



Agenda Item 6: AIS/AIM Staff Competency Assessment and Training (Doc 8126), including CBTA and AIS→AIM→SWIM Transition Talent Development

**AIS/AIM STAFF ASSESSMENT AND TRAINING
 WITH A COMPETENCY-BASED APPROACH**

(Presented by the Secretariat)

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| ABSTRACT | |
| This Working Paper presents ICAO's guidelines related to competency-based training and assessment (CBTA) applied to AIS/AIM staff, including background documents, implementation processes, and their relationship to the transition from AIS to AIM and the Quality Management System. | |
| References: | |
| <ul style="list-style-type: none"> • Annex 15 – Aeronautical Information Services • Doc 10066 – PANS-AIM • Doc 9868 – PANS-TRG • Doc 9991 – AIS/AIM Training Manual (2023) • Doc 8126 – Manual AIS • Doc 9839 – Manual QMS/AIM | |
| ICAO Strategic objectives: | <i>A - All flights are safe and secure</i> <i>D - No Country Left Behind</i> |

1. Introduction

1.1 ICAO states that AIS/AIM staff must be competent to perform their duties, which involves the implementation of competency-based training and assessment (CBTA) programs.

1.2 This approach responds to the need to ensure the quality, integrity and traceability of aeronautical data, especially in the context of the transition to an AIM digital environment.

1.3 Annex 15 and Doc 8126 require all AIS personnel to possess the necessary competencies and to be evaluated on an initial and periodic basis.

1.4 In the AIS/AIM context, a competency is defined as the combination of knowledge, skills, and attitudes necessary to perform functions safely, efficiently, and in compliance with regulatory requirements.

1.5 Personnel must demonstrate these competencies in areas such as aeronautical data management, quality assurance, information production and dissemination (AIP, NOTAM, digital data) and use of AIM systems and technological tools.

2. Discussion

a) ICAO Framework for CBTA in AIS/AIM

2.1 The CBTA methodology is based on the framework defined in Doc 9868 (PANS TRG), which provides principles and procedures for the design of competency-based training programs.

2.2 Doc 9991 complements this framework by providing specific guidance for AIS/AIM personnel, including the development, implementation, and evaluation of training programs tailored to States' operational environments.

2.3 In addition, Doc 10066 (PANS-AIM) incorporates requirements relating to training management as part of the AIM system and aeronautical data quality assurance.

b) CBTA Implementation Processes

2.4 Doc 9991 establishes a structured process for the implementation of the CBTA based on the ADDIE model, which includes the following stages:

2.5

i. Analysis

- Identifying AIS/AIM Roles and Tasks
- Definition of required competencies
- Gap Assessment

ii. Design

- Defining Learning Objectives
- Establishment of performance criteria and standards

iii. Development

- Development of training programmes
- Development of teaching materials and assessment tools

iv. Implementation

- Implementation of the training in its different phases:
 - initial,
 - operational,
 - specialized,
 - Recurring

v. Evaluation

- Staff performance evaluation
- Validation and maintenance of competencies

2.6 This approach is results-oriented and tailored to the specific needs of each AIS/AIM organization

c) Evaluation of competencies

2.7 The CBTA model states that evaluation should be based on observable performance, use measurable criteria, and be applied continuously (initial and periodic).

2.8 Likewise, the processes must include the recording of results, identification of deviations and corrective actions, ensuring that AIS/AIM personnel periodically demonstrate their competencies to maintain operational safety.

d) Relationship with the Quality Management System (QMS/AIM)

2.9 Competency-based training and assessment is directly linked to QMS/AIM, as it ensures the quality of processes, the integrity of aeronautical data and the continuous improvement of the organization.

2.10 In this sense, the QMS must include processes for competency management, continuous training and evaluation of staff performance.

e) Conclusion

2.11 Competency-based training and assessment for AIS/AIM staff:

- is a fundamental requirement of ICAO;
- it is essential to ensure the safety and efficiency of air navigation;
- represents a key enabler for the transition to digital AIM.

2.12 The application of the guidelines established in Doc 9991, Doc 9868 and Doc 10066 will allow States to implement effective, measurable and sustainable training systems.

2.13 **Appendix A** presents considerations for the competency assessment of AIS/AIM staff.

2.14 **Appendix B** presents a template for noting the implementation of competency-based training and competency assessment of staff in accordance with the requirements of Annex 15, Doc 10066 - PANS-AIM, Doc 8126, Doc 9868 (PANS TRG), and ICAO Doc 9991.

3. Action Required

3.1. The Meeting is invited to:

- a) to take note of the information presented in this Study Note;
- b) promote the implementation of the CBTA approach in the States of the NAM/CAR/SAM Regions;
- c) encourage the revision and updating of AIS/AIM training programmes;
- d) integrate competency management within the QMS/AIM;
- e) consider further actions to strengthen the training and development of AIS/AIM staff in the NAM/CAR/SAM regions.

APPENDIX A

AIM COMPETENCY MODEL FOR NAM/CAR/SAM REGIONS (CBTA-ICAO BASED)

A.1 Introduction

This AIM competency model is based on the ICAO framework set out in **Doc 9991 (AIS/AIM Training Manual)** and **Doc 9868 (PANSTRG)**, adapted for application in the States of the SAM Region.

