



SAM/AIM/4

**INTERNATIONAL CIVIL AVIATION ORGANIZATION
South American Regional Office**

**FOURTH MULTILATERAL MEETING OF THE SAM
REGION FOR THE TRANSITION OF AIS TO AIM
(SAM/AIM/4)**

PRELIMINARY REPORT

Lima, Peru, 15 to 19 October 2012

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HISTORY OF THE MEETING

ii-1 PLACE AND DURATION OF THE MEETING

The Fourth Multilateral Meeting of the SAM Region for the Transition of AIS to AIM (SAM/AIM/4) was held at the ICAO SAM Regional Office, Lima, Peru, from 15 to 19 October 2012.

ii-2 OPENING CEREMONY AND OTHER MATTERS

Mr Oscar Quesada Carboni, Regional Deputy Director of the ICAO South American Office, greeted the participants, and highlighted the importance of the objectives of the meeting, as regards consolidation of Phase 1 of the Roadmap for the Transition from AIS to AIM, and the continuation and follow-up of the tasks of AIM Projects for the provision of Electronic Terrain and Obstacle Data (e-TOD), aeronautical information/data management and the preparation of quality specifications applicable to the digital AIM environment.

The ICAO Regional Deputy Director also highlighted the importance of the assistance of experts and the important contribution of the same, recalling that the working methodology approved by GREPECAS is based on the States' support to Projects to carry out tasks for the transition from AIS to AIM.

The meeting had the opportunity to count with presentations of Eng. David Díaz, quality management and action plan adviser, Lic Juan González on Electronic Terrain and Obstacle Data (e-TOD), Amd. 37 of ICAO Annex 15 and Documentation for UML Systems, Mr Marcilio Pinto de Vasconcelos on Pre-flight information, Mr. Mauricio Díaz on Quality Implementation Plan in Colombia, and Eng. Antonio Nicoletti, from IDS, on Aeronautical Information Systems and Aeronautical Data Management.

ii-3 SCHEDULE, ORGANIZATION, WORKING METHODS, OFFICERS AND SECRETARIAT

The Meeting agreed to hold its sessions from 0830 to 1530 hours, with appropriate breaks. The work was done with the Meeting as a Single Committee, contemplating the creation of Ad-Hoc Groups to deal with some items of the agenda, if deemed appropriate.

Ms Graciela Monzillo, from the Delegation of Uruguay, acted as President of the Meeting. Mr Mauricio Díaz delegate from Colombia was elected as Vice-Chairman of the Meeting.

Mr Roberto Arca Jaurena, RO/ATM/SAR/AIM from the Lima Regional Office, acted as Secretary, with the support of GREPECAS Project Coordinators, Lic Juan González, from Uruguay and Mr Oscar Dioses, from Peru.

ii-4 WORKING LANGUAGES

The working languages of the Meeting were Spanish and English, and its relevant documentation was presented in both languages. There was simultaneous interpretation during the sessions.

ii-5 AGENDA

The following agenda was adopted:

Agenda

Item 1: Implementation of provision of Electronic Terrain and Obstacle Data (e-TOD).

Agenda

Item 2: Implementation of systems for aeronautical information data exchange and aeronautical data.

Agenda

Item 3: implementation of the Quality Management System in AIM units

Agenda

Item 4: NOTAM Contingency Plan

4.1 Revision of the status of application of letters of agreement for the use of a NOTAM Contingency Plan

Agenda

Item 5: Other business

ii-6 ATTENDANCE

The meeting was attended by 29 participants from 10 States of the SAM Region, Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador, Guyana, Peru, Suriname, and Uruguay, and IDS, as well as INFRAERO, and the Argentinean Professional Associations APADA, APAIMA and APANCA.

The list of participants is shown in page iii-1.

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Agenda Item 1: Implementation of provision of Electronic Terrain and Obstacle Data (e-TOD).

1.1 The Meeting noted that, with the support of Regional Project RLA/06/901, Mr Juan González was hired as project coordinator to develop an action plan for the implementation of functional improvements to the provision of aeronautical information services, pursuant to output 1.7 of Regional Project RLA/06/901 related to GPI 18 of the Global Air Navigation Plan.

1.2 The Meeting was informed that, in order to achieve the objective of the mission, account was taken of the status of implementation of the WGS-84 and GIS in the States of the Region, with a view to developing the guidance document based on their needs.

1.3 The work done resulted in a report, a main document that would serve as a guide for defining the objectives related to the development of the e-TOD project, and an attachment containing all the technical aspects involved in e-TOD implementation in the States.

1.4 The resulting documentation is related to ICAO strategic objectives concerning safety, and environmental protection, and to the performance objectives of the regional air navigation implementation plan associated to PBN implementation, and was analysed and modified by the Meeting.

1.5 The “Guidance document on the objectives of the e-TOD project” makes reference to the background of e-TOD implementation in the States of the Region, describes in detail the tasks to be accomplished for that implementation, and addresses the economic aspects (elements to be considered for cost calculation) and target dates for project completion. It finally provides guidance for conducting the risk analysis of the project. This document appears in **Appendix A** to this part of the report.

1.6 The document attached to the Guidance Document, entitled “Technical and e-TOD project specifications” contains plenty information especially addressing the technical aspects related to the implementation of the e-TOD project. It contains abundant conceptual information on digital elevation models, obstacles, metadata, quality, etc. Subsequently, it relates the need to manage terrain and obstacle information to the specifications provided in ISO 19131, which is taken as a reference for that area. These technical specifications are shown in **Appendix B** to this part of the report.

1.7 The result is a purely technical document that may be used by project designers and managers, as well as by those related in one way or another to data collection, storage, and exchange.

1.8 The meeting analysed the Description of GREPECAS Project G1, adjusted it and consolidated tasks to optimise the same, as shown in **Appendix C** to this part of the report. In parallel, the GANTT template of Project G1 was updated, as shown in **Appendix D** to this part of the report.

Service Level Agreements (SLA)

1.9 As part of the e-TOD Project tasks, the Meeting took note of the Template presented by the Project Coordinator for Service level agreements will permit the reception of aeronautical data and information based on predefined criteria that ensure their inclusion in aeronautical information management systems for the delivery of information based on quality criteria to attain the ATM systems foreseen in the global air traffic management operational concept.

1.10 The objective pursued with these SLA agreements is for the AIS to have a tool for receiving aeronautical data and information with the required accuracy, resolution, and integrity, in accordance with ICAO Annexes 4, 15, 11, and 14 (Vol. I and II).

1.11 Although several States have AIS offices with quality certification, the problem of the quality of the aeronautical data and information regularly received by providers thereof persists. Likewise, the need for new information, in this case terrain and obstacle information raises again the issue of quality criteria.

1.12 Keeping this in mind, an attempt was made to raise awareness amongst all providing offices as to the need to have a quality certification that would ensure that they applied the quality criteria required in manuals and Annexes to the products they delivered.

1.13 In general terms, providers say that they find it difficult to implement quality management systems at their offices and thus, compliance with aeronautical data and information quality requirements cannot be guaranteed.

1.14 Accordingly, it has been suggested that it is necessary to sign service level agreements with those providers. As a first step, it is advisable to define an agreement on the model to be signed between the AIS and the aeronautical data and information providing office, containing mainly the rights and obligations of each office involved. **Appendix E** to this part of the report shows a tentative model of such agreement.

1.15 The meeting deemed also pertinent to accept a Guidance material that is related to the detailed description of all the data involved in these agreements, divided by office involved. **Appendix F** to this part of the report shows a model listing.

1.16 After completing the two documents, all the corresponding aeronautical information and data will be entered to an office specified in the model agreement to be signed. Consequently, the resulting SLA will indicate the rights, obligations, the information involved (its accuracy, resolution, and integrity), responsible parties, and anything deemed relevant for that agreement, which shall be signed by the responsible parties of each office.

1.17 Finally, when provider offices do not have a certified quality management system for their data, a set of audits shall be arranged with the internal audit office of the organisation so that the corresponding reviews are carried out to ensure that the data sent by the providers meet that states in the previously signed SLA until such time that the corresponding quality certificate is obtained.

1.18 The products developed to assist SAM Region States in the implementation for the provision of Electronic Terrain and Obstacle Data (e-TOD) that were analysed and approved during the Meeting in the environment of GREPECAS Project G1 are as follows:

- a) Guidance Document on e-TOD Project Objectives
- b) Technical and e-TOD Project Specifications
- c) Model Service Level Agreement (SLA)
- d) Model Data Listing for SLAs

APPENDIX A

Guidance Document eTOD Project Objectives

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Guidance Document eTOD Project Objectives

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<i>Position</i>			
<i>Signature</i>			
<i>Fecha</i>			

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Scope

This Document must serve as a guide for defining the objectives related to the execution of the eTOD project.

This Document applies to the Aeronautical Information Service (AIS) and State offices providing terrain and obstacle data.

The Document describes in detail the steps required to ensure a satisfactory implementation and to have electronic terrain and obstacle data available, which in turn may be used for the production of charts and by users that so require it.

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Reference Documentation

- ICAO Annex 4 – Aeronautical Charts
- ICAO Annex 15 - Aeronautical Information Services
- ICAO Doc 8126 OACI – Aeronautical Information Services Manual
- ICAO Doc 8697 OACI – Aeronautical Chart Manual
- ICAO Doc 8400 OACI – ICAO Abbreviations and Codes
- ICAO Doc 9881 - Guidelines for Electronic Terrain, Obstacle and Aerodrome Mapping Information
- ICAO Doc 9859 – Safety Management Manual (SMM)

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Terms and Definitions

The definitions and abbreviations contained in ICAO Doc 8400 – ICAO Abbreviations and Codes are adopted.

Other Definitions

AIS-AIM Plan established for the set of tasks that will permit the transition from the current AIS to the new AIM concept

Transition
Roadmap:

Amendment: Correction of existing information

Abbreviations

AIM: Aeronautical information management
AIP: Aeronautical information publication
AIS: Aeronautical information service
CAR: Caribbean Region
eTOD: Electronic terrain and obstacle data
GIS: Geographic information system
GPWS: Ground proximity warning systems
MSAW: Minimum safe altitude warning
ICAO: International Civil Aviation Organization
PBN: Performance-Based Navigation
SAM: South American Region
SLA: Service Level Agreement

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1. Background

This AIS-AIM Transition Roadmap describes in detail the provision of terrain and obstacle data by States, as a priority task for the first phase.

