasonable likelihood of occurrence of similar human behaviour models under similar working conditions, or of occurrence of the same physical or logical defect in other parts of the system.
- **Not likely to occur**, from **0.4 to 0.59**: Failures that are “not likely to occur” include isolated events and hazards in which the exposure index is very low or the sample size is small.
- **Unlikely** to occur, from **0.2 to 0.39**: Very unlikely to occur (not known to have occurred)
- **Extremely unlikely**, form **0 to 0.19**: Its occurrence is almost unconceivable.

**5: Risk assessment:** Risk tolerability depends on the likelihood and the severity of its consequences.

$$\text{Tolerability (impact of risk)} = \text{Likelihood} \times \text{Severity}$$

This result not only permits to determine the tolerability of each risk, but also its classification and comparison with other risks. This classification helps to prioritize the allocation of the resources of the organization.

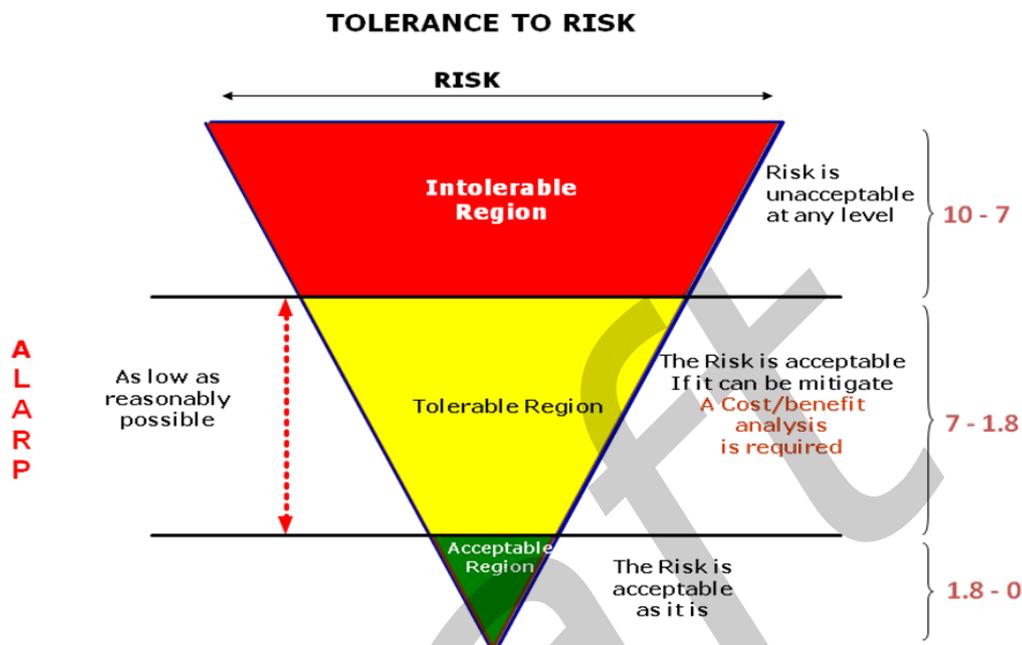
(Name of the service provider) classifies risks based on the following structure:

- **Acceptable** (green): means that no more measures are needed (unless the risk can be further reduced with little cost or effort);
- **Tolerable** (yellow): means that the organization is prepared to face the risk in a calculated and controlled manner;
- **Intolerable** (red): means that operations must cease until the risk is reduced at least to a tolerable level.

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Likewise, the boundaries between acceptable, tolerable and intolerable have been established according to the following graph:



**6: Risk mitigation:** means reducing the risk. That is why risks in the tolerable region must be kept "as low as reasonable possible" (ALARP). This means that risk must be balanced with time, cost, and the difficulty of taking measures to reduce or eliminate it.

Effective risk management seeks to **maximize the benefits** of risk acceptance (a time and cost reduction) while **minimizing** risk.

In order to formulate adequate safety measures, it is necessary to understand if existing defenses are adequate.

(Name of the service provider) establishes the following defense structure:

Level one (**technological measures**): technology-based defenses;

Level two (**personnel measures**): training-based defenses;

Level three (**control measures**): procedure-based defenses.

Each option proposed for mitigating risk must be analyzed based on the following:

- a) **Efficacy:** Will it reduce or eliminate the risks identified? To what extent do other options mitigate risk? Efficacy must be considered as a continuum.
- b) **Cost/benefit ratio:** Does the cost of implementing safety measures exceed the perceived benefits? Will potential benefits be proportional to the impact of the change required?
- c) **Practical:** Is it feasible and appropriate in terms of available technology, financial and administrative feasibility, political will of Top Management, etc.?

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- d) **Bias:** Does the quality and safety committee, the head of quality management and the head of the aeronautical MET section apply criteria that may affect the validity of the safety analysis? (The definition of basic bias appears in the glossary of terms of this procedure.)
- e) **Challenge:** Can the risk mitigation measure resist critical analysis by all stakeholders (employees, managerial staff) of (*name of the organization*)?
- f) **Acceptance by stakeholders:** How much acceptance (or resistance) can be expected from stakeholders? (Discussions with stakeholders during the risk assessment phase may point to their preferred option for mitigating risk.)
- g) **Mandatory compliance:** If new rules (procedures, instructions) are put in place, can they be enforced?
- h) **Duration:** Will the measure withstand the test of time? Will it provide only a temporary benefit or will it be beneficial in the long run?
- i) **Residual risk:** Once the risk mitigation measure has been implemented, what will be the residual risk in relation to the original hazard? What will be the capacity to mitigate the residual risk?
- j) **New issues:** What new problems or (even worse) risks will result from the proposed change?
- 7: **Development of safety assessment documentation:** According to the records established in this document and the new procedures that (*name of the service provider*) deems necessary.

## 8. RECORDS

IDENTIFICATION	STORAGE	PROTECTION	RETRIEVAL	RETENTION	DISPOSAL
<b>R03-AGC.GR-01</b> Risk assessment matrix	( <i>Name of MET unit</i> )	Printed/Digital	Chronological	3 years	Eliminate
<b>R01-AGC.GR-02</b> Risk follow-up matrix	( <i>Name of MET unit</i> )	Printed/Digital	Chronological	3 years	Eliminate

## 9. GLOSSARY

### Corrective action:

Action taken to eliminate the cause of an identified non-conformity or other undesired condition.

