



**INTERNATIONAL CIVIL AVIATION ORGANIZATION**

**SOUTH AMERICAN OFFICE**

**AERONAUTICAL INFORMATION SERVICES, AERONAUTICAL CHARTS AND  
AIS AUTOMATION COORDINATION AND IMPLEMENTATION MEETING**

**(SAM 03/03-AIS/MAP/AUTO)**

(Lima, Peru, 13 to 17 October 2003)

**Agenda Item 6: Analysis on the status of implementation of Quality Systems at the AIS  
Services in the ICAO SAM Region.**

(Presented by the Secretariat)

**SUMMARY**

This working paper has the aim to present the need for the establishment of quality systems in the aeronautical information services (AIS), in order to safeguard the integrity of information/aeronautical data, as required by ICAO Annex 15.

**References:**

- Report of the CAR/SAM/3 RAN Meeting (Buenos, Argentina, 5 to 15 October 1999).

**1. Introduction**

1.1 When considering the implementation of CNS/ATM and GNSS systems and the need to improve the FMS, note was taken of the need to have aeronautical information/data of high quality and of the required integrity. Therefore, Amendment 29 to Annex 15 incorporated the requirement to implement quality assurance systems into AIS services.

1.2 An important component of the quality system is the publication of aeronautical information/data for use by civil aviation, which must be duly verified and authorised. Therefore, within the quality system environment, it is essential to require technical skills and competence from both the technical personnel and the system itself. In order to support the implementation of the quality system, new guides should be established for AIS/MAP services, in accordance with aeronautical data quality assurance requirements, including the development of training texts and the standardisation of training programmes for AIS/MAP personnel.

## 2 **General concepts on AIS quality systems**

2.1 It is obvious that the role of aeronautical information services (AIS) is one of the pillars for the successful transition to CNS/ATM and GNSS systems and to support an efficient FMS. Consequently, in the centre of this pillar lies the implementation of an AIS quality system, which will permit the provision of aeronautical information and data to the aeronautical community in a timely manner and with high-integrity. ICAO Annex 15 states that the 9000 series of Quality Assurance Standards of the International Standardisation Organisation (ISO) provides the basic framework for the development of a quality assurance programme and that each contracting State should define the details and requirements for a successful quality programme, which, in most cases, would be specific to each State aeronautical organisation. These international standards specify the requirements for a quality assurance system, in which an organisation has to:

- a) prove it is capable of continuously supplying products that meet customer needs and the applicable regulatory requirements; and
- b) deal with the issue of customer satisfaction, through the effective implementation of the system, including continuous improvement processes and avoiding nonconformities.

2.2 Quality guarantees users that the aeronautical information/data distributed meet the data quality requirements (accuracy, resolution and integrity) stipulated in Annex 15. To that end, a properly organised quality system should be established that includes the necessary procedures, processes and resources for the implementation of quality management in all of the functional stages of the aeronautical data process, that is, receiving, generating, collating, editing, formatting, publishing, storing and distributing aeronautical information/data. Furthermore, procedures should be established to make sure that aeronautical information/data can be tracked to their origin at all times, so that data anomalies or errors can be detected and corrected.

2.3 Although ICAO, through Annex 15, has established that ISO 9000 standards are the basic element of reference for the implementation of the quality assurance programme for AIS and MAP services, the RAN CAR/SAM/3 Meeting was aware that CAR/SAM States seem to face considerable difficulties in the implementation of a quality system and of a quality management programme. In this sense, the meeting considered that ICAO, through the development of the appropriate guidance material, training and its technical cooperation programme, could assist States and expedite the implementation of quality systems within AIS and MAP services of most States in the area of concern.

2.4 The quality system will give assurances regarding the foreseen period of application of the aeronautical data and compliance with the distribution dates agreed upon. This means that the global aeronautical community expects the AIS to guarantee the provision of accurate data and information, with the required resolution and with the same integrity throughout their life cycle. It should be noted that the mere introduction of an AIS quality system will not result in automatic quality improvements in products or services, or improvements in work practices and processes. However, it will provide tools and guidance to those who work in the AIS field, so that they may apply a well-defined and systematic approach to their work and business. The implementation of a quality system, among other things, gives the opportunity to:

- Meet regulatory requirements.
- Improve performance, coordination and productivity.
- Focus efforts on corporate objectives and customer expectations.
- Attain and maintain product and service quality in order to meet explicit and implicit customer needs.
- Raise the level of customer awareness and satisfaction.
- Have the certainty that the desired quality is being attained and maintained.
- Show the corporate capacity to existing and potential customers.
- Expand market opportunities.

2.5 An AIS quality management system could be described as the way in which an organisation conducts its business activities in order to provide aeronautical information services, and is related to an organisational structure, and the documentation, processes and resources necessary for the AIS to attain its quality objectives and meet customer requirements. A quality system means that everything should fit together to create a consistent and effective system. This means that an organisation with a quality system will have:

- A quality manual describing the quality system.
- Procedures for all the activities within said system.
- Planning activities to ensure the availability of resources for the effective operation of the quality system.

### 3. Discussion

3.1 The Third CAR/SAM Regional Air Navigation Meeting noted that the role and importance of aeronautical information/data had increased considerably with the implementation of the required navigation performance (RNP) concept and airborne computer navigation systems. In this respect, it was noted that air navigation safety could be compromised if aeronautical information/data were altered or were mistaken. Accordingly, ICAO Annex 15 had incorporated the requirement to establish quality systems in AIS services, in keeping with the 9000 series of standards of the International Standardisation Organisation (ISO), so as to provide a homogeneous basic framework for the implementation of AIS quality assurance programmes.