Amendment 33 to ICAO Annex 15 introduces the concept of electronic terrain and obstacle data (eTOD) sets to be made available to users.

Given the importance of this proposal, the SAM/AIM/2 meeting issued draft Conclusion 13/3, Provision of Electronic Terrain and Obstacle Data (eTOD), as follows:

That CAR/SAM States and Territories take urgent action to:

- a) Represent the geodetic data of WGS-84 aeronautical charts in electronic format in support of performance-based navigation (PBN), and*
- b) Have electronic terrain and obstacle data of high quality and integrity available, as required in ICAO Annex 15.*

Accordingly, the aforementioned meeting worked on the definition of a work project, which was finally called G1 “Developments for the provision of electronic terrain and obstacle data (eTOD) (SAM)”.

Task 10 of said project is “*Establish and prioritise objectives of eTOD implementation project (tasks, costs, implementation, target dates, project risks)*”, based on which the deliverable “Draft the Guidance Document containing the objectives of the ETOD project” is defined.

It should be noted that it is very important to define the area of influence for the collection of both terrain and obstacle data, as defined in Amendment 36 to Annex 15. Accordingly, Appendix 1 contains the latest definitions of the “terrain and obstacle data collection area”.

The quality of the aforementioned terrain and obstacle information will have a direct impact on:

- ground proximity warning systems (GPWS),
- the minimum safe altitude warning (MSAW),
- the definition of contingency procedures to be used in case of an emergency during a missed approach or rejected take-off,
- the analysis of aircraft operational limitations,
- the design of instrument approach procedures,
- the determination of en-route cruise descent procedures and location of en-route emergency landing,
- advanced surface movement guidance and control systems (A-SMGCS);
- the production of aeronautical charts and on board databases,
- the performance-based navigation (PBN) concept,
- search and rescue activities (especially in mountainous areas)

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Since eTOD requirements have raised the level of concern by States from both the technical and institutional perspective, it has been deemed necessary to present this guidance document in support of the tasks that need to be implemented.

To that end, this Guidance Document contains a series of tasks, costs, target dates, and risks for the implementation of the eTOD project as a whole.

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2. Tasks

The tasks to be carried out are detailed below.

2.1. Understand ICAO requirements and State policies in force

ICAO has designated eight (8) geographic areas for the collection of electronic terrain and obstacle data (eTOD) that States must make available to users of airspaces defined in their territory. A proper understanding of such requirements will be essential for subsequent tasks.

To that end, Appendix 1 to this document contains a description of such areas. Likewise, ICAO Annex 15 “Aeronautical Information Services”, in Chapter 10 and Appendix 8, describes such areas and suggests dates when terrain and obstacle information shall start being provided.

In addition to ensuring a proper understanding of such requirements, existing State policies must also be identified. These may include domestic regulatory restrictions, State policies that are in conflict with Annex 15, data collection problems, data processing, and participation of third parties in such task. It is recommended that all States review their current policies concerning ICAO requirements and identify the adjustments or new procedures that may be required.

States that do not meet the relevant dates must file a “difference” before ICAO and set a date for compliance and an action plan.

States must recognise that compliance requirements may imply collaboration by organisations other than the aeronautical authority. That would be the case if the responsibility for data collection is shared or delegated to more than one organisation, which will result in agreements and eventually some type of training to make sure that information received is the right one.

2.2. Identification of data types

The types of data to be collected are related to “terrain” and “obstacles”.

“Terrain” is defined as the surface of the Earth containing naturally occurring features such as mountains, hills, ridges, valleys, bodies of water, permanent ice and snow, and excluding obstacles (Annex 15, Chapter 2 “Definitions”).

“Obstacles”, in turn, are defined as all fixed (whether temporary or permanent) and mobile objects, or part thereof, that are located on an area intended for the surface movement of aircraft or that extend above a defined surface intended to protect aircraft in flight. (Annex 15, Chapter 2 “Definitions”).

The State must identify the sources of such data. In general, terrain data is available at

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State geographical institutes. There may also be other providers of such data, reason why there may be a need to enter into some type of agreement to that end. In this sense, the signing of a service level agreement (SLA) with such providers is recommended in order to formalise the initial and subsequent acquisition of data.

As to obstacles, data may be available from:

- Mobile telephone companies (antennae, transmission frequencies)
- Aviation service provider (NAVAIDS / aerodrome data)
- Airports (aerodrome data)
- Public service authorities (electric lines, dams, cable railways, chimneys, wind mills, etc.)
- Military
- Local authorities (buildings)
- Existing studies on obstacles

Some States have offices that collect all this information; consequently, such offices shall be identified and queried accordingly.

These sources will provide all the basic data for building an eTOD database, which will be modified as new data emerges, or when the existing data is modified or deleted.

2.3. Data collection

Once originating data sources, both internal and external, have been identified, and taking into account that such sources are capable of sharing such data, the State may import the available electronic data.

Similarly, the imported data may be incomplete, given the fact that there are much more data still uncollected. In that case, and if no terrain and obstacle data were available, an analysis shall be made of how to obtain them.

The State must create mechanisms for collecting new or additional data for the database in such a way as to ensure that the information is accurate and up-to-date. It must take into account the amount of data that needs to be collected, and do it efficiently.

These data collection methodologies will depend on the data already available, the extent of the territory, and economic resources available. Therefore, it is recommended that a study be made on the possibility of working together with other areas of the States so that they can all benefit from the collection of this type of information.

Another point to consider is the need to collect data on territory of another State. In that case, it is recommended that an agreement be signed whereby the parties define the corresponding data collection permits and data sharing criteria. In this regard, Annex 15 “Aeronautical Information Services”, Ch. 3, 3.1.5, 3.1.6, and 3.3.4 should be considered.

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2.4. Ensure data validity, quality and accuracy

Before gathering data in a database, it is essential to make sure that such data meets quality, validity, and accuracy requirements. Appendix 2 to this document describes the level of detail required from the data collected (this Appendix shall be updated after the approval of AMDT NR 37 to ICAO Annex 15).

In order to meet quality requirements, data must be accompanied by the corresponding metadata, that is, a registry of data sources or origin and all relevant aspects concerning how it was obtained, training of those who obtained them, conditions, etc., with the corresponding records.

2.5. Creation of an eTOD database

Before entering data on an eTOD database, the State must consider the following:

- The ideal database shall provide real-time support to operations, imposing no restrictions on size, and run on an open systems environment in order to enable future analysis.
- The database must be structured in an industry standard format with sufficient safety mechanisms against unauthorised access.
- The database must permit immediate inclusion of new data sources and obstacles.
- The database shall permit the export and publication of data, specifically in AIXM standards.

Furthermore, the authority may analyse how to structure the database in such a way as to provide operational benefits not only to airspace users, but to the authority itself, since this could generate cost savings. The eTOD database designed to meet ICAO terrain and obstacle data requirements could also offer:

- Inclusion and management of data on aerodromes, nav aids, obstacles, Annex 14, and data on other surfaces;
- Easier assessment of obstacles through advanced 2D and 3D displays;
- Inclusion of GIS tools to facilitate the analysis;
- Automation mechanisms to increase efficiency and improve the assessment; and
- Historical reference data for assessment purposes.

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2.6. Publication of information

ICAO Annex 15, Chapter 10.6 points to the need to public electronic terrain and obstacle data. Once the State has created an eTOD database, it will have to consider what data will be published and what mechanisms will be used for that purpose.

Likewise, the State shall also consider if it will charge the users for the provision of data or it will make them available free of charge.

A possible platform for publication could be the web, since it offers a simple means of publication. Likewise, there is the possibility of doing the publication directly to the user, that is, through some magnetic or digital medium.

An additional benefit would be the ability to export the aforementioned data in industry standard formats, such as AIXM, XML, for their use in other applications.

2.7. Continuous review

Within the context of the quality concept, the State shall also consider conducting a continuous review of its information so as to keep the database up-to-date at all times. Equally important is to take into account the responsibility and impact of the data provided. Accordingly, their review will be crucial.

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3. Costs

The generation of an eTOD database will generate expenses that must be taken into account by the State.

3.1. Elements to be taken into account

For cost calculations, a set of elements must be taken into account and specifically analysed by each State based on a series of parameters:

- the extent of its territory,
- the existence or absence of previous terrain and obstacle data,
- the methodology to be used for capturing information,
- others that may have an impact on the equation.

In addition to these parameters, consideration shall also be given to the way in which new information will be collected in the future. This aspect is extremely important de define whether the information will be collected directly by the State or through third parties.

In case of outsourcing, the cost of training and the possible signing of an SLA clearly specifying the required data shall also be taken into account.

As an example, the cost could include:

- work planning,
- data collection,
- entry of data in the database,
- final verification of data

Likewise, consideration shall be given to paragraph 2.6 of this document referred to the way in which both the initial investment as well as any future investment on future data collections will be recovered.

Accordingly, States must analyse how they will recover their investment. Some mechanisms are listed below by way of example:

- payment for using the information whenever the database is queried,
- an initial payment for the right to use the information and a fixed annual charge for such use,
- other options that the State may consider appropriate

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4. Implementation timetables

Taking into account the eTOD Project Plan defined at the SAM/AIM/2 meeting, the deadline for the completion of this document has been set for 31 August 2012.

In turn, the technical specifications for the execution of the eTOD project will be based on this document.

But States should make reference to the aforementioned eTOD project plan in order to properly plan the implementation timetable for each of the tasks contained therein. The analysis of the possibility of complying with the timetable will be extremely important in order to put the database at the disposal of users by 12 November 2015.

Likewise, the analysis of the eTOD project plan will be very useful if, for any reason, the State is unable to meet the date or any of the tasks contained therein.

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5. Project risks

The risk analysis must be conducted by each State in the event it is unable to develop the eTOD database or any of the tasks contained in the aforementioned eTOD project plan, in accordance with the forms shown below.