**Note 1.** – A non-conformity may have more than one cause.

**Note 2.** – Corrective action is taken to prevent something from happening again, while preventive action is taken to prevent something from happening.

**Note 3.** - There is a difference between correction and corrective action.

### Preventive action:

Action taken to eliminate the causes of potential **non-conformities** in order to prevent them from happening.

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**Note 1.** – A potential non-conformity may have more than one cause.

**Note 2.** – Preventive action is taken to prevent something from happening, while corrective action is taken to prevent something from happening again.

**ALARP:**

An acronym that is used to indicate that the risk must be kept “as low as reasonably possible”.

**Correction:**

Action taken to eliminate an identified non-conformity.

**Note 1.-** A correction may be made together with a corrective action.

**Note 2.-** A correction may be, for example, a re-process or a re-classification.

**Conformity:**

Compliance with a requirement.

**Safety management:**

The condition in which environmental, process, and decision-making information risks are reduced and kept at or below an acceptable level through a continuous process of hazard identification and risk management.

**Risk management:**

The identification, analysis and elimination and/or mitigation, to an acceptable level, of risks that compromise the capacity of an organization.

**Hazard identification:**

The process of recognizing existing hazardous conditions and defining their characteristics. Well-identified hazards permit to infer their sources, the originating mechanisms, and the extent of their impact.

**Mitigation:**

A process aimed at reducing risk to a level “as low as reasonable possible” (ALARP), which involves balancing risk with other factors such as time, cost, and difficulties for taking measures to reduce or eliminate risk.

**Acceptable level:**

The acceptable level of safety reflects the safety objectives (or expectations) of the organization.

**Non-conformity:**

Failure to comply with a requirement.

**Occurrence:**

The frequency with which a particular event has occurred in the organization.

**Hazard or threat:**

A condition, object, or activity that can potentially cause harm, damage to the equipment and structures, loss of personnel, or a reduced ability to perform a given function.

**Likelihood of a risk:**

The possibility that a hazardous condition may occur.

**Risk:**

The possibility of occurrence of loss or damage, measured in terms of severity and likelihood. The possibility that something might occur, and its consequences if it did occur.

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**Risk of unlawful performance:**

The possibility that a company may be fined or sanctioned due to unlawful acts committed by managers or employees, individually or jointly.

**Authority/boundary risk:**

The inadequate definition by the organization of the functions that correspond to each position, or lack of compliance with the defined functions. The following cases may occur:

- Employees do not perform the activities incumbent on them; or
- Employees stop performing the activities they must perform.

**Competition risk:**

Is the capacity of the main competitors or newcomers in the market to take measures for the establishment or maintenance of a competitive advantage over the company, thus compromising its survival.

**Communication risk:**

Is the inconsistency between messages sent and measures taken, due to ineffective vertical (top-down and bottom-up) or horizontal (cross-functional) communications. Consequently, Management and employees:

- Are not clear about the mission, values, objectives, and strategies of the company.
- Do not report what top management needs to know in order to be aware of what is really occurring in the business.
- Do not receive guidance or advice from top management, and thus feel unsupported and isolated.
- Do not work together to improve processes and to meet customer needs.

**Information confidentiality risk:**

Is the loss of control resulting in the leak of information to unauthorized individuals.

**Product/service development risk:**

Is the reduction in sales volume due to the fact that the product/service development process generates products/services that:

- Customers do not want or need;
- Customers cannot afford; or
- Meet a need but the competition reaches the market before.

**Performance risk:**

Is the reduction in the number of customers due to inferior business processes (e.g., lower quality, higher cost, longer lead time) compared to market standards.

**Information availability risk:**

Is the inability to access information when needed. It may be due to:

- **Loss of communication** (e.g., cut cables, telephone systems being repaired, loss of satellite signal).
- **Loss of basic processing capacity** (e.g., fire, flooding, power outages).
- **Operational loss and difficulties** (e.g. computer failure, operational errors).

**Capital availability risk:**

Is the difficulty of the organization to have efficient access to the capital it needs to finance its growth, implement its strategies, and generate future income.

**Resistance-to-change risk:**

Is the inability of individuals in the organization to make improvements in the processes and in the product/service promptly enough to keep pace with changes in the market. Management is unaware of the level of acceptance of, or resistance to, change by its employees.

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**Regulatory/legal environment risk:**

Is the reduction of efficiency in the operation of the organization due to changes in existing regulations or laws (e.g., laws preventing contractual agreements or specific strategies).

**Efficiency risk:**

Is the increase in competitive costs, due to processes that barely meet valid customer requirements. For example, gaps identified between the cost of a process within the organization and the cost of similar processes in other companies.

**Information integrity risk:**

Is the accidental or deliberate loss or alteration of information.

**Leadership risk:**

Is the reduction in efficacy and efficiency in the work of employees, resulting from the fact that those responsible for the important business processes do not provide the vision, motivation, guidelines and support required.

**Performance measurement risk:**

The scarce relevance of performance measurements for the adoption of operational decisions, due to the fact that such measurements are not:

- Informative (that is, do not really reflect what is happening or how processes are performing),
- Reliable,
- Understandable,
- Realistic,
- Feasible (that is, they are not controllable; there is nothing a decision-maker can do to impact the behaviour of measurements), and
- Generators of change (that is, they do not foster a continuous improvement process)

**Outsourcing risk:**

There are two elements of risk in outsourcing:

- Third parties to whom the service is outsourced may not be working within their defined authority boundaries and may not share the values, strategies and objectives of the organization.
- The competition generated by third parties responsible for strategic business processes.

**Risk of loss due to a catastrophe:**

Is the reduction in the capacity to maintain operations, provide essential products and services, or recover operating costs, as a result of a major catastrophe.

**Human resource risk:**

Is the increase in the business risks or the non-compliance with critical objectives due to lack of knowledge, skills, and/or experience by the personnel responsible for managing and controlling the processes of the organization.

