



Agenda Item 3: Implementation of the quality management system in AIM units

Implementation of ISO 9001:2015 in aeronautical publication processes

(Presented by Brazil)

SUMMARY

This working paper presents the main aspects of the quality management system (SGQ) implemented at the Aeronautical Mapping Institute (ICA) in relation to aeronautical publication processes and the implementation of ISO 9001, version 2015.

1. Introduction

1.1 The Aeronautical Mapping Institute (ICA) of Brazil has its aeronautical publication processes certified since 2006 under ISO 9001, version 2000. Version 2008 was implemented in 2010, and version 2015 is currently being implemented. ISO 9001 brought about quite significant changes, such as risk management and focus on leadership.

1.2 The purpose of this working paper is to share with the other States the action taken by the Aeronautical Mapping Institute for the implementation of ISO 9001:2015 in its quality management system (QMS).

2. Discussion

2.1.1 In accordance with ISO 9001:2015, the quality management system relies on process-based management. Accordingly, the main requirement is that all processes related to the reception, processing, input in data banks, management and publication of aeronautical information be mapped.

2.1.2 The ICA has a process team that, together with the technical staff, defines the process flow to ensure data quality and integrity. Flows are recorded in the job instructions available to the technical staff at the institutional premises of ICA. The flow chart is developed in Bizagi.

2.1.3 All the mapped processes involved in the generation of aeronautical publications are listed below:

- Reception and analysis of the request for aeronautical information dissemination;
- Planning, coordination and monitoring of aeronautical information services;
- Aeronautical data updating;
- Generation of digital data products;
- Generation of AIP publications;
- Availability of aeronautical products in digital format on the AISWEB;

- Product quality analysis;
- Generation and cancellation of the AIP supplement;
- Issuance of national NOTAMs;
- Issuance of international NOTAMs; and
- Customer service.

2.2 Leadership

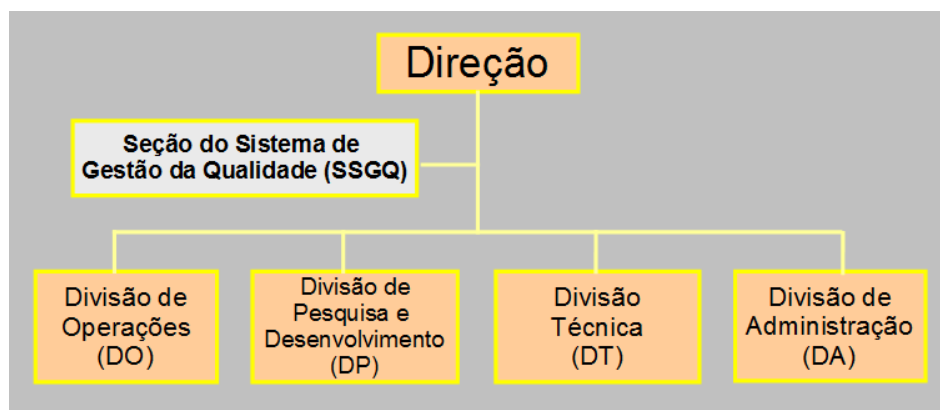
2.2.1 Regarding leadership, ISO 9001:2015 no longer requires the formal designation of a management representative, but the Aeronautical Mapping Institute decided to maintain somebody responsible for the quality management system and even created a section exclusively for conducting quality-related activities.

2.2.2 Another important aspect involves sharing quality responsibilities with process managers and technicians. This distribution of responsibilities can be formalised in the job instructions, and dissemination of information can take place through meetings and training.

2.2.3 Since the quality management system is based on process integration, it is very important for all staff to be involved and to understand the benefits derived from having a process managed by an QMS, such as:

- process-based management;
- setting of goals;
- monitoring of processes and goals;
- failure prevention rather than failure correction;
- avoidance of redo;
- ensuring information traceability;
- visibility of results; and
- enhancing customer satisfaction.

2.2.4 The ICA organisational chart is shown below, where the quality management system section (SSGQ) reports directly to the Director, exerting leadership over the other sectors.



2.3 Risk management

2.3.1 ISO 9001:2015 introduces a risk approach to process management, replacing the preventive action procedure. The standard does not define how to apply risk management, leaving it to each organisation to define the method best suited to its organisational context.

2.3.2 ICA developed a formal risk management procedure to identify those factors that could result in process deviations from expected results and to use preventive controls to minimise the possibility of errors that might affect aeronautical information quality.

2.3.3 In order to identify the causes of risk, consideration should be given to all real and potential situations that could lead to risk, such as tool errors, information gaps in the database, entry of incorrect information, operator failure or typing error.

2.3.4 Consideration is also given to the consequences of risk for the customer/user of the products and services made available by ICA, such as user complaints, use of inconsistent aeronautical information, re-working, aeronautical accidents.