DEFICIENCY (HAZARD) REPORT AND RISK ASSESSMENT	
1. Description of the identified deficiency	
2. State/Territory/ Organisation:	
3. Report N°:	
4. Date of identification:	
5. Deficiency reported by:	
6. Air navigation area – Facility/service involved:	
7. Specific requirement:	
8. Potential consequences of the deficiency:	
9. Currently implemented mitigation (if known):	
10. Remarks:	
11. Report prepared by:	

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DEFICIENCY (HAZARD) REPORT AND RISK ASSESSMENT (CONT.)						
		RISK SEVERITY				
		Catastrophic A	Hazardous B	Major C	Minor D	Insignificant E
RISK PROBABILITY	Frequent 5	5A	5B	5C	5D	5E
	Occasional 4	4A	4B	4C	4D	4E
	Remote 3	3A	3B	3C	3D	3E
	Improbable 2	2A	2B	2C	2D	2E
	Extremely Improbable 1	1A	1B	1C	1D	1E
Risk index	Tolerance	Required action				
5A, 5B, 4A	Extreme risk	IMMEDIATE STOP THE OPERATION OR PROCESS. Unacceptable under the current circumstances. No operation is to be permitted until sufficient control measures are implemented to reduce the risk to an acceptable level. Top management approval is required.				
3A, 4B, 5C	High risk	CAUTION. Make sure the risk assessment has been satisfactorily completed and the corresponding preventive controls have been established. Management authorisation of the risk assessment is required before starting the operation or process.				
1A, 2A, 2B, 3B, 3C, 4C, 4D, 5D, 5F	Moderate risk	Implement or review risk mitigation as necessary. The approval by the risk assessment department is required.				
1B, 1C, 2C, 2D, 3D, 3E, 4E	Low risk	Risk mitigation or revision is optional.				
1D, 1E, 2E	Insignificant risk	Acceptable as it is. No risk mitigation is required.				
PROBABILITY	Is defined as the probability that an event or unsafe condition may occur					
Frequent:	Likely to occur many times (has occurred frequently)					
Occasional:	Likely to occur some times (has occurred infrequently)					
Remote:	Unlikely, but may occur (rarely occurs)					
Improbable:	Very unlikely (no occurrence is known)					
Extremely improbable:	Almost unconceivable that the event may occur.					

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SEVERITY:	Is defined as the possible consequence of an event or unsafe condition, taking as a reference the worst case scenario
Catastrophic:	<ul style="list-style-type: none"> • Equipment destruction • Multiple casualties
Hazardous:	<ul style="list-style-type: none"> • Major reduction of safety margins, physical damage or workload such that operators cannot perform their tasks in a precise and complete manner • Severe injury • Major damage to equipment
Major:	<ul style="list-style-type: none"> • Significant reduction of safety margins, reduced ability of the operator to respond to adverse operational conditions resulting from increased workload or conditions hindering its efficiency • Serious incident • Personal injury
Minor:	<ul style="list-style-type: none"> • Interference • Operational limitations • Use of emergency procedures • Minor incidents
Insignificant:	<ul style="list-style-type: none"> • Minor consequences

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**EXPLANATION OF THE FORM
“DEFICIENCY (HAZARD) REPORT AND RISK ASSESSMENT”**

1. **Description of the identified deficiency:** Specifies the deficiency identified and validated by the corresponding Regional Office.
2. **State/Territory/Organisation:** Identifies the name of the State/Territory/Organisation involved.
3. **Report N°:** Unique code that identifies the deficiency by State.
4. **Date of identification:** Indicates the date of notification of the identified deficiency, if applicable.
5. **Deficiency reported by:** Indicates the source that identified and reported the deficiency.
6. **Air navigation area facility/service involved:** Specifies the air navigation area directly involved in the identified deficiency. More than one area may be listed.
7. **Specific requirement:** ICAO Annex standard/recommended practice or reference to the requirement of the air Navigation Plan associated to the deficiency. If known, the error or specific failure that affects the operation is included.
8. **Potential consequences of the deficiency:** Initial assessment of the consequences of the identified deficiency, either by the source that reports the deficiency or by the Regional Office that sends the notification.
9. **Currently implemented mitigation (if known):** If known, currently implemented defences are included.
10. **Remarks:** Remarks or comments on the identified deficiency may be included.
11. **Report prepared by (ICAO Officer):** Indicates the Regional Office and the ICAO Officer that send the notification.

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REPORT OF RECOMMENDATIONS TO MITIGATE THE RISK				
1. Description of the identified deficiency:				
2. State/Territory/Organisation:				
3. Report N°:				
4. Date of identification:				
5. Level of risk before the adoption of mitigation measures				
6. Solution # 1				
7. Description of the solution:				
8. Estimated cost and time for implementation of this solution: \$ _____	9. Revised risk assessment if only this solution is to be implemented	10. Probability:		
		11. Severity:		
		12. Level of risk:		
13. Potential implementation problems:				
14. Solution # 2				
15. Descripción de la Solución:				
16. Estimated cost and time for implementation of this solution \$ _____	17. Revised risk assessment if <u>only</u> this solution must be	18. Probability:		
		19. Severity:		

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REPORT OF RECOMMENDATIONS TO MITIGATE THE RISK						
		implemented:	20. Level of risk			
21. Potential implementation problems:						
22. Solution # 3						
23. Description of the solution:						
24. Estimated cost and time for implementation of this solution \$ _____		25. Revised risk assessment if only this solution must be implemented:	26. Probability:			
			27. Severity:			
			28. Level of risk:			
29. Potential implementation problems:						
30. Recommended solution(s):						
31. Estimated cost and time for implementation of the recommended solution(s):		\$				
32. Revised risk assessment if implemented as recommended:						
		RISK SEVERITY				
		Catastrophic A	Hazardous B	Major C	Minor D	Insignificant E
RISK PROBABILITY	Frequent 5	5A	5B	5C	5D	5E
	Occasional 4	4A	4B	4C	4D	4E
	Remote 3	3A	3B	3C	3D	3E
	Improbable 2	2A	2B	2C	2D	2E

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REPORT OF RECOMMENDATIONS TO MITIGATE THE RISK						
	Extremely Improbable 1	1A	1B	1C	1D	1E
33. Report prepared by (State/Territory/ Organisation):						

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EXPLANATION OF THE FORM “REPORT OF RECOMMENDATIONS TO MITIGATE RISK DE”

The State involved shall complete the form in accordance with the following explanations:

1. **Description of the identified deficiency:** Complete with the same text as the deficiency report validated by the corresponding Regional Office.
2. **State/Territory/Organisation:** Complete with the name of the State/Territory/Organisation.
3. **Report N°:** Complete with the same code as the deficiency identified for each State.
4. **Date of identification:** Insert the date of completion of this form.
5. **Level of risk before the adoption of mitigation measures:** Complete with the level of risk calculated with the existing mitigation measures.
6. **Solution # 1:** Identifies the number of the solution.
7. **Description of the solution:** Complete with a brief description of the first solution to be implemented.
8. **Estimated cost and time for implementation of this solution:** Insert the estimated cost for the implementation of the first solution.
9. **Revised risk assessment if only this solution is to be implemented:** Associated to boxes 10, 11, and 12.
10. **Probability:** Insert the probability index, in code and in simple text, that would be achieved with the implementation of this mitigation measure.
11. **Severity:** Complete with the severity index, in code and in simple text, that would be achieved with the implementation of this mitigation measure.
12. **Level of risk:** Complete with the tolerability index resulting from the implementation of this mitigation measure, in code and in simple text.
13. **Potential implementation problems:** Insert a brief description of potential implementation problems that might prevent the application of the identified solution.
14. **Solution # 2:** Identifies the number of the solution or scenario.
15. **Description of the solution:** Insert a brief description of the second solution to be implemented.
16. **Estimated cost and time for the implementation of this solution:** Insert the estimated cost for the implementation of the second solution.

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17. **Revised risk assessment if only this solution is to be implemented:** Associated to boxes 18, 19, and 20.
18. **Probability:** Insert the probability index, in code and in simple text, to be attained with the implementation of this mitigation measure.
19. **Severity:** Complete with the severity index, in code and in simple text, that would be attained with the implementation of this mitigation measure.
20. **Level of risk:** Insert the tolerability index resulting from the implementation of this mitigation measure, in code and in simple text.
21. **Potential implementation problems:** Insert a brief description of the potential implementation problems that might prevent the execution of the identified solution
22. **Solution # 3:** Identifies the number of solution or scenario.
23. **Description of the solution:** Insert a brief description of the third solution to be implemented.
24. **Estimated cost and time for implementation of this solution:** Insert the estimated cost of the implementation of the third solution.
25. **Revised risk assessment if only this solution is to be implemented:** Associated to boxes 26, 27, and 28.
26. **Probability:** Insert the probability index, in code and in simple text, to be achieved with the implementation of this mitigation measure.
27. **Severity:** Insert the severity index, in code and in simple text, to be achieved with the implementation of this mitigation measure.
28. **Level of risk:** Insert the tolerability index resulting from the implementation of this mitigation measure, in code and in simple text.
29. **Potential implementation problems:** Insert a brief description of potential implementation problems that might prevent the application of the identified solution.
30. **Recommended solution(s):** Insert the solution(s) to be implemented to reduce the tolerability index to an acceptable level.
31. **Estimated cost and time for implementation of the recommended solution(s):** Insert with the estimated cost related to the solutions to be implemented.
32. **Revised risk assessment if implemented as recommended:** Complete with the risk assessment once the aforementioned solution(s) has(have) been implemented.
33. **Report prepared by (State/Territory/Organisation):** Insert the name of the aeronautical authority or person/area generating the report.