**Customer satisfaction risk:**

Is the failure to meet customer expectations due to failures in the processes or service design. Or customer expectations are consistently exceeded due to lack of focus on them.

**Occupational health and safety:**

Conditions and factors that affect or might affect the health and safety of employees, temporary workers, contractors, visitors, and any other individual in the workplace.

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**Severity of risk:** The possible consequences of a hazardous condition, taking into account the worst-case scenario.

**10. ANNEXES**

Annex I: Revision status control matrix

Annex II: Risk assessment matrix

Annex III: Risk follow-up matrix

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**ANNEX II**

**RISK ASSESSMENT MATRIX**

**CODE: R03-AGC.GR-01**

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<b>N°</b>	<b>Hazard</b>	<b>Origin</b>	<b>Consequence</b>	<b>Likelihood 0 - 1</b>	<b>Severity 1 - 10</b>	<b>Risk tolerability</b>	<b>Defense</b>	<b>Risk rating</b>

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<p><b>ORGANIZATION LOGOTYPE</b></p> <p><b>UNIT</b></p>	<p><b>5.6 PURCHASE OF MET EQUIPMENT AND SPARE PARTS</b></p> <p><b>CONTROLLED DOCUMENT</b></p>	<p><b>CODE: IT-7.4-AGC-1</b></p> <p><b>PAGE 1 OF 8</b></p>
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**PURCHASE OF MET EQUIPMENT AND SPARE PARTS**

**Revision 00**

**2011**

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<b>ORGANIZATION LOGOTYPE</b>	<b>5.6 PURCHASE OF MET EQUIPMENT AND SPARE PARTS</b>	<b>CODE: IT-7.4-AGC-1</b>
<b>UNIT</b>	<b>CONTROLLED DOCUMENT</b>	<b>PAGE 3 OF 8</b>

**REVISION STATUS CONTROL MATRIX**

CODE: R01-AGC.CD-05

REVISION: 00/XX-XX-2011

REVISION	PREPARED	REVISED	APPROVED	REASON FOR THE CHANGE	DATE
00					
01					

<b>REVISION</b>	<b>DATE</b>
00	30/11/11

<b>ORGANIZATION LOGOTYPE</b>	<b>5.6 PURCHASE OF MET EQUIPMENT AND SPARE PARTS</b>	<b>CODE: IT-7.4-AGC-1</b>
<b>UNIT</b>	<b>CONTROLLED DOCUMENT</b>	<b>PAGE 4 OF 8</b>

## 1. OBJECTIVE

- 1.1 This procedure establishes guidelines for:
- Making sure that MET equipment, spare parts and inputs meet the specified purchase requirements; and
  - Establishing criteria for the assessment of external maintenance providers of MET equipment and systems.

## 2. SCOPE

2.1 This procedure applies to [name of the MET service provider]/organic units responsible for purchasing and maintaining MET equipment and systems.

## 3. RESPONSIBILITIES

3.1 The executives of the organic units in charge of procurement and maintenance of MET equipment and systems are responsible for enforcing this document.

3.2 The MET area, in coordination with the MET equipment and system maintenance area, prepares, one year in advance, the estimated budget for the procurement of MET equipment, spare parts and inputs.

3.3 The MET area and the MET equipment and system maintenance area prepare the technical and operational specifications for the procurement of such equipment and systems.

3.4 The logistics area is responsible for the MET equipment, spare part, and input procurement process, in keeping with the existing national legislation.

3.5 The director/manager of [name of the MET service provider] is responsible for signing the administrative specifications for purchases and the purchase contracts.

3.6 The MET area and the MET equipment and system maintenance area are responsible for establishing the criteria for assessing maintenance equipment or service providers for MET equipment and systems. They will also assess the providers at least once a year.

## 4. REFERENCES

- 4.1 MET quality management manual.
- 4.2 Drafting and presentation of MET/QMS documents (PR-4.2-AGC-1).
- 4.3 Doc 9873 – *Manual on the quality management system for the provision of meteorological service to international air navigation.*
- 4.4 (*Name of the MET service provider*) strategic plan for the 2011-2015 period.

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<b>ORGANIZATION LOGOTYPE</b>	<b>5.6 PURCHASE OF MET EQUIPMENT AND SPARE PARTS</b>	<b>CODE: IT-7.4-AGC-1</b>
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## 5. REQUIREMENTS

- 5.1. ISO 9001:2008 (Clause 7.4 - Purchasing)
- 5.2. Contracting and procurement law and its modifications
- 5.3. Regulations of the contracting and procurement law of the State and its modifications
- 5.4. General law of the national budget system

## 6. DESCRIPTION OF ACTIVITIES

### Purchase or contracting of goods, services, and works

6.1 This equipment, spare part, input, or service procurement activity will be consistent with the existing regulation, in any of the following processes:

- Purchase or hiring of goods, services, and works, through direct selective awarding process
- Purchase or hiring of goods, services, and works, through direct public awarding process
- Purchase or hiring of goods and services, through small-amount awarding process

### MET area requirement

6.1.1 The MET area, in coordination with the MET equipment and system maintenance area, prepares its equipment, spare part, input and service requirements one year in advance, and defines an estimated amount in the annual budget.

### Development of operational-technical specifications

6.1.2 The MET area, in coordination with the MET equipment and system maintenance area, documents the operational-technical specifications of the requirement. Based on the requirement, it uses the purchase order (R01-LOG-01) or work or service order (R01-LOG-02) record, which is then signed by the head of the respective section.

6.1.2.1 If it is a selective or public direct awarding process, activity 6.1.4 follows, and if it is a small-amount awarding processing, activity 6.1 comes next.

### Market study, budget availability, and procurement

6.1.3 The Logistics area, through its corresponding unit, conducts a market study and determines the reference value through a request for quotes. It also checks budget availability with the financial unit. It then completes the purchase order record (R01-LOG-03) addressed to the provider, with the agreed price and the purchase conditions and/or observations. Once the purchase is made, it completes the goods and services reception and conformity record (R01-LOG-04), and the MET area and the warehouse personnel sign the record indicating conformity.