The model defines the competencies needed for AIS/AIM staff, considering the transition to a data-driven digital environment, the implementation of QMS/AIM, and the requirements of Annex 15.

A.2 Structure of the Competency Model

The competencies are grouped into the following categories:

1. **AIS/AIM technical competences**
2. **Information and data management competencies**
3. **Quality Competencies (QMS/AIM)**
4. **Operational competencies (NOTAM, AIP, etc.)**
5. **Transversal competences**

A.3 AIM Competence Matrix (SAM Reference Model)

| Code | Competition | Description | Observable Elements (Examples) |
|--------|--------------------------------------|---|--|
| AIM-01 | Aeronautical Data Management | Apply processes for the collection, validation, storage and distribution of aeronautical data | - Verify data consistency- Enforce integrity requirements- Use AIM databases |
| AIM-02 | Production and management of the AIP | Prepare and maintain the Aeronautical Information Publication (AIP and e-AIP) | - Publishes in AIRAC cycle- Ensures consistency between products- Manages amendments and supplements |
| AIM-03 | NOTAM Management | Process, validate, and issue NOTAM compliant with SARPs | - Issues correct and timely NOTAMs- Applies coding criteria- Coordinates with ATS dependencies |

| | | | |
|--------|---|--|--|
| AIM-04 | Digital Data Management (AIM) | Implement digital datasets (AIXM, eTOD, etc.) | - Manages data models- Ensures interoperability- Manages digital datasets |
| AIM-05 | Quality Assurance (QMS/AIM) | Applying Quality Processes at AIM | - Applies documented procedures- Registers non-conformities- Implements corrective actions |
| AIM-06 | Information management in a digital environment | Operate AIM systems (eAIP, databases, automation) | - Uses AIM systems - Ensures traceability - Handles digital information flows |
| AIM-07 | Security and risk management | Identify risks associated with aeronautical information | - Evaluate the impact of errors- Apply mitigations- Report incidents |
| AIM-08 | Communication and coordination | Coordinate with users and entities (ATS, MET, operators) | - Communicates critical information- Coordinates operational changes- Manages queries |
| AIM-09 | Regulatory Compliance | Implement ICAO SARPs and national regulations | - Complies with Annex 15 - PANS-AIM applies - Maintains updated documentation |
| AIM-10 | Digital and technological skills | Use of technological tools and interoperable systems | - Manages automated systems- Understands SWIM (basic level)- Uses ICT tools |
| AIM-11 | Troubleshooting | Analyze and resolve operational situations | - Identifies deviations- Applies effective solutions- Makes timely decisions |
| AIM-12 | Ethics and responsibility | Ensure information integrity and reliability | - Handles critical data responsibly- Complies with procedures- Acts professionally |

A.4 Performance Levels (Reference)

Each competency can be assessed at progressive levels:

- **Level 1 – Basic:** theoretical and supervised knowledge
- **Level 2 – Operational:** autonomous performance in assigned tasks
- **Level 3 – Advanced:** decision-making and resolution of complex situations

- **Level 4 – Expert:** Technical Leadership and Process Improvement
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A.5 Evidence and Evaluation

Competencies should be assessed by:

- Direct observation of performance
- Operational simulations
- Theoretical / practical evaluations
- Product Review (AIP, NOTAM, Datasets)

The evaluation process must:

- Be documented
- be part of the QMS
- Include initial and periodic evaluation

A.6 Considerations for Regional Implementation

States in the SAM Region should:

- Adapt this model to your organizational structure
- define profiles by position (AIS, AIM, NOF, supervisors)
- integrate competency management into QMS/AIM
- align the model with the AIS → AIM and SWIM transition

A.7 Conclusion of the Appendix

This AIM competency model provides a harmonized basis for the SAM Region, facilitating:

- the implementation of the CBTA approach
- improving the quality of AIS/AIM services
- the transition to an AIM digital environment

APPENDIX B

Follow-up to the training of AIS/AIM technical personnel with a competency-based approach and evaluation of personnel competence, in the SAM Region

| <i>N°</i> | <i>States</i> | <i>Is the AIS/AIM technician training program prepared with a competency-based approach?</i> | <i>Does this program meet the requirements of ICAO Annex 15, PANS-AIM, Doc 8126, Doc 9868 and Doc 9991?</i> | <i>Do you have a competency-based AIS/AIM staff assessment procedure?</i> | <i>Does this evaluation procedure take into account the requirements of Annex 15, PANS-AIM, ICAO Doc 8126, Doc 9868 and Doc 9991?</i> |
|-----------|---------------|--|---|---|---|
| 1 | Argentina | | | | |
| 2 | Brazil | | | | |
| 3 | Bolivia | | | | |
| 4 | Chile | | | | |
| 5 | Colombia | | | | |
| 6 | Ecuador | | | | |
| 7 | Guyana | | | | |
| 8 | Panama | | | | |
| 9 | Paraguay | | | | |
| 10 | Peru | | | | |
| 11 | Suriname | | | | |
| 12 | Uruguay | | | | |
| 13 | Venezuela | | | | |