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Appendix 1 – Data collection areas

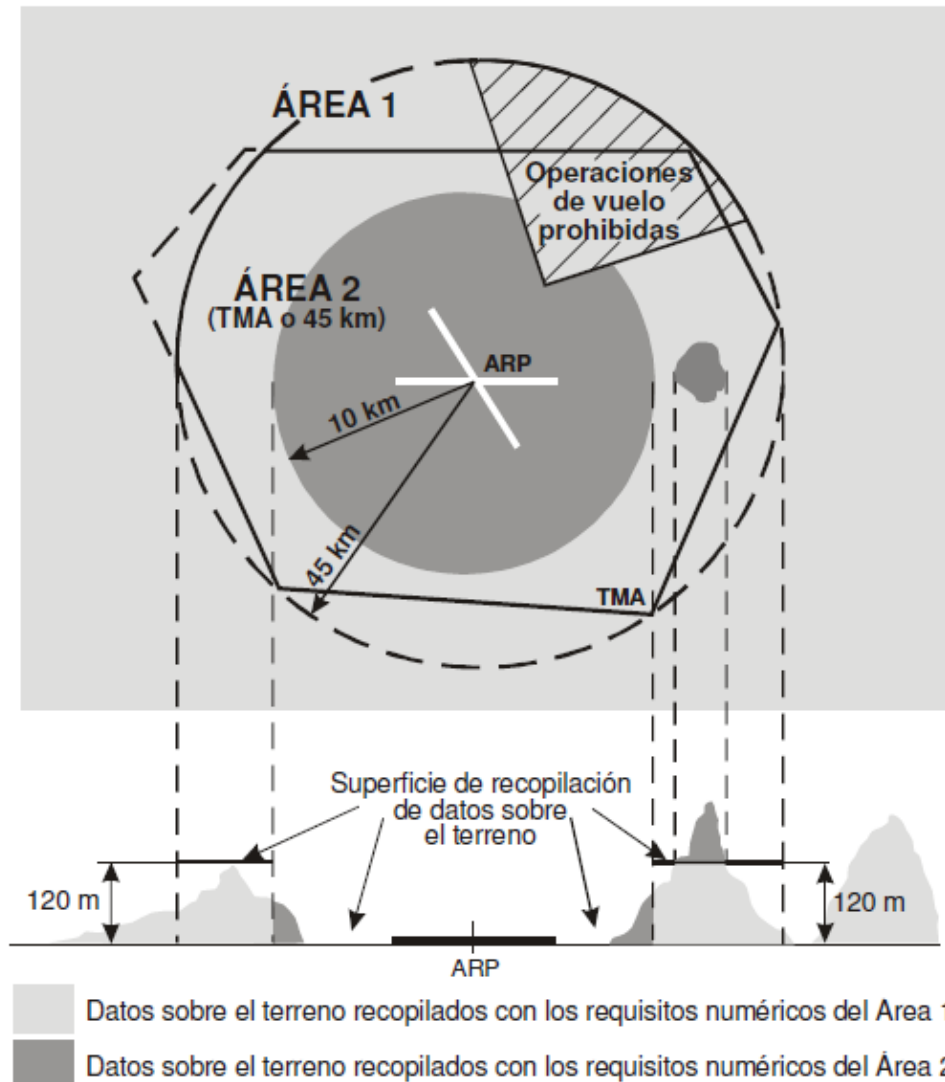


Figure A1-1. Terrain data collection surfaces — Area 1 and Area 2

1. In the area contained within a radius of 10 km from the ARP, terrain data will be adjusted to the numerical requirements of Area 2.
2. In the area between 10 km and TMA boundaries or 45 km from the radius (whichever is smaller), terrain data that penetrates 120 m of the horizontal plane above the lowest runway elevation will be adjusted to the numerical requirements of Area 2.

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3. In the area between 10 km and TMA boundaries or 45 km from the radius (whichever is smaller), terrain data that do not penetrate 120 m of the horizontal plane above the lowest runway elevation will be adjusted to the numerical requirements of Area 1.
4. In those sectors of Area 2 where flight operations are prohibited because of too high terrain or other local restrictions or regulations, terrain data will be adjusted to the numerical requirements of Area 1.

Note.- The numerical requirements of terrain data for Areas 1 and 2 are shown in Table A2-6.

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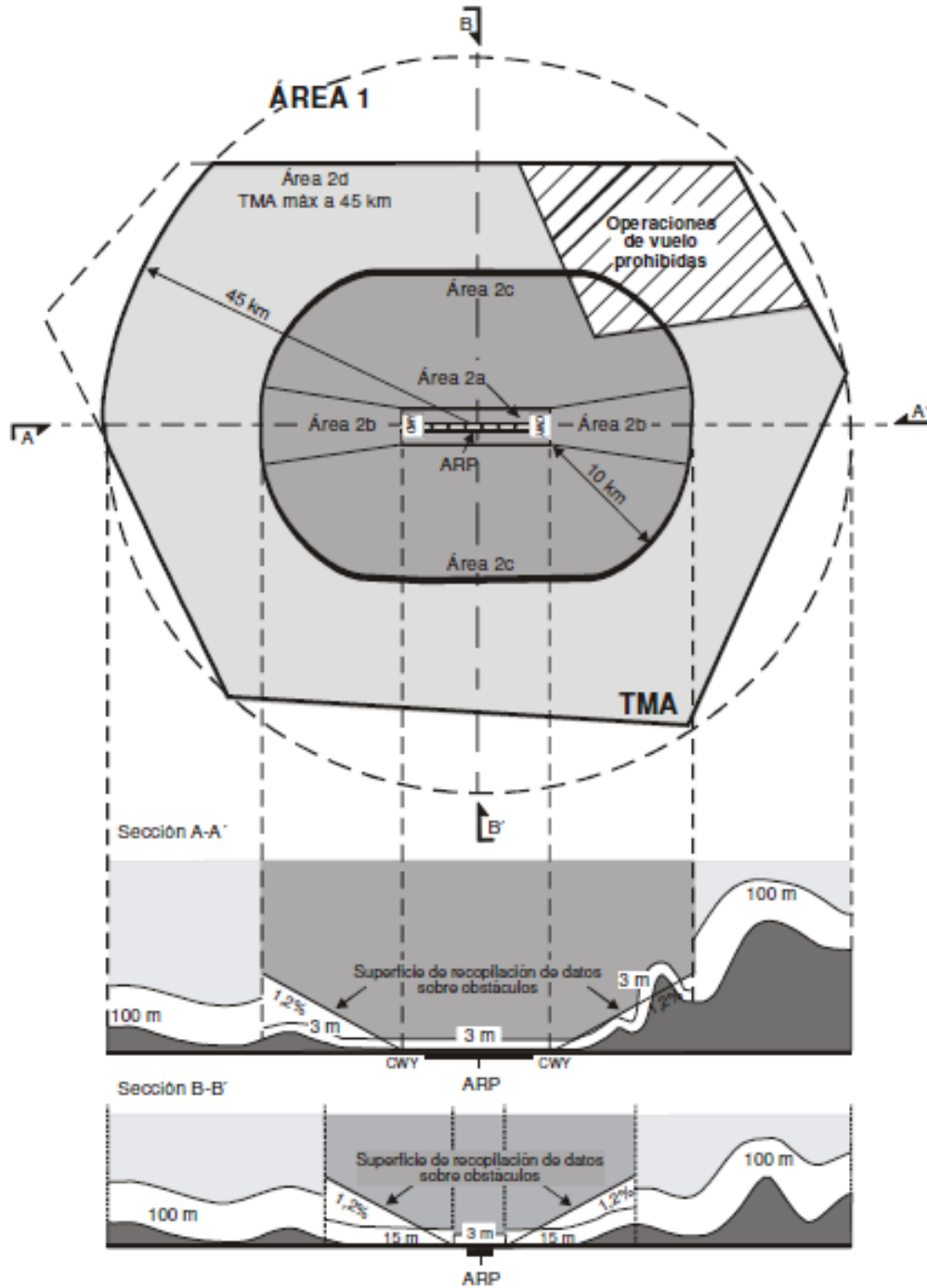


Figure A1-2. Obstacle data collection surfaces — Area 1 and Area 2

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1. Obstacle data will be collected and recorded in accordance with the numerical requirements of Area 2 shown in Table A2-7:
 - a) Area 2a: rectangular area around a runway that includes the runway strip and whatever clearway exists. The obstacle data collection surface of Area 2a will be at a height of three metres above the closest runway elevation measured along the runway centre line, and for those parts related to a clearway, if any, the elevation of the closest runway end;
 - b) Area 2b: area that extends from the ends of Area 2a in the outbound direction, with a length of 10 km and a widening of 15% to each side. The data collection surface of Area 2b follows a slope of 1,2% that extends from the ends of Area 2a to the elevation of the runway end in the outbound direction, with a length of 10 km and a widening of 15% to each side;
 - c) Area 2c: area extending outside of Area 2a and Area 2b to a distance not exceeding 10 km with respect to the boundaries of Area 2a. The data collection surface of Area 2c follows a slope of 1,2% that extends outside of Areas 2a and 2b at a distance not exceeding 10 km with respect to the boundary of Area 2a. The initial elevation of Area 2c will be the elevation of the point of Area 2a where it starts; and
 - d) Area 2d: Area extending outside of Areas 2a, 2b and 2c up to a distance of 45 km with respect to the aerodrome fix, or up to the existing TMA boundary, if this boundary is closer. The obstacle data collection surface of Area 2d is located at a height of 100 m above the terrain.
2. In those sectors of Area 2 where flight operations are prohibited because of too high terrain or other local restrictions or regulations, obstacle data will be identified and recorded in accordance with the requirements of Area 1.
3. The data on each obstacle within Area 1 that has a height above the ground of 100 m or more will be collected and recorded in the data set, in accordance with the numerical requirements of Area 1 specified in Table A2-7.