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### Selection process

6.1.4 Pre-selection stage: The corresponding logistics unit conducts the market study to prepare the technical dossier, with a referential value. It will then propose the creation of a special committee to draft the administrative specifications, which will be approved by the director/manager.

6.1.4.1 Selection process: The special committee will follow the steps listed below:

- call for bids;
- registration of participants;
- consultations and response to consultations and/or observations;
- integration of specifications;
- submission of proposals;
- assessment of proposals; and
- granting of the bidding award.

6.1.4.2 Contractual stage: Following the approval, the winning bidder will be invited to sign the contract, which will be signed by the head of the entity or the legal representative and the winning bidder, according to the State contracting and procurement law.

### Criteria for assessing external providers

6.1.5 The MET area, in coordination with the MET equipment and system maintenance area, will prepare the registry for the assessment of external providers of MET equipment and system maintenance (R01-AMSM.COM.-01), which will be assessed at least once a year, considering 3.5 as an acceptable minimum score. After completing the assessment, the provider will be invited to see its score and consider this assessment for making improvement, if applicable.

## 7. RECORDS

IDENTIFICATION	STORAGE	PROTECTION	RETRIEVAL	RETENTION	DISPOSAL
<b>R01-LOG-01</b> Purchase requirement	<i>(Name of the logistics unit)</i>	Printed/digital	Chronological	10 years	General archive
<b>R01-LOG-02</b> Work or service order	<i>(Name of the logistics unit)</i>	Printed/digital	Chronological	10 years	General archive
<b>R01-LOG-03</b> Purchase order	<i>(Name of the logistics unit)</i>	Printed/digital	Chronological	10 years	General archive
<b>R01-LOG-04</b> Goods and services reception and conformity	<i>(Name of the logistics unit)</i>	Printed/digital	Chronological	10 years	General archive
<b>R01-AMSM.COM-01</b> Assessment of providers	<i>(Name of the MET equipment and system maintenance unit)</i>	Printed/digital	Chronological	3 years	Eliminate

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## 8. GLOSSARY

**Approval:**

The formal acceptance of a document, product, service, item or activity.

**AMSM:**

MET observing equipment and system maintenance area

**Quality:**

Extent to which a set of inherent characteristics meets the requirements

**Conformity:**

Compliance with a requirement. Statement of facts, a condition identified during an audit that meets the audit criteria.

**Contract:**

A binding agreement.

**Management:**

Coordinated activities for managing and controlling an organization.

**Technical specifications:**

A description prepared by the entity of the main characteristics of the goods or supplies to be purchased.

**Market study:**

The market research and analysis conducted by the unit in charge of purchases and contracts to determine the characteristics of what is to be purchased or hired, and the reference value of the processes involved in the public bidding procedure.

**Provision:**

The execution of the work, the rendering of consultancy services, the delivery of the service, or the delivery of goods, the hiring or purchase of which is governed by law and by the contracting and procurement regulations of the State.

**Selection process:**

Is a special administrative procedure that consists of a series of administrative and management acts or administrative events for the selection of the individual or corporation that will enter into a contract with State entities for the procurement of goods, the hiring of services, or the execution of some work.

## 9. ANNEXES

Annex I: Rating of Providers

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00	30/11/11

<b>ORGANIZATION LOGOTYPE</b>	<b>5.6 PURCHASE OF MET EQUIPMENT AND SPARE PARTS</b>	<b>CODE: IT-7.4-AGC-1</b>
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**ANNEX I**  
**RATING OF PROVIDERS**

**CODE: R01-AMSM.COM-01**

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**PROVIDER OF:**

	<b>Very poor</b>	<b>Poor</b>	<b>Fair</b>	<b>Good</b>	<b>Very good</b>	<b>Weight</b>	<b>Score</b>	<b>Optimum</b>
Does it conduct maintenance as scheduled?						0.15		
Is maintenance effective?						0.20		
Does it arrive promptly when so requested?						0.20		
Does it cooperate?						0.15		
Does it supply the spare parts?						0.15		
Does it have the necessary tools to conduct maintenance?						0.15		

**Score:**

Very poor=1    Poor=2    Fair=3    Good=4    Very good=5

<b>REVISION</b>	<b>DATE</b>
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## FASID Table MET 1B — Tableau MET 1B — Tabla MET 1B DEL FASID

### METEOROLOGICAL WATCH OFFICES CENTRES DE VEILLE MÉTÉOROLOGIQUE OFICINAS DE VIGILANCIA METEOROLÓGICA

#### EXPLANATION OF THE TABLE

##### Column

- |   |  |
|---|--|
| 1 | Location of the meteorological watch office (MWO)                                |
| 2 | ICAO location indicator, assigned to the MWO                                     |
| 3 | Name of the FIR, UIR and/or Search and Rescue Region (SRR) served by the MWO     |
| 4 | ICAO location indicator assigned to the ATS unit serving the FIR, UIR and/or SRR |
| 5 | Remarks  |

*Note.* — Unless otherwise stated in Column 5, the MWO listed in Column 1 is the designated collecting centre for the air-reports received within the corresponding FIR/UIR listed in Column 3.

#### EXPLICATION DU TABLEAU

##### Colonne

- |   |  |
|---|--|
| 1 | Emplacement du centre de veille météorologique (MWO)   |
| 2 | Indicateur d'emplacement OACI du MWO   |
| 3 | Nom de la FIR, de l'UIR et/ou de la région de recherches et de sauvetage (SRR) desservie(s) par le MWO |
| 4 | Indicateur d'emplacement OACI des organismes ATS desservant la FIR, l'UIR et/ou les SRR                |
| 5 | Remarques  |

*Note.*— Sauf indication contraire dans la colonne 5, le MWO indiqué dans la colonne 1 est le centre collecteur désigné des comptes rendus en vol reçus dans la FIR/UIR figurant dans la colonne 3.