3.2 Therefore, in order to support CNS/ATM, GNSS and FMS systems, quality aeronautical information will be need to be readily available world-wide. In order to meet these high-level requirements, strict quality principles must be established to make sure that aeronautical data are verified and validated in such a way that end users can be confident that the information provided is correct and accurate. Consequently, AIS services need to evolve specifically in the following spheres:

- a) implementation of the quality system;
- b) implementation of the WGS-84 geodetic datum to support RNAV operations;
- c) provision and exchange of aeronautical information/data through modern means of communication, including data link, that will permit querying ground aeronautical databases from the aircraft; and

- d) real-time provision and exchange of aeronautical information/data by electronic media, through a system that will guarantee the quality and integrity of the information supplied.

3.3 The AIS plays an important role in ensuring the safety and regularity of flight operations, and the task of AIS and MAP specialists is to become growingly knowledgeable of their activity. The introduction of new airborne navigation systems and the corresponding automated databases, as well as the use of digital equipment, have led to the need to extend the scope and depth of AIS/MAP personnel training. The establishment of AIS quality systems requires that the personnel in these services be highly qualified in order to effectively perform their duties within an aeronautical data system. Consequently, AIS personnel should be fully knowledgeable of the aeronautical information service, and have other knowledge related to the automation of these services.

3.4 Taking into account that the human component plays an extremely important role within a quality system, it is essential to develop appropriate training programmes to allow such component to meet the basic operational requirements of the service. Therefore, based on the requirements of an AIS quality system, a formal approach to personnel training should be adopted in terms of training and maintenance of training records. One of the main pre-requisites for this approach is the development of a complete AIS training policy. Likewise, uniform guidelines should be established for said training programmes, stating the experience and competence required of the personnel involved in a quality system process. In addition to the above, it may be noted that the AIS training programmes that exist in the area of concern do not seem to be really and directly related to the current demands imposed on AIS personnel as a result of such technical requirements. Taking into account the role to be played by AIS personnel in an AIS service supply environment under a strict quality system, it would be advisable to develop new guidelines and training programme modules for the effective training of AIS/MAP personnel in the area under study by the meeting.

### 3. **Suggested action**

3.1 Taking into account the scope of the material presented in this working paper, SAM States need to urgently implement quality systems in their AIS services, as a means to ensure that aeronautical information/data available for international users in the area of concern are accurate, reliable, have the required resolution and will have the same integrity throughout their life cycle. Since civil aviation administrations are directly responsible for establishing AIS quality systems, they will have to consider the need to apply appropriate and relevant procedures, such as the establishment of specialised teams to oversee and/or contribute to the effective application of quality assurance processes in AIS services implemented both internally or by private organisations engaged for such purpose.

3.2 Aware of the direct responsibility that SAM States have in the implementation of AIS quality systems, and of the support that ICAO could provide on this issue, the meeting is invited to adopt the actions suggested below:

**CONCLUSION 6/1: IMPLEMENTATION OF AIS QUALITY SYSTEMS (AIS-QS)**

That, in order to guarantee the availability of precise aeronautical information, of the resolution required, and with the same integrity throughout its life cycle, civil aviation administrations of the SAM Region take the appropriate and required measures to implement quality systems in their AIS services (AIS-QS) and maintain effective quality assurance programmes (AIS-QA) in said services.

**CONCLUSION 6/2: ACTION BY THE STATES TO FOSTER THE IMPLEMENTATION OF AIS QUALITY SYSTEMS (AIS-QS) IN THE SAM REGION**

That, considering the importance of having highly-accurate and reliable aeronautical information/data available, the relevant States should take the required action in order to:

Support the establishment of a new regional technical cooperation project and/or extend the scope of any of the projects of this type under way in the Region, in order to have the necessary economic resources to support the effective implementation of AIS service quality systems in the ICAO South American Region.

**CONCLUSION 6/3: ACTION BY ICAO TO FOSTER THE IMPLEMENTATION OF AIS SERVICE QUALITY SYSTEMS (AIS-QS) IN THE SAM REGION**

That, in order to support SAM States in the implementation of quality systems in their AIS services, the ICAO SAM Regional office take the necessary measures to:

- a) foster the training of AIS personnel in the area, regarding the implementation and management of quality systems, through the development and implementation of courses, seminars and workshops related to the specialty; and
- b) encourage the adoption by the ICAO Council of special implementation projects (SIPs) mainly aimed at hiring experts in quality systems (QS), in order to provide direct assistance to States through technical missions and the conduction of seminars/workshops related to this particular issue.

**CONCLUSION 6/4: ACTION BY THE SAM STATES TO ENSURE THE EFFECTIVE PERFORMANCE OF THE HUMAN COMPONENT (CRH) IN AN AIS QUALITY SYSTEMS (AIS-QS) ENVIRONMENT**

That, taking into account the important role played by human resources within an AIS quality system, SAM States should take the necessary measures to:

- a) prepare and develop specific AIS training programmes that will guarantee that the personnel assigned to AIS functions will acquire the necessary skills and competencies to properly perform in an AIS quality system (AIS-QS) environment, regarding the various activities defined for the effective provision of AIS services; and
- b) establish AIS quality assurance programmes (AIS-QA), with a view to ensuring the corresponding periodic verifications that will guarantee, at any time, that AIS personnel qualification is appropriate to perform specific activities within AIS services, and that it continues to meet the required AIS-QS standards; and, furthermore, if applicable, adopt the corresponding corrective action.