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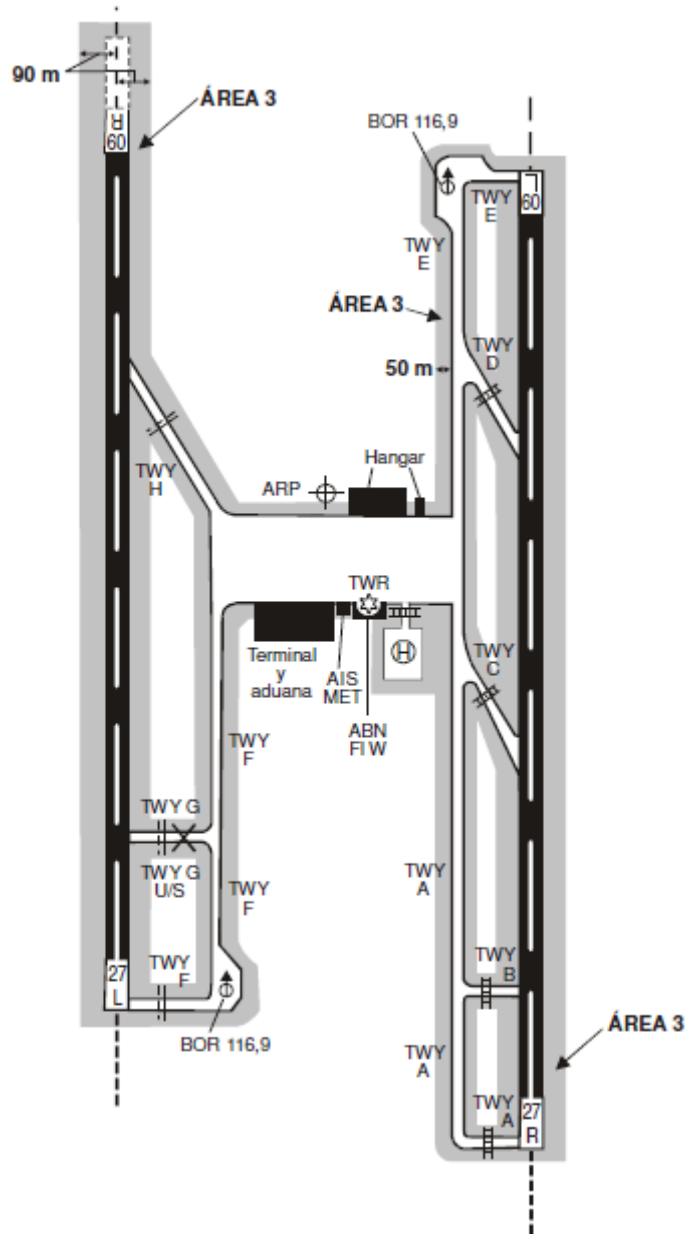


Figure A1-3. Terrain and obstacle data collection surface — Area 3

1. The terrain and obstacle data collection surface is prolonged half a metre (0,5 m) over the horizontal plane crossing the closes point in the aerodrome movement area.
2. Terrain and obstacle data in Area 3 will be adjusted to the numerical requirements specified in Table A2-6 and Table A2-7, respectively.

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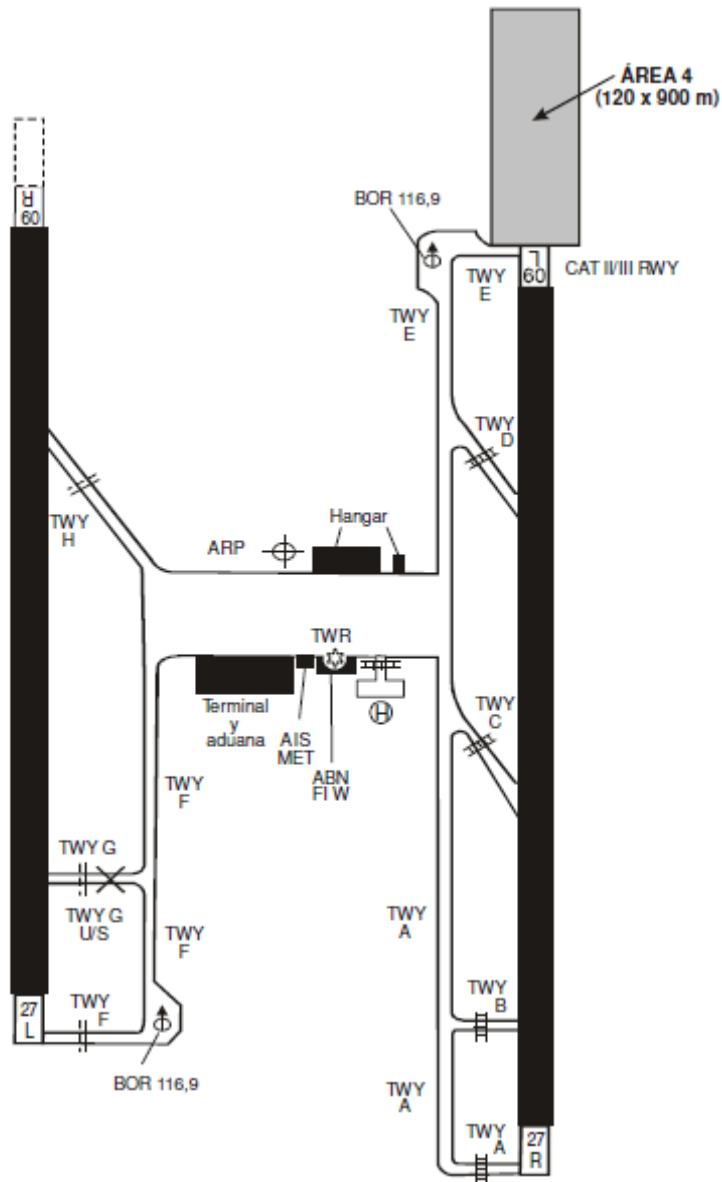


Figure A1-4. Terrain and obstacle data collection surface — Area 4

Terrain data in Area 4 will be adjusted to the numerical requirements specified in Table A2-6.

Note 1.- Area 2 spreads over Area 4, in the horizontal plane. More detailed obstacle data may be collected in Area 4 in accordance with the numerical requirements of Area 4 for the obstacle data specified in Table A2-7. (see Annex 15, 10.1.8.).

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Note 2.- Area 4 may be extended in accordance with Annex 15, 10.1.2.

Appendix 2 – Data precision

Table A2-1 Latitude and Longitude

APPENDIX 7. AERONAUTICAL DATA QUALITY REQUIREMENTS

Table A7-1. Latitude and longitude

Latitude and longitude	Publication resolution	Integrity Classification
Flight information region boundary points	1 min	1×10^{-3} routine
P, R, D area boundary points (outside CTA/CTR boundaries)	1 min	1×10^{-3} routine
P, R, D area boundary points (inside CTA/CTR boundaries)	1 sec	1×10^{-5} essential
CTA/CTR boundary points	1 sec	1×10^{-5} essential
En-route NAVAIDS, intersections and waypoints, and holding, and STAR/SID points	1 sec	1×10^{-5} essential
Obstacles in Area 1 (the entire State territory)	1 sec	1×10^{-3} routine
Aerodrome/heliport reference point	1 sec	1×10^{-3} routine
NAVAIDS located at the aerodrome/heliport	1/10 sec	1×10^{-5} essential
Obstacles in Area 3	1/10 sec	1×10^{-5} essential
Obstacles in Area 2	1/10 sec	1×10^{-5} essential
Final approach fixes/points and other essential fixes/points comprising the instrument approach procedure	1/10 sec	1×10^{-5} essential
Runway threshold	1/100 sec	1×10^{-8} critical
Runway end	1/100 sec	1×10^{-8} critical
Runway holding position	1/100 sec	1×10^{-8} critical
Taxiway centre line/parking guidance line points	1/100 sec	1×10^{-5} essential
Taxiway intersection marking line	1/100 sec	1×10^{-5} essential

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Latitude and longitude	Publication resolution	Integrity Classification
Exit guidance line	1/100 sec	1 × 10 ⁻⁵ essential
Aircraft stand points/INS checkpoints	1/100 sec	1 × 10 ⁻³ routine
Geometric centre of TLOF or FATO thresholds, heliports	1/100 sec	1 × 10 ⁻⁸ critical
Apron boundaries (polygon)	1/10 sec	1 × 10 ⁻³ routine
De-icing/anti-icing facility (polygon)	1/10 sec	1 × 10 ⁻³ routine

Note.— See Appendix 8 for graphical illustrations of obstacle data collection surfaces and criteria used to identify obstacles in the defined areas.

Table A7-2. Elevation/altitude/height

Elevation/altitude/height	Publication resolution	Integrity Classification
Aerodrome/heliport elevation	1 m or 1 ft	1 × 10 ⁻⁵ essential
WGS-84 geoid undulation at aerodrome/heliport elevation position	1 m or 1 ft	1 × 10 ⁻⁵ essential
Runway or FATO threshold, non-precision approaches	1 m or 1 ft	1 × 10 ⁻⁵ essential
WGS-84 geoid undulation at runway or FATO threshold, TLOF geometric centre, non-precision approaches	1 m or 1 ft	1 × 10 ⁻⁵ essential
Runway or FATO threshold, precision approaches	0.1 m or 0.1 ft	1 × 10 ⁻⁸ critical
WGS-84 geoid undulation at runway or FATO threshold, TLOF geometric centre, precision approaches	0.1 m or 0.1 ft	1 × 10 ⁻⁸ critical
Threshold crossing height, precision approaches	0.1 m or 0.1 ft	1 × 10 ⁻⁸ critical
Obstacles in Area 2	1 m or 1 ft	1 × 10 ⁻⁵ essential
Obstacles in Area 3	0.1 m or 0.1 ft	1 × 10 ⁻⁵ essential
Obstacles in Area 1 (the entire State territory)	1 m or 1 ft	1 × 10 ⁻³ routine

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Appendix 7

	Publication resolution	Integrity Classification
Latitude and longitude		
Exit guidance line	1/100 sec	1 × 10 ⁻⁵ essential
Aircraft stand points/INS checkpoints	1/100 sec	1 × 10 ⁻³ routine
Geometric centre of TLOF or FATO thresholds, heliports	1/100 sec	1 × 10 ⁻⁸ critical
Apron boundaries (polygon)	1/10 sec	1 × 10 ⁻³ routine
De-icing/anti-icing facility (polygon)	1/10 sec	1 × 10 ⁻³ routine

Note.— See Appendix 8 for graphical illustrations of obstacle data collection surfaces and criteria used to identify obstacles in the defined areas.