EXPLICACIÓN DE LA TABLA

*Columna*

- 1 Lugar de la oficina de vigilancia meteorológica (MWO)
- 2 Indicador de lugar de la OACI asignado a la MWO
- 3 Nombre de las FIR, UIR o región de búsqueda y salvamento (SRR) a las que presta servicio la MWO
- 4 Nombre del indicador de lugar asignado a la dependencia ATS que presta servicio a las FIR, UIR o SRR
- 5 Observaciones

*Nota.— Salvo indicación distinta en la Columna 5, la MWO que figura en la Columna 1 es el centro colector designado para las aeronotificaciones recibidas en las FIR/UIR correspondientes reseñadas en la Columna 3.*

MWO location Emplacement du MWO Lugar de la MWO	ICAO loc.ind. Ind. d'empl. OACI Ind. lugar OACI	Area served/Région desservie/Zona atendida		Remarks Remarques Observaciones
		Name Nom Nombre	ICAO loc. ind. Ind. d'empl. OACI Ind. lugar OACI	
1	2	3	4	5
<b>ARGENTINA</b>				
BUENOS AIRES/Aeroparque, Jorge Newbery	SABE	Ezeiza FIR/SRR Ezeiza ACC/UIR	SAEF SAEU	
COMODORO RIVADAVIA/General Mosconi	SAVC	Comodoro Rivadavia FIR/SRR Comodoro Rivadavia ACC/UIR	SAVF SAVU	
CORDOBA/Ing. Aer. A.L. Taravela	SACO	Córdoba FIR/SRR Córdoba ACC/UIR	SACF SACU	
MENDOZA/EI Plumerillo	SAME	Mendoza FIR/SRR Mendoza ACC/UIR	SAMF SAMV	
RESISTENCIA/Resistencia	SARE	Resistencia FIR/SRR Resistencia ACC/UIR	SARR SARU	
<b>BOLIVIA</b>				
LA PAZ/EI Alto Intl	SLLP	La Paz FIR/SRR	SLLP	
<b>BRAZIL</b>				
BRASILIA/CINDACTA I	SBBS	Brasilia FIR/UIR/SRR	SBBS	
CURITIBA/CINDACTA II	SBCW	Curitiba FIR/UIR/UTA/SRR	SBCW	
MANAUS/CINDACTA IV	SBAZ	Amazónica FIR/UIR/SRR	SBAZ	
RECIFE/CINDACTA III	SBRE	Recife FIR/UIR/SRR Atlántico FIR/UIR/SRR	SBRE SBAO	
<b>CHILE</b>				
ANTOFAGASTA/Cerro Moreno SANTIAGO/Arturo Merino Benitez	SCFA SCEL	Antofagasta FIR/SRR	SCFZ	During the night SCEL assumes functions of Meteorological Watch Office for SCFZ FIR / En horario nocturno SCEL asume las funciones de oficina de vigilancia meteorológica para la FIR SCFZ
PUERTO MONTT/EI Tepual	SCTE	Puerto Montt FIR/SRR	SCTZ	
PUNTA ARENAS/Pdte. C. Ibañez del Campo	SCCI	Punta Arenas FIR/SRR	SCCZ	
SANTIAGO/Arturo Merino Benitez	SCEL	Santiago FIR/SRR	SCEZ	
<b>COLOMBIA</b>				
BOGOTÁ/Eldorado	SKBO	Bogotá FIR/UIR/SRR Barranquilla FIR below/por debajo de FL200 (cf. Bogotá UIR)	SKED SKEC	
<b>CUBA</b>				
HABANA/José Martí Intl	MUHA	Habana FIR/SRR	MUFH	
<b>DOMINICAN REPUBLIC</b>				
SANTO DOMINGO/De Las Américas Intl	MDSO	Santo Domingo FIR/SRR	MDCS	

MWO location Emplacement du MWO Lugar de la MWO	ICAO loc.ind. Ind. d'empl. OACI Ind. lugar OACI	Area served/Région desservie/Zona atendida		Remarks Remarques Observaciones
		Name Nom Nombre	ICAO loc. ind. Ind. d'empl. OACI Ind. lugar OACI	
1	2	3	4	5
<b>ECUADOR</b>				
GUAYAQUIL/José Joaquín de Olmedo	SEGU	Guayaquil FIR/SRR	SEGU	
<b>FRENCH GUIANA (France)</b>				
CAYENNE/Rochambeau	SOCA	Rochambeau FIR Cayenne SRR	S000	
<b>GUYANA</b>				
TIMEHRI/Cheddi Jagan Intl	SYCJ	Georgetown FIR/SRR	SYGC	
<b>HAITI</b>				
PORT-AU-PRINCE/Port-au-Prince Intl	MTPP	Port-au-Prince FIR/SRR	MTEG	
<b>HONDURAS</b>				
TEGUCIGALPA/Toncontin Intl	MHTG	Central American FIR/SRR FIR/SRR Centroamericana	MHTG	The Tegucigalpa MWO serves Central American FIR/SSR, which is under the Corporación Centroamericana para los Servicios de Navegación Aérea (COCESNA)'s responsibility, comprising Belize, Costa Rica, El Salvador, Guatemala, Honduras and Nicaragua./ La MWO de Tegucigalpa presta servicios a la FIR/SSR de Centroamérica, que está a cargo de la Corporación Centroamericana para los Servicios de Navegación Aérea (COCESNA) conformada por Belice, Costa Rica, El Salvador, Guatemala, Honduras y Nicaragua.
<b>JAMAICA</b>				
KINGSTON/Norman al Manley Intl	MKJP	Kingston FIR/SRR	MKJK	
<b>MÉXICO</b>				
MEXICO/Lic. Benito Juárez Intl	MMMX	Mazatlán Oceanic FIR/UIR México FIR/UIR/SRR	MMFO MMFR	
<b>NETHERLANDS ANTILLES (Netherlands)</b>				
WILLEMSTAD/Hato, Curaçao I.	TNCC	Curaçao FIR/SRR	TNCF	
<b>PANAMA</b>				
PANAMA/Tocumen Intl	MPTO	Panamá FIR/SRR	MPZL	
<b>PARAGUAY</b>				
ASUNCION/Silvio Pettirossi	SGAS	Asunción FIR/UIR/SRR	SGFA	
<b>PERU</b>				
LIMA-CALLAO/Jorge Chávez Intl	SPIM	Lima FIR/UIR/SRR	SPIM	
<b>SURINAME</b>				
ZANDERY/Johan Adolf Pengel Intl	SMJP	Paramaribo FIR/UIR	SMPM	