2.3.5 After defining risk, its causes and consequences, risk is classified as follows:

High risk: means that its consequences compromise the quality of the products and services made available by ICA, affecting safety;

Medium risk: means that its consequences compromise the quality of the products and services offered by ICA, but do not affect safety or security; and

Low risk: means that there is a risk, but it does not compromise the quality of the products and services offered by ICA.

2.3.6 Depending on risk classification, the following action shall be taken:

High risk: take action to eliminate the cause of risk;

Medium risk: take action to eliminate the cause of risk or to reduce the consequence of risk;

Low risk: low risk may be accepted without taking any action.

2.4 Quality objective

2.4.1 One of the objectives of the QMS implemented at ICA is to offer quality products, including NOTAMs, AIPs, and AIP supplements, as well as AIS data. In order to assess the attainment of this objective, an indicator is used that has 95% product conformity as its goal.

2.4.2 Two indicators are generated for NOTAMs, one for the national NOTAM and one for the international NOTAM. Each NOTAM issued must be assessed, and will be considered non-conforming if at least one piece of data is non-conforming.

2.4.3 For the AIP, the indicator is calculated by amendment and by page count. A page will be considered non-conforming if there is at least one non-conforming piece of data, and thus all the pages in the amendment and the total number of pages will be considered non-conforming.

2.4.4 For the AIP supplement, each publication is assessed.

2.4.5 ICA has a Product Quality Analysis Section in charge of quality control and measuring the indicator for the AIP and AIP supplement. This section also informs the production sector about the corrections that need to be made to products.

2.4.6 The following tables present the quality indicator data for 2016 and 2017. Recently, in 2017, the NOTAM was included within the scope of the ICA QMS, since NOTAM publication was previously entrusted to other bodies of the Airspace Control Department (*Departamento de Control del Espacio Aéreo - DECEA*). Consequently, we still do not have a history of NOTAM indicators.

INDICADOR DE QUALIDADE EM 2016									
Janeiro	Março	Maio	Julho	Agosto	Setembro		Outubro	Novembro	Dezembro
04/16	08/16	12/16	16/16	18/16	20/16	22/16	24/16	26/16	02/17
AIP	AIP	AIP	AIP	AIP	AIP	AIP	AIP	AIP	AIP
96,2	98	95,25	95,08	96,65	95,83	-	96,71	98,45	92,99
SUP	SUP	SUP	SUP	SUP	SUP		SUP	SUP	SUP
--	--	--	100,00	100,00	100,00		100,00	100,00	100,00

INDICADOR DE QUALIDADE EM 2017							
Janeiro	Fevereiro	Março	Abril	Maio	Junho	Julho	Agosto
04/17	06/17	08/17	10/17	12/17	14/17	16/17	18/17
AIP	AIP	AIP	AIP	AIP	AIP	AIP	AIP
-	-	-	95,03	95,51	-	95,51	94,84
SUP	SUP	SUP	SUP	SUP	SUP	SUP	SUP
100,00	100,00	100,00	100,00	100,00	100,00	100,00	100,00

2.4.7 It may be noted that 100% conformity was obtained in all AIP supplement measurements. For the AIP, the 95% conformity goal was attained, except in December 2016 and August 2017. For such cases, an analysis is conducted to identify the root cause of errors and take action to prevent their recurrence in the future.

2.5 Results of the Satisfaction Survey

2.5.1 ISO 9001 cites customer focus as one of the quality management principles. Furthermore, the organisation must monitor customer perception and assess whether expectations have been met.

2.5.2 Brazil assesses the degree of satisfaction of aeronautical publication users through a satisfaction survey that is conducted every 2 years, at which time the following requirements are assessed: information reliability, information availability, information accuracy, and security.

2.5.3 The degree of customer satisfaction is assessed using a 1-10 scale, as per the following classification:

1 - 2	Very dissatisfied
3 - 4	Dissatisfied
5 - 6	Reasonable
7 - 8	Satisfied
9 - 10	Very satisfied

2.5.4 When the customer grades a survey item between 1 and 6, an option is available to make comments on the reason for the dissatisfaction, so that ICA may assess whether it is necessary to make improvements in the aeronautical information service.

2.5.5 Below are the results of the satisfaction survey conducted in 2015, in which approximately 1,500 users responded voluntarily to the survey.

Requirement	Validation
Reliability of information	9.7
Availability of information	9.4
Accuracy of information	9.6
Security	9.7

2.5.6 Based on the results of the satisfaction survey, it may be noted that users are very satisfied with the aeronautical publications produced in Brazil, since the average grade was above 9.

3. **Conclusion**

3.1 The results of the satisfaction survey conducted in 2015 show that the AIP produced by Brazil meets the needs and expectations of users, and that such success may be attributed to the way in which the aeronautical publication process is conducted by ICA through the quality management system.

3.2 By monitoring the quality indicator, any process deviation may be corrected and preventive action taken to maintain data integrity and the reliability of aeronautical publications.

3.3 **Suggested action**

4.1 States that already have implemented a quality management system could share their mapped processes, indicators, quality documents and improvements made.