	Publication resolution	Integrity Classification
Elevation/altitude/height		
Aerodrome/heliport elevation	1 m or 1 ft	1 × 10 ⁻⁵ essential
WGS-84 geoid undulation at aerodrome/heliport elevation position	1 m or 1 ft	1 × 10 ⁻⁵ essential
Runway or FATO threshold, non-precision approaches	1 m or 1 ft	1 × 10 ⁻⁵ essential
WGS-84 geoid undulation at runway or FATO threshold, TLOF geometric centre, non-precision approaches	1 m or 1 ft	1 × 10 ⁻⁵ essential
Runway or FATO threshold, precision approaches	0.1 m or 0.1 ft	1 × 10 ⁻⁶ critical
WGS-84 geoid undulation at runway or FATO threshold, TLOF geometric centre, precision approaches	0.1 m or 0.1 ft	1 × 10 ⁻⁸ critical
Threshold crossing height, precision approaches	0.1 m or 0.1 ft	1 × 10 ⁻⁸ critical
Obstacles in Area 2	1 m or 1 ft	1 × 10 ⁻⁵ essential
Obstacles in Area 3	0.1 m or 0.1 ft	1 × 10 ⁻⁵ essential
Obstacles in Area 1 (the entire State territory)	1 m or 1 ft	1 × 10 ⁻³ routine

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Note.- See in Appendix 1 the graphical illustrations of obstacle data collection surfaces and criteria used to identify obstacles in the defined areas.

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Table A7-3. Declination and magnetic variation

Declination/variation	Publication resolution	Integrity Classification
VHF NAVAID station declination used for technical line-up	1 degree	1 × 10 ⁻⁵ essential
NDB NAVAID magnetic variation	1 degree	1 × 10 ⁻³ routine
Aerodrome/heliport magnetic variation	1 degree	1 × 10 ⁻⁵ essential
ILS localizer antenna magnetic variation	1 degree	1 × 10 ⁻⁵ essential
MLS azimuth antenna magnetic variation	1 degree	1 × 10 ⁻⁵ essential

Table A7-4. Bearing

Bearing	Publication resolution	Integrity Classification
Airway segments	1 degree	1 × 10 ⁻³ routine
En-route and terminal fix formations	1/10 degree	1 × 10 ⁻³ routine
Terminal arrival/departure route segments	1 degree	1 × 10 ⁻³ routine
Instrument approach procedure fix formations	1/100 degree	1 × 10 ⁻⁵ essential
ILS localizer alignment (True)	1/100 degree	1 × 10 ⁻⁵ essential

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Table A2-5 Length/distance/dimension

Table A7-5. Length/distance/dimension

Length/distance/dimension	Publication resolution	Integrity Classification
Airway segment length	1/10 km or 1/10 NM	1×10^{-3} routine
En-route fix formation distance	1/10 km or 1/10 NM	1×10^{-3} routine
Terminal arrival/departure route segment length	1/100 km or 1/100 NM	1×10^{-3} essential
Terminal and instrument approach procedure fix formation distance	1/100 km or 1/100 NM	1×10^{-3} essential
Runway and FATO length, TLOF dimensions	1 m or 1 ft	1×10^{-4} critical
Runway width	1 m or 1 ft	1×10^{-3} essential
Displaced threshold distance	1 m or 1 ft	1×10^{-3} routine
Clearway length and width	1 m or 1 ft	1×10^{-3} essential
Stopway length and width	1 m or 1 ft	1×10^{-4} critical
Landing distance available	1 m or 1 ft	1×10^{-4} critical
Take-off run available	1 m or 1 ft	1×10^{-4} critical
Take-off distance available	1 m or 1 ft	1×10^{-4} critical
Accelerate-stop distance available	1 m or 1 ft	1×10^{-4} critical
Runway shoulder width	1 m or 1 ft	1×10^{-3} essential
Taxiway width	1 m or 1 ft	1×10^{-3} essential

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Length/distance/dimension	Publication resolution	Integrity Classification
Taxiway shoulder width	1 m or 1 ft	1×10^{-5} essential
ILS localizer antenna-runway end, distance	1 m or 1 ft	1×10^{-3} routine
ILS glide slope antenna-threshold, distance along centre line	1 m or 1 ft	1×10^{-3} routine
ILS marker-threshold distance	1 m or 1 ft	1×10^{-5} essential
ILS DME antenna-threshold, distance along centre line	1 m or 1 ft	1×10^{-5} essential
MLS azimuth antenna-runway end, distance	1 m or 1 ft	1×10^{-3} routine
MLS elevation antenna-threshold, distance along centre line	1 m or 1 ft	1×10^{-3} routine
MLS DME/P antenna-threshold, distance along centre line	1 m or 1 ft	1×10^{-5} essential

Table A2-6 Terrain data numerical requirements

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Table A2-7 Length/distance/dimension - Obstacle data numerical requirements

Table A8-1. Terrain data numerical requirements

	Area 1	Area 2	Area 3	Area 4
Post spacing	3 arc seconds (approx. 90 m)	1 arc second (approx. 30 m)	0.6 arc seconds (approx. 20 m)	0.3 arc seconds (approx. 9 m)
Vertical accuracy	30 m	3 m	0.5 m	1 m
Vertical resolution	1 m	0.1 m	0.01 m	0.1 m
Horizontal accuracy	50 m	5 m	0.5 m	2.5 m
Confidence level	90%	90%	90%	90%
Data classification	routine	essential	essential	essential
Integrity level	1×10^{-3}	1×10^{-5}	1×10^{-5}	1×10^{-5}
Maintenance period	as required	as required	as required	as required

Table A8-2. Obstacle data numerical requirements

	Area 1	Area 2	Area 3	Area 4
Vertical accuracy	30 m	3 m	0.5 m	1 m
Vertical resolution	1 m	0.1 m	0.01 m	0.1 m
Horizontal accuracy	50 m	5 m	0.5 m	2.5 m
Confidence level	90%	90%	90%	90%
Data classification	routine	essential	essential	essential
Integrity level	1×10^{-3}	1×10^{-5}	1×10^{-5}	1×10^{-5}
Maintenance period	as required	as required	as required	as required

APPENDIX B

eTOD Technical and Project Specifications

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eTOD Technical and Project Specifications

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Scope

This Document describes eTOD technical and project specifications to be developed for the implementation of eTOD by the State.

This Document applies to the Aeronautical Information Service (AIS), those responsible for defining the project, and those offices providing data, including companies hired to capture such data.

The document contains both the technical aspects as well as the necessary elements to execute the project if the State had a terrain and obstacle database (eTOD) that meets both its own needs as well as the requirements of ICAO Annex 15.

It would be almost impossible to address each and all the questions arising during the execution of said project, which would make it necessary to have a very extensive document that would be almost impossible to use. Therefore, it has been decided to generate a document that contains sufficient and useful information for both the organisation and those involved in the project.

Furthermore, it is expected that this will be a dynamic document, to be updated based on the experience acquired during execution.

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Control of changes

Document

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Reference Documents

- ICAO Annex 4 – Aeronautical Charts
- ICAO Annex 15 – Aeronautical Information Services
- ICAO Doc 8126 – Aeronautical Information Services Manual
- ICAO Doc 8697 – Aeronautical Chart Manual
- ICAO Doc 8400 – ICAO Abbreviations and Codes
- ICAO Doc 9881 - Guidelines for Electronic Terrain, Obstacle and Aerodrome Mapping Information

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Terms and Definitions

The definitions and abbreviations contained in ICAO Doc 8400 – ICAO Abbreviations and Codes are adopted.

Other definitions

AIS-AIM Transition Roadmap:	Plan containing the sequence of tasks for the transition from the current AIS to the new AIM concept
Amendment:	Correction of existing information

Abbreviations

AIM:	Aeronautical information management
AIP:	Aeronautical information publication
AIS:	Aeronautical information service
CAR:	Caribbean Region
eTOD:	Electronic terrain and obstacle data
GIS:	Geographical information system
GPWS:	Ground proximity warning system
ILS:	Instrument landing system
MSAW:	Minimum safe altitude warning
OACI:	International Civil Aviation Organization
PBN:	Performance-based navigation
SAM:	South American Region

Spanish terms and their equivalent in English

Introducción al Producto:	Overview
Campo de aplicación de las Especificaciones:	Specification scope
Identificación del producto:	Data product identification
Contenido y estructura de los Datos:	Data content and structure
Sistemas de referencia:	Reference system
Calidad de datos:	Data quality
Captura de datos:	Data capture
Mantenimiento de los datos:	Data maintenance
Representación:	Portrayal
Suministro del producto:	Data product delivery
Información adicional:	Additional information
Metadatos:	Metadata

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1. Background

1.1. SARPs and the new amendments to Annex 15

Traditionally, States have published information on obstacles, always taking into account that they could affect air navigation routes, the areas around the aerodromes, or the take-off and landing flight phases at an aerodrome.

In the case of a detailed portrayal of the terrain, the topographic chart for precision approaches provides precise terrain information. However, the production of that chart was only required if ILS Category II or greater was available.

The remaining charts, in some cases, provide terrain information but details are not as meticulous as in the aforementioned chart.

In short, with the products developed to date, it was not possible to provide full FIR coverage with an adequate level of detail of both obstacles and terrain.

The provision of the digital data required by the industry on both terrain and obstacles led to some modifications to the traditional way in which information was collected and displayed.

Annex 15 through Amendment 33, proposed some major modifications to the collection of both obstacle and terrain data, through the inclusion of Areas 1 to 4 with a view to meeting the aforementioned need.

Subsequently, through Amendment 36, those areas were adjusted, resulting in the creation of Areas, 2a, 2b, 2c, and 2d, resulting in cost savings in the collection of the information required, and in a modification of the dates in which said information would be made available to users. Appendix 8 to ICAO Annex 15 contains a complete description of those areas.

1.2. Application of the new concepts

No doubt these new concepts may be applied to:

1.2.1. Ground proximity warning systems (GPWS):

The idea is to have a terrain profile that may be used at any point of the terrain, rather than a single value of the minimum sector altitude for a whole area.

1.2.2. Instrument and circling approach procedures

The use of terrain and obstacle profiles is more focused on the centre line of limiting surfaces. In this new way, quality information will be available for both the centre line and any other part of the limiting surface, including missed approaches.

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1.2.3. Contingency procedures (other than the existing ones)

In case of occurrence, no major effort will be required to obtain the data, since both obstacle and terrain areas will be fully covered.

1.2.4. Aerodrome obstacle planes (analysis)

Basic understanding of underlying terrain and obstacles by airline operators, and availability of sufficient information for pilots to plan and take emergency action (especially during take-off)

1.2.5. Minimum safe altitude warning (MSAW)

(9881 pag A-5) As a last line of defence, the availability of precise data will be more than beneficial.