MWO location Emplacement du MWO Lugar de la MWO	ICAO loc.ind. Ind. d'empl. OACI Ind. lugar OACI	Area served/Région desservie/Zona atendida		Remarks Remarques Observaciones
		Name Nom Nombre	ICAO loc. ind. Ind. d'empl. OACI Ind. lugar OACI	
1	2	3	4	5
<b>TRINIDAD AND TOBAGO</b>				
PORT OF SPAIN/Piarco Intl, Trinidad I.	TTPP	Piarco FIR/SRR	TTZP	
<b>UNITED STATES</b>				
Kansas City Aviation Weather Center	KKCI	Houston Oceanic FIR Miami Oceanic FIR/SRR San Juan FIR/SRR	KZHU KZMA TJZS	
<b>URUGUAY</b>				
MONTEVIDEO/Carrasco Intl Gral. Cesáreo L. Berisso	SUMU	Montevideo FIR/SRR	SUEO	
<b>VENEZUELA</b>				
CARACAS/Simon Bolivar Intl, Maiquetia	SVMI	Maiquetia FIR/UIR/SRR	SVZM	

**FASID Table MET 3A — Tabla MET 3A del FASID**

**TROPICAL CYCLONE ADVISORY CENTRE  
CENTRO DE AVISOS DE CICLONES TROPICALES**

**EXPLANATION OF THE TABLE**

- 1 Location of the tropical cyclone advisory centre (TCAC).
- 2 ICAO location indicator of TCAC (for use in the WMO header of advisory bulletin).
- 3 Area of responsibility for the preparation of advisory information on tropical cyclones by the TCAC in Column 1.
- 4 Period of operation of the TCAC.
- 5 MWO to which the advisory information on tropical cyclones should be sent.
- 6 Location indicator assigned to the MWO in Column 4.

**EXPLICACIÓN DE LA TABLA**

*Columna*

- 1 Lugar del centro de avisos de ciclones tropicales (TCAC).
- 2 Indicador de lugar del TCAC (para usar en el encabezamiento de la OMM del boletín de asesoramiento).
- 3 Zona de responsabilidad para la preparación de la información de asesoramiento sobre ciclones tropicales por el TCAC en la Columna 1.
- 4 Período de operación del TCAC.
- 5 MWO a la que debe enviarse la información de asesoramiento sobre ciclones tropicales.
- 6 Indicador de lugar de la OACI asignado a la MWO de la Columna 4.

**FASID Table MET 3A — Tabla MET 3A del FASID**

Tropical cyclone advisory centre/Centro de avisos de ciclones tropicales	ICAO Loc. Ind. / Ind. De Lugar OACI	Area of responsibility/ Zona de responsabilidad	Period of operation/ Período de operación	MWO to which advisory information is to be sent/ MWO a la que debe enviarse información de asesoramiento	
				Name/ Nombre	ICAO Loc. Ind./ Ind. de Lugar OACI
1	2	3	4	5	6
Miami (United States) (Estados Unidos)	KWBC	Tropical Atlantic, Caribbean Sea, Gulf of Mexico Relevant parts of the Pacific East of E140°  Atlántico Tropical, Mar del Caribe, Golfo de México Partes pertinentes del Pacífico al este de los 140° E	1 June – 30 November 1 de junio – 30 noviembre	Amazónico/CINDACTA IV Bogotá Brasilia/CINDACTA I Caracas Cayenne Curitiba/CINDACTA II Timehri Habana Kingston México Kansas City Panama Port of Spain Port-au-Prince Recife/CINDACTA III Santo Domingo Tegucigalpa Willemstad Zandery	SBAZ SKBO SBBS SVMJ SOCA SBCW SYCJ MUHA MKJP MMMX KKCI MPTO TTPP MTPP SBRE MDSJ MHTG TNCC SMJP

**FASID Table MET 3B — Tableau MET 3B — Tabla MET 3B DEL FASID**

**VOLCANIC ASH ADVISORY CENTRE  
CENTRO DE AVISOS DE CENIZAS VOLCÁNICAS**

EXPLANATION OF THE TABLE

*Column*

- 1 Name of the volcanic ash advisory centre (VAAC).
- 2 ICAO location indicator of VAAC (for use in the WMO heading of advisory bulletin).
- 3 Area of responsibility for the preparation of advisory information on volcanic ash by the VAAC in Column 1.
- 4 ICAO Contracting State where the MWOs and ACCs/FICs are located.
- 5 ICAO region where the VAAC, WMOs and ACCs/FICs are located.
- 6 MWOs to which the advisory information on volcanic ash should be sent.
- 7 ICAO location indicator of the MWOs in Column 6.
- 8 ACCs/FICs to which the advisory information on volcanic ash should be sent.
- 9 ICAO location indicator of the ACCs/FICs in Column 8.

EXPLICACIÓN DE LA TABLA

*Columna*

- 1 Nombre del centro de aviso de cenizas volcánicas (VAAC)
- 2 Indicador de lugar de la OACI del VAAC (para uso en el encabezamiento abreviado de la OMM de los boletines de los avisos).
- 3 Zona de responsabilidad para la preparación de la información de asesoramiento sobre cenizas volcánicas por el VAAC de la Columna 1.
- 4 Estado Contratante de la OACI donde las MWO y los ACC/FIC están localizados.
- 5 Región de la OACI donde el VAAC, la MWO y el ACC/FIC están localizados.
- 6 MWO a las que debe enviarse la información de asesoramiento sobre cenizas volcánicas.
- 7 Indicador de lugar de la OACI de la MWO de la Columna 6.
- 8 ACC a las que debe enviarse la información de asesoramiento sobre cenizas volcánicas.
- 9 Indicador de lugar de la OACI de los ACC/FIC de la Columna 8.



**QMS/MET Guide - Appendix D**

**Table A6-1. Template for SIGMET and AIRMET messages and special air-reports (uplink)**

Key: M = inclusion mandatory, part of every message;  
 C = inclusion conditional, included whenever applicable;  
 = = a double line indicates that the text following it should be placed on the subsequent line.

