



ICAO

# INTERNATIONAL CIVIL AVIATION ORGANIZATION

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*Workshop on the Implementation of  
Amendment 82 to Annex 3 to Chicago  
Convention and the PANS-MET*

*(Praia, Cabo Verde, 30 March – 3 April 2026)*



# Session 3: Operational and institutional impacts

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## PPT3.5. Quality Management (QMS) and Compliance Assurance

*ICAO, WACAF Office*

# Overview

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# Introduction

- In November 2001, Amendment 72 to Annex 3 introduced a recommended practice on quality control and management of meteorological information.
- In November 2010, Amendment 75 elevated this practice to a Standard, applicable from November 2012. This date became a key reference for NMHSs and aeronautical meteorological service providers in implementing quality management systems.

# Quality Requirements for Meteorological Information

## Amendment 82 to ICAO Annex 3 (21st Edition)

- Under Amendment 82, the QMS becomes a **KEY tool to demonstrate:**
  - ◇ **Compliance** with Annex 3 SARPs;
  - ◇ **Effective implementation** of the PANS-MET procedures;
  - ◇ The **reliability and consistency** of OPMET information;
  - ◇ The effective application of measures **guaranteeing the integrity** of meteorological data.
  
- QMS becomes an **active mechanism** for controlling MET processes.

### A3 Chap. 2

2.2.2 The meteorological authority **shall ensure** that the **designated meteorological service provider referred to in 2.1.5 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 listed in 2.1.2.

2.2.3 **Recommendation.**— *The quality system established in accordance with 2.2.2 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.*

2.2.4 **Recommendation.**— *The quality system should provide the users with **assurance** that the meteorological information supplied **complies with the stated requirements** in terms of the **geographical and spatial coverage, format and content, time and frequency of issuance and period of validity**, as well as the **accuracy of measurements**, observations and forecasts. When the quality system indicates that meteorological information to be supplied to the users does not comply with the stated requirements, and automatic error correction procedures are not appropriate, such information should not be supplied to the users unless it is validated with the originator. .*

2.2.5 **Recommendation.**— *In regard to the exchange of meteorological information for operational purposes, the quality system should include **verification and validation procedures and resources** for monitoring adherence to the prescribed transmission schedules for individual messages and/or bulletins required to be exchanged, and the times of their filing for transmission. The quality system **should be capable of detecting excessive transit times of messages and bulletins received.** .*

*Note.*— *Requirements concerning the exchange of operational meteorological information are contained in Chapter 11 of this Annex and Chapter 10 of the PANS-MET (Doc 10157).*

# Increased standardization and formalization of processes

- Requirement to **align operational procedures with the PANS-MET**;
- Updating key operational processes, **integrating new services** (SWXA, QVA, VONA, etc.) and taking into account the **new definition of the meteorological service provider**;
- Updating the roles and responsibilities of stakeholders, as well as ATS/MET/AIM/CNS interfaces;
- The QMS to integrate and control all these standardized processes.

**Réf. A3, Tableau A, Amendement n°82 :** (a) Restructuring of Annex 3, Space Weather Information Services, Volcano Watch along International Airways (IAVW), ICAO Meteorological Information Exchange Model (IWXXM), Global Area Forecast System (SMPZ), Amendment of the definition of meteorological administration to clarify it and inclusion of a new definition for the term meteorological assistance provider;

**b) Quantitative volcanic ash (QVA) information as of November 26, 2026.**

- The QMS will have to ensure/promote:
  - ◇ Strengthening of quality performance indicators;
  - ◇ Monitoring of information compliance (accuracy, precision, integrity, availability, etc.);
  - ◇ Handling non-conformities and implementing corrective actions;
  - ◇ Risk management related to the MET processes;
  - ◇ Traceability of meteorological information;
  - ◇ Mastery of the life cycle of MET information, including the MET-SWIM environment;
  - ◇ A culture of performance and continuous improvement.

**A3 Chap.2 §2.2.6** Demonstration of compliance of the quality system applied **shall be by audit**. If non-conformity of the system is identified, action shall be initiated to determine and correct the cause. **All audit observations shall be evidenced and properly documented.**

**A3 Chap.2 §2.2.7** Owing to the variability of meteorological elements in space and time, to limitations of observing techniques and to limitations caused by the definitions of some of the elements, the specific value of any of the elements given in a report shall be understood by the recipient to be the best approximation of the actual conditions at the time of observation.

*Note.— Guidance on the operationally desirable accuracy of measurement or observation is contained in Attachment A to the PANS-MET (Doc 10157). .*

**A3 Chap.2 §2.2.9** The meteorological information supplied to the users listed in 2.1.2 shall be consistent with Human Factors principles and shall be in forms which require a minimum of interpretation by these users, as specified in the following chapters. .

*Note.— Guidance material on the application of Human Factors principles can be found in the Human Factors Training Manual (Doc 9683).*

# Skills and quality culture

## Qualification, Competency and Training Requirements for Aviation MET Personnel

- **Increased need for training that takes into account:**
  - ◇ The new competencies introduced by the new requirements of Annex 3;
  - ◇ Competencies related to the PANS-MET;
  - ◇ Quality management and auditing techniques.
- **Raising awareness among MET staff of the role of QMS in safety.**
- **Strengthening the human factor as a pillar of the MET quality system.**

**A3 Chap. 2 §2.1.6** The meteorological authority shall ensure that the **designated meteorological service provider complies with the requirements of the World Meteorological Organization (WMO) in respect of qualifications, competencies, education and training** of meteorological personnel providing service for international air navigation.

*Note.— Requirements concerning the qualifications, competencies, education and training of meteorological personnel in aeronautical meteorology are given in the Technical Regulations (WMO-No. 49), Volume I – General Meteorological Standards and Recommended Practices, Part V – Qualifications and Competencies of Personnel Involved in the Provision of Meteorological (Weather and Climate) and Hydrological Services, Part VI – Education and Training of Meteorological Personnel, and Appendix A – Basic Instruction Packages.*



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Thank You!