1.2.6. Performance-based navigation (PBN)

The inclusion of data on Area 2 (both terrain and obstacles) will be of great help support for the implementation of the PBN concept.

1.2.7. Advanced surface movement guidance and control systems (A-SMGCS)

In accordance with Doc 9830, the SMGCS requires a digital portrayal of the terrain and obstacles at the aerodrome that could affect aircraft and ground vehicle operations. The precision of the collected data will be of greater importance to support this concept.

1.2.8. Search and rescue (especially in mountainous terrain)

Models may provide greater support in this respect, since a DTM for all the territory will be available.

1.2.9. On-board production of aeronautical charts and databases

To the extent on-board charting products and databases start to evolve, it will be an increasing need for digital information. Furthermore, for the remaining aeronautical charts, it will be extremely important for this information to be detailed and precise.

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1.2.10. Flight simulators

The use of simulators for personnel training requires precise terrain information, especially when providing training on emergency situations.

1.2.11. Synthetic displays

Although the data collected is not enough to define a synthetic vision of reality (what the pilot can see under VFR conditions), it will be critical to collect the rest of the required data (building facades, etc.)

1.2.12. Restriction and removal of obstacles at aerodromes/heliports

It will be extremely important to have terrain and obstacle (those that penetrate and do not penetrate surfaces) information for the purpose of managing them.

1.3. Benefits

Benefits will be seen mainly with the passage of time, given the impact that this new information will have on the provision of both the traditional products and the new ones that may emerge.

The benefits include a better visualization of the construction of GIS-related procedures, a better visualization of charts together with the metadata, the possibility of applying quality criteria in support of AIM for the provision not only of static AIS products but data as well.

Finally, it will be of great advantage for data exchange (AIXM).

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2. Concepts

The precise meaning of the terms is essential for a clear understanding of the information contained in this document. Accordingly, some basic concepts that will be used in the document are described below.

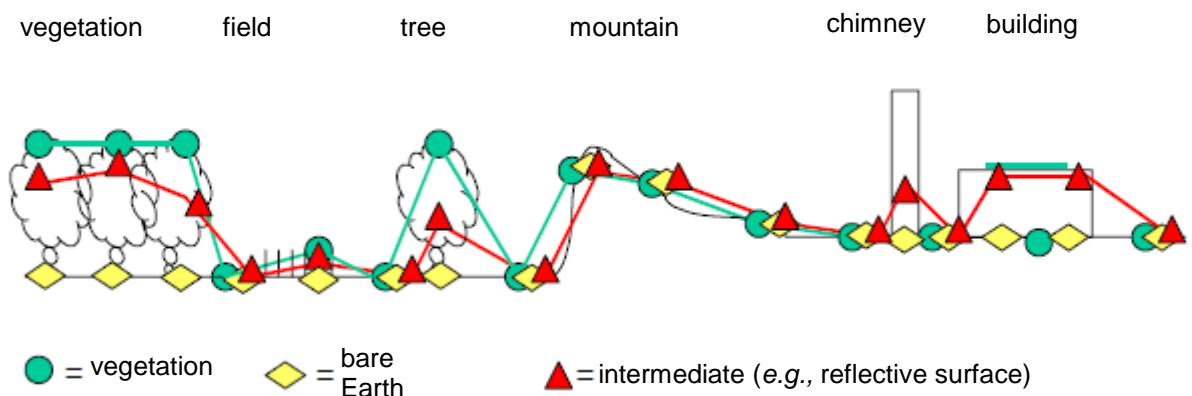
2.1. Terrain

For the purpose of this document, the following definition will be used:

Terrain: The surface of the Earth containing naturally occurring features such as mountains, hills, ridges, valleys, bodies of water, permanent ice and snow, and excluding obstacles.

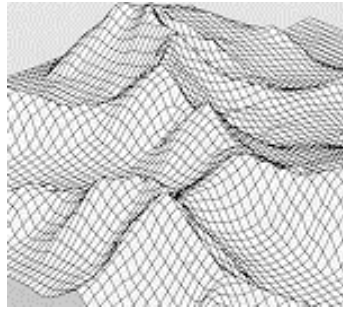
A terrain database is a digital portrayal of the vertical extension (elevation) of the terrain in a number of discrete points.

Depending on the study source, a terrain database may be envisaged for “bare earth” or “bare earth with cultural features and/or obstacles” (vegetation, buildings, etc.), or for an intermediate surface, resulting from the “reflection” of part of the terrain and obstacles, as shown in the following figure:



The terrain must be represented by elevation at regular intervals. The result is a digital elevation model.

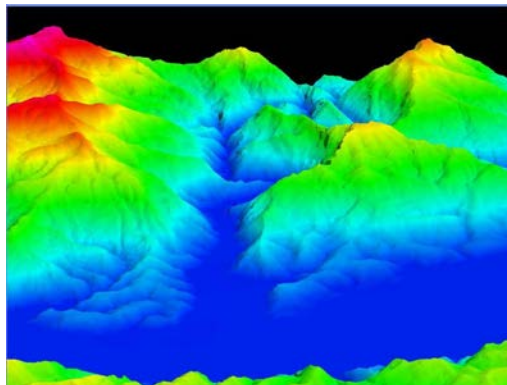
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Elevation grid

Therefore, digital elevation models (DEM) are defined as the 3-D representation of terrain surface by continuous elevation values at all intersections of a defined grid, referenced to a common datum.

As an example, a terrain database represented by a coloured MED is shown below.



MED

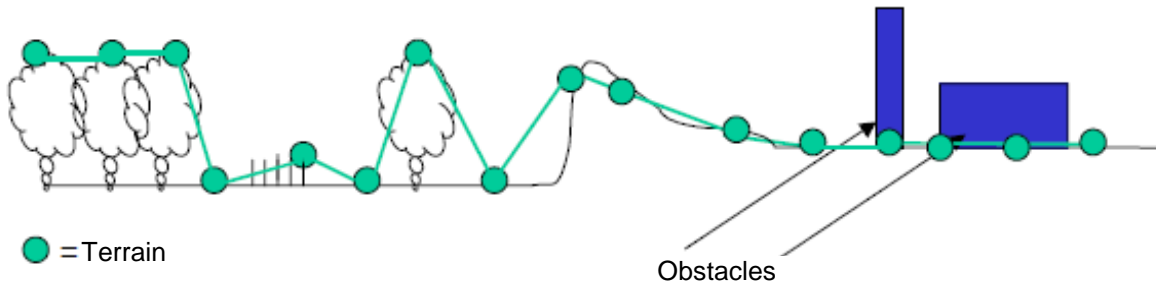
2.2. Obstacles

The definition to be used for the document is as follows:

Obstacle: All fixed (whether temporary or permanent) or mobile objects, or parts thereof, that:

- a) are located on an area intended for the surface movement of aircraft; or
- b) extend above a defined surface intended to protect aircraft in flight; or
- c) stand outside those defined surfaces and that have been assessed as being a hazard to air navigation.

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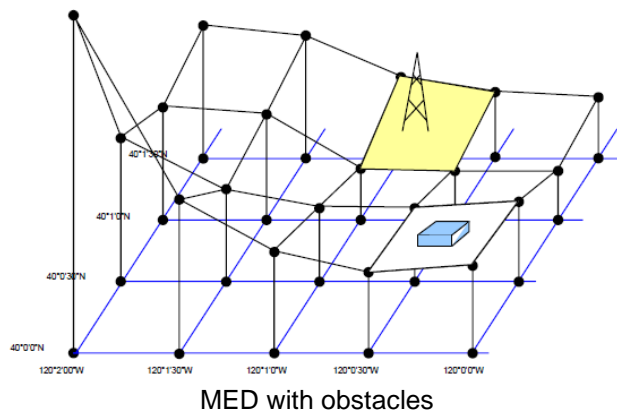


It should be noted that the obstacle concept, depending on its use and the user, could be different from the one set forth herein. For this document, whenever the term “obstacle” is used, it will refer to the aforementioned definition, unless stated otherwise.

An obstacle is an individually identifiable object of a limited spatial extension. Some of the features of the object are captured in the database. Obstacles are not included in a terrain database.

Obstacle data will comprise the digital representation of the vertical and horizontal extension of significant man-made and natural features, such as isolated rocky pillars and natural vegetation (trees).

Obstacle representation on an elevation grid is as follows:



2.3. Metadata

In general, metadata is defined as “data on data” or “data defining data”.

Metadata provide information that describes a number of attributes related to a set of actual data.

By way of clarification, it is important to note that product specifications describe what a data set must be, they are defined before production and do not vary through time, while metadata describe what a data set is, they are determined after their production and vary with each new version or update for the product.

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One of the objectives of publishing metadata is to permit the user determine the ability to use a data set with respect to the requirements of a specific application, without having to assess the data itself.

2.4. Reference system

Is defined as a reference to “any amount or set of amounts that may serve as reference or basis for calculating other amounts”.

A ground reference system defines a spatial reference system where the position of a point located on the solid surface of the Earth has coordinates.

The reference system has 3 elements:

- Horizontal reference
- Vertical reference
- Temporal reference

2.4.1. Horizontal reference

The WGS-84 defines a global earth reference system (geodetic datum) and geocentric-referenced ellipsoid. It was developed by the United States Department of Defense, together with scientists of other countries and institutions. Currently, the WGS-84 is the reference system that ICAO requires for georeferencing aeronautical information and will be the one used in this document.

2.4.2. Vertical reference

Mean sea level (MSL), which gives the relationship of gravity-related height (elevation) to a surface known as the geoid, is used as the vertical reference system for international air navigation.

The geoid defined as the equipotential surface in the gravity field of the Earth that coincides with the undisturbed MSL extended continuously through the continents. Gravity-related heights (elevations) are also referred to as orthometric heights while distances of points above the ellipsoid are referred to as ellipsoidal heights.

The Earth Gravitational Model - 1996 (EGM-96), for the purpose of this document, will be used as the global gravity model. In those cases in which the accuracy of EGM-96 does not meet the accuracy requirements for elevation and geoid undulation, regional, national or local geoid models containing high resolution gravity field data will be developed and used.