*Note.— The ranges and resolutions for the numerical elements included in SIGMET/AIRMET messages and in special air-reports are shown in Table A6-4 of this appendix.*

Element as specified in Chapter 5 and Appendix 6	Detailed content	Template(s)			Examples
		SIGMET	AIRMET	SPECIAL AIR-REPORT <sup>1</sup>	
Location indicator of FIR/CTA (M) <sup>2</sup>	ICAO location indicator of the ATS unit serving the FIR or CTA to which the SIGMET/AIRMET refers (M)	nnnn		—	YUCC <sup>3</sup> YUDD <sup>3</sup>
Identification (M)	Message identification and sequence number <sup>4</sup> (M)	SIGMET [nn]n	AIRMET [nn]n	ARS	SIGMET 5 SIGMET A3 AIRMET 2 ARS
Validity period (M)	Day-time groups indicating the period of validity in UTC (M)	VALID nnnnnn/nnnnnn		— <sup>5</sup>	VALID 221215/221600 VALID 101520/101800 VALID 251600/252200
Location indicator of MWO (M)	Location indicator of MWO originating the message with a separating hyphen (M)	nnnn-			YUDO- <sup>3</sup> YUSO- <sup>3</sup>
Name of the FIR/CTA or aircraft identification (M)	Location indicator and name of the FIR/CTA <sup>6</sup> for which the SIGMET/AIRMET is issued or aircraft radiotelephony call sign (M)	nnnn nnnnnnnnnn FIR/[UIR] or nnnn nnnnnnnnnn CTA	nnnn nnnnnnnnnn FIR/[n]	nnnnnn	YUCC AMSWELL FIR <sup>3</sup> YUDD SHANLON FIR/UIR <sup>3</sup>  YUCC AMSWELL FIR/2 <sup>3</sup> YUDD SHANLON FIR <sup>3</sup>  VA812
IF THE SIGMET IS TO BE CANCELLED, SEE DETAILS AT THE END OF THE TEMPLATE.					
Phenomenon (M) <sup>7</sup>	Description of phenomenon causing the issuance of SIGMET/AIRMET (C)	OBSC <sup>8</sup> TS[GR] <sup>9</sup> EMBD <sup>10</sup> TS[GR] FRQ <sup>11</sup> TS[GR] SQL <sup>12</sup> TS[GR]  TC nnnnnnnnnn or NN <sup>13</sup>  SEV TURB <sup>14</sup> SEV ICE <sup>15</sup> SEV ICE (FZRA) <sup>15</sup> SEV MTW <sup>16</sup>  HVY DS HVY SS  [VA ERUPTION] [MT] [nnnnnnnnnn] [PSN Nnn[nn] or Snn[nn]	SFC WSPD nn[n]MPS (or SFC WSPD nn[n]KT)  SFC VIS nnnnM (nn) <sup>17</sup>  ISOL <sup>18</sup> TS[GR] <sup>9</sup> OCNL <sup>19</sup> TS[GR]  MT OBSC  BKN CLD nnn/[ABV]nnnnM (or BKN CLD nnn/[ABV]nnnnFT)  OVC CLD nnn/[ABV]nnnnM (or OVC CLD nnn/[ABV]nnnnFT)	TS TSGR  SEV TURB SEV ICE  SEV MTW  HVY SS  VA CLD [FL nnn/nnn] VA [MT nnnnnnnnnn]  MOD TURB MOD ICE	SEV TURB FRQ TS OBSC TSGR EMBD TSGR TC GLORIA TC NN  VA ERUPTION MT ASHVAL PSN S15 E073 VA CLD  MOD TURB MOD MTW ISOL CB  BKN CLD 120/900M (BKN CLD 400/3000FT)

Element as specified in Chapter 5 and Appendix 6	Detailed content	Template(s)			Examples
		SIGMET	AIRMET	SPECIAL AIR-REPORT <sup>1</sup>	
		Ennn[nn] or Wnnn[nn] VA CLD  RDOACT CLD	ISOL <sup>18</sup> CB <sup>20</sup> OCNL <sup>19</sup> CB FRQ <sup>11</sup> CB  ISOL <sup>18</sup> TCU <sup>20</sup> OCNL <sup>19</sup> TCU <sup>20</sup> FRQ <sup>11</sup> TCU  MOD TURB <sup>14</sup> MOD ICE <sup>15</sup> MOD MTW <sup>16</sup>		OVC CLD 270/ABV3000M (OVC CLD 900/ABV10000FT)  SEV ICE  RDOACT CLD
Observed or forecast phenomenon (M)	Indication whether the information is observed and expected to continue, or forecast (M)	OBS [AT nnnnZ] FCST [AT nnnnZ]		OBS AT nnnnZ	OBS AT 1210Z OBS FCST AT 1815Z
Location (C) <sup>21</sup>	Location (referring to latitude and longitude (in degrees and minutes) or locations or geographic features well known internationally)	Nnn[nn] Wnnn[nn] or Nnn[nn] Ennn[nn] or Snn[nn] Wnnn[nn] or Snn[nn] Ennn[nn] or N OF Nnn[nn] or S OF Nnn[nn] or N OF Snn[nn] or S OF Snn[nn] or [AND] W OF Wnnn[nn] or E OF Wnnn[nn] or W OF Ennn[nn] or E OF Ennn[nn] or [N OF, NE OF, E OF, SE OF, S OF, SW OF, W OF, NW OF] [LINE] Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn[nn] – Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn[nn] or [N OF, NE OF, E OF, SE OF, S OF, SW OF, W OF, NW OF, AT] nnnnnnnnnn or WI Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn[nn] – Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn[nn] – Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn[nn] – [Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn[nn] – Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn[nn]]		NnnnnWnnnnn or NnnnnEnnnnn or SnnnnWnnnnn or SnnnnEnnnnn	S OF N54 N OF N50 N2020 W07005 AT YUSB <sup>3</sup> N2706 W07306  N48 E010  N OF N1515 AND W OF E13530  W OF E1554  N OF LINE S2520 W11510 – S2520 W12010  WI N6030 E02550 – N6055 E02500 – N6050 E02630
Level (C) <sup>21</sup>	Flight level or altitude and extent (C) <sup>22</sup>	[SFC]/FLnnn or [SFC]/nnnnM (or [SFC]/nnnnFT) or FLnnn/nnn or TOP FLnnn or [TOP] ABV FLnnn  or <sup>23</sup> CB TOP [ABV] FLnnn WI nnnKM OF CENTRE (or CB TOP [ABV] FLnnn WI nnnNM OF CENTRE) or CB TOP [BLW] FLnnn WI nnnKM OF CENTRE (or CB TOP [BLW] FLnnn WI nnnNM OF CENTRE)  or <sup>24</sup>  FLnnn/nnn [APRX nnnKM BY nnnKM] [nnKM WID LINE <sup>25</sup> BTN (nnNM WID LINE BTN)] [Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn[nn]]		FLnnn or nnnnM (or nnnnFT)	FL180 FL050/080 TOP FL390 SFC/FL070 TOP ABV FL100 FL310/450  CB TOP FL500 WI 270KM OF CENTRE (CB TOP FL500 WI 150NM OF CENTRE)  FL310/350 APRX 220KM BY 35KM

Element as specified in Chapter 5 and Appendix 6	Detailed content	Template(s)			Examples	
		SIGMET	AIRMET	SPECIAL AIR-REPORT <sup>1</sup>		
		– Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn[nn] [ – Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn[nn]] [ – Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn[nn]] (or FLnnn/nnn [APRX nnnNM BY nnnNM] [Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn[nn] – Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn[nn] [ – Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn[nn]] [ – Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn[nn]]])				FL390
Movement or expected movement (C) <sup>21</sup>	Movement or expected movement (direction and speed) with reference to one of the sixteen points of compass, or stationary (C)	MOV N [nnKMH] or MOV NNE [nnKMH] or MOV NE [nnKMH] or MOV ENE [nnKMH] or MOV E [nnKMH] or MOV ESE [nnKMH] or MOV SE [nnKMH] or MOV SSE [nnKMH] or MOV S [nnKMH] or MOV SSW [nnKMH] or MOV SW [nnKMH] or MOV WSW [nnKMH] or MOV W [nnKMH] or MOV WNW [nnKMH] or MOV NW [nnKMH] or MOV NNW [nnKMH] (or MOV N [nnKT] or MOV NNE [nnKT] or MOV NE [nnKT] or MOV ENE [nnKT] or MOV E [nnKT] or MOV ESE [nnKT] or MOV SE [nnKT] or MOV SSE [nnKT] or MOV S [nnKT] or MOV SSW [nnKT] or MOV SW [nnKT] or MOV WSW [nnKT] or MOV W [nnKT] or MOV WNW [nnKT] or MOV NW [nnKT] or MOV NNW [nnKT]) or STNR		—	MOV E 40KMH (MOV E 20KT)  MOV SE STNR	
Changes in intensity (C) <sup>21</sup>	Expected changes in intensity (C)	INTSF or WKN or NC		—	WKN	
Forecast position (C) <sup>21, 22</sup>	Forecast position of volcanic ash cloud or the centre of the TC at the end of the validity period of the SIGMET message (C)	FCST nnnnZ TC CENTRE Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn[nn] or FCST nnnnZ VA CLD APRX [nnKM WID LINE <sup>25</sup> BTN (nnNM WID LINE BTN)] Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn[nn] – Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn[nn] [ – Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn[nn]] [ – Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn[nn]] [AND] <sup>26</sup>	—	—	FCST 2200Z TC CENTRE N2740 W07345  FCST 1700Z VA CLD APRX S15 E075 – S15 E081 – S17 E083 – S18 E079 – S15 E075	
OR						
Cancellation of SIGMET/ AIRMET (C) <sup>27</sup>	Cancellation of SIGMET/AIRMET referring to its identification	CNL SIGMET [nn]n nnnnnn/nnnnnn or CNL SIGMET [nn]n nnnnnn/nnnnnn [VA MOV TO nnnn FIR] <sup>24</sup>	CNL AIRMET [nn]n nnnnnn/nnnnnn	—	CNL SIGMET 2 101200/101600 <sup>27</sup>  CNL SIGMET 3 251030/251430 VA MOV TO YUDO FIR <sup>27</sup>  CNL AIRMET 151520/151800 <sup>27</sup>	

Notes.—

1. No wind and temperature to be uplinked to other aircraft in flight in accordance with 3.2.
2. See 4.1.
3. Fictitious location.
4. In accordance with 1.1.3 and 2.1.2.
5. See 3.1.
6. See 2.1.3.
7. In accordance with 1.1.4 and 2.1.4.
8. In accordance with 4.2.1 a).
9. In accordance with 4.2.4.
10. In accordance with 4.2.1 b).
11. In accordance with 4.2.2.
12. In accordance with 4.2.3.
13. Used for unnamed tropical cyclones.
14. In accordance with 4.2.5 and 4.2.6.
15. In accordance with 4.2.7.
16. In accordance with 4.2.8.
17. In accordance with 2.1.4.
18. In accordance with 4.2.1 c).
19. In accordance with 4.2.1 d).
20. The use of cumulonimbus, CB, and towering cumulus, TCU, is restricted to AIRMETs in accordance with 2.1.4.
21. In the case of the same phenomenon covering more than one area within the FIR, these elements can be repeated, as necessary.
22. Only for SIGMET messages for volcanic ash cloud and tropical cyclones.
23. Only for SIGMET messages for tropical cyclones.
24. Only for SIGMET messages for volcanic ash.
25. A straight line between two points drawn on a map in the Mercator projection or a straight line between two points which crosses lines of longitude at a constant angle.
26. To be used for two volcanic ash clouds or two centres of tropical cyclones simultaneously affecting the FIR concerned..
27. End of the message (as the SIGMET/AIRMET message is being cancelled).

*Note.— In accordance with 1.1.5 and 2.1.5, severe or moderate icing and severe or moderate turbulence (SEV ICE, MOD ICE, SEV TURB, MOD TURB) associated with thunderstorms, cumulonimbus clouds or tropical cyclones should not be included.*