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2.4.3. Temporal reference

Temporal reference systems are used for time-related aeronautical information elements. In this context, time is used to specifically identify the unique moment when an event occurs. A temporal reference system comprises a calendar and time system.

In accordance with Annex 15, Section 3.7.3.1, "For international civil aviation, the Gregorian calendar and coordinate universal time (UTC) shall be used as the temporal reference system".

Therefore, the same principle will be applied in this Document.

2.5. Quality criteria

The quality philosophy to be applied for both terrain and obstacle data must reflect a holistic approach based on a set of ISO 19100 standards.

Accordingly, it should be noted that in order to have quality spatial data, such methodology must consider the different stages, from data set design and the required data quality level (both based on the requirements of a specific application), through data quality measurement (quality assessment), to data reporting.

The data quality philosophy comprises the following four topics:

a) Data product specifications (DPS):

A data product specification defines the data product requirements. The content of the DPS is designed to assist potential users to assess the suitability of the data product for its use. The information contained in a DPS is different from that contained in the metadata for the same data set.

b) Quality elements of spatial data:

The quality of data will not only depend on the precision of the data. The following elements must also be considered:

a) Precision: thematic precision, temporal accuracy;

b) Data resolution

c) Integrity

d) Traceability:

e) Integrity: excess, omission:

f) Logical consistency: format consistency, conceptual consistency, domain consistency, topological consistency.

c) Data quality assessment procedures:

A data quality assessment procedure describes the methodology used for applying a data quality measurement to the specified data.

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d) Data/metadata quality report

The reporting of data quality assessment results is closely related to metadata.

The objective of each data quality report is to provide sufficient information to enable the end user to determine what has been tested, the way it has been tested, conformity, and the quantitative results of the quality assessment.

2.6. Use of the GIS

Use of the GIS (data access and data exchange)

The provision of terrain and obstacle data in accordance with ISO 19100 enables the delivered data sets to be easily used by the GIS (geographical information system).

A GIS is a set of technological components used for describing real life phenomena in a structured manner. Contrary to other information systems, the GIS highlights the spatial property of a phenomenon.

Therefore, a GIS is used for capturing, maintaining, storing, analysing, managing, and presenting data related to a location. In a more general sense, GIS applications are tools that permit users to create interactive queries (user-created searches), analyse spatial information, edit data, and present the results of all these operations (on the screen or as maps).

2.7. Applicable specifications in accordance with ISO 19131

The specifications of a product are defined as a detailed description of a data set and any additional information required for its production, provision, and use. In other words, it is like a complete and comprehensive description that clearly defines a data set.

The specifications of a product establish user requirements, that is, what is expected of the data set.

For the terrain specification and the obstacle-related data set, the DPS must be based on the structure provided by ISO 19131, and must cover the following topics (mandatory elements in accordance with ISO 19131):

- Introduction to the product:

Informal description of the product and general information on the creation of the DPS. *Definition, content, extent, purpose, sources, production process, metadata description, definitions, maintenance, main characteristics. Reference: Informal*

- Field of application of the specifications:

For each subset of a homogeneous data set, the scope (or foreseen use, coverage) must be proportional. Multiple scopes may be used to distinguish the four areas. *Physical/logical extension (does not need to be the whole file, could be a layer, an area, or a group of types of phenomena). Reference: ISO19115*

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- Product identification:

Product title, a brief summary of the content, purpose, and expected spatial resolution, geographical area covered by the data product; supplementary information, such as legal limitations. *Title, extent, topic, scale, summary, purpose, supplementary information.*
Referencia: ISO19115

- Data content and structure:

Application scheme (formal description of the data structure and content of data sets) and feature catalogue (the semantics of all feature types, together with their attributes and attribute value domains, association types between feature types and feature operations, inheritance relations and constraints);

1) Vector file

- Application model Reference: ISO19109, ISO19137
- Catalogue of phenomena Reference: ISO19110

2) Raster file

- Identifier
- Description
- Range of attribute values
- Spatial and temporal extension
- Type of coverage

Reference: ISO19123

- Reference systems:

Spatial and temporal reference system

- 1) Coordinate reference system. Reference: ISO19111
- 2) Geographical identification reference system. Reference: ISO19112
- 3) Temporal reference system. Reference: ISO19108

- Data quality:

Acceptable conformity quality and quality of the corresponding data. Quality data elements and sub-elements. *Position, thematic, and logical accuracy, logical consistency, completion (omission and comission), legacy, purpose and use.* Reference: ISO19113, ISO19114

- Data capture:

General description of data sources and data capture processes. *Literal description of the data capture phase and subsequent data handling and editing processes in order to obtain a data set with the required properties. This description must be sufficiently clear and detailed to serve for data set production.*

The best way of documenting such description with precision and in detail is by implementing a quality management system (QMS) that describes all processes and quality controls.

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- **Data maintenance:**
Principles and criteria applied, including update frequency. *Maintenance frequency, next date, scope, contact. Reference: ISO19115*

- **Representation:**
Information about data representation (graphic output: plot/image). *Representation catalogue, with colours, thicknesses, spot, lineal, and surface symbols, fonts... Reference: ISO19117*

- **Product delivery:**
Delivery formats and information delivery media. *Native format, supports, and available formats. Reference: ISO19115*

- **Additional information**
Information not contemplated in other items:
 - + *Organisation in sheets*
 - *Division, corners*
 - *Sheet nomenclature*
 - + *Coordinate conversion*
 - + *Units*
 - + *Nº of coordinates*
 - + *Cases*
 - + *Consistency with other products*
 - + *Consistency with other products (MED, raster, orthophoto, files on other countries)**Reference: ISO19115*

- **Metadata**
To be included as part of the product. Reference: ISO19115

The catalogue of metadata is based on ISO 19115, and must be adjusted to the requirements of the application.

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3. Terrain specifications

The items to be included in the terrain specifications are described below.

3.1. Introduction to the product

3.1.1. DPS metadata

Title of the data set

Title of the data set. May require alignment with the national spatial data infrastructure
Example: Terrain in accordance with data contained in ICAO Annex 15, for <country>.

Date of the reference data set

Date of publication of the DPS
Example: 23/08/2012.

Responsible for the data set

The party responsible for DPS creation.
Example: <Name of the organisation>
<Address>
<Telephone>
<Fax>
<email >
<URL>

Language of the data set

The language in which the DPS and the data set are published.
Example: Spanish.

Data set category

A classification of the data set according to the numbering list provided in MD_TopicCategoryCode of ISO 19115, optionally strengthened with the domain.
Example: 018 - Transportation (Aviation).

3.1.2. Terms and definitions

Important terms used in the DPS may be described in this section. The target audience of the DPS must be taken into account importantes que se utilizan en el DPS puede describirse en esta sección. The target audience of the DPS must be considered when compiling the list of terms (for example, there is no need to explain what a geoid is to inspectors).

Example: Integrity, obstacle, terrain data set, traceability.

3.1.3. Abbreviations

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All abbreviations used in this DPS are described in this section.
Example: AIP, AIXM, CRC, ICAO.

3.1.4. Informal description of the product

Given the importance of clearly defining the area for terrain data collection, it will be beneficial to include a detailed description thereof; it would even be advisable to include a graph like those shown in Annex 15, Appendix 8, or those deemed more appropriate.

3.2. Field of application of the specifications

The terrain data set is not homogeneous throughout its length; therefore, consideration must be given to the option of using a subset. The scope of each of these subsets shall be defined.

The following elements must be considered:

3.2.1. Identification of the scope

Identification of the scope for the purpose of a particular data specification
Example: Terrain scope.

3.2.2. Level

The code that identifies the hierarchical level of the data specified by the scope. The MD_ScopeCode numbering of ISO 19115 is used. For a general scope of application, it is assumed to refer to the level of the series. Another level that may be useful within the context of terrain data is the feature type (terrain data).
Example: 006 – series.

3.2.3. Name of level

Name of the hierarchical level of the data specified by the scope of application.
Example: Detail valid for the terrain data of <country>, in accordance with the specifications of ICAO Annex 15.

3.2.4. Extension

Information about spatial, vertical, and temporal extension of the data specified by the scope of application. Information shall be provided only on the horizontal measure of terrain data. A simple description can also be provided.
Example: The area of <country> and of the adjacent areas, if necessary, for full coverage of Area 2.

3.2.5. Description of the level

Detailed description of the level of the data specified by the scope of application.
Example: The "terrain" level defines the requirements specific to terrain data, and thus deviate from the "general scope".

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3.2.6. Coverage

Coverages to which the information applies.

Example: General scope.

3.3. Identification of the product

The examples given for product identification are independent from whether it refers to terrain or an obstacle. For each data application that goes beyond the topographic measurement of a single obstacle, the geographic extension must be documented in this section. Although certain definitions can only be validated by one part of the complete data set, it is proposed that more than one product identification be defined.

3.3.1. Title

The title of the data product.

Example: Terrain data for <país> in accordance with Annex 15.

3.3.2. Alternative title

Another name used for the data product.

3.3.3. Abstract

A brief narrative summary of the content of the data product.

Example: The product contains a terrain data set that meets the requirements established in ICAO Annex 15 (Amendment 36).

3.3.4. Purpose

A summary of the reason for developing the data product.

Example: The purpose of the data product appears in the introduction to Annex 15, Chapter 10, foreseeing the possible use of the data. The user is responsible for determining if the data product meets its needs.

3.3.5. Category of the topic

Specifies to what main topic(s) the data product belongs.

Example: 006 - Elevation
018 - Transportation.

3.3.6. Type of spatial representation

Form of spatial representation.

Example: 002 – grid

3.3.7. Spatial resolution

Factor that provides a general understanding of the density of spatial data in the data set.

3.3.8. Geographical description

Description of the geographical area for which the data are made available. The DPS permits the definition of the geographical extension in a number of different ways, such

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as polygons (using Geography Markup Language - GML), selection conditions, or by a geographical identifier (which could be the ISO country code).

Example: SI - Slovenia.

The junction box may be expressed as a polygon coded in GML.

Example:

```
<gml:PolygonsrsName="EPSG:4326">
  <gml:LinearRing>
    <gml: ". " coordinates decimal = cs = "," ts = "">
      119,593002319336, -31,6695003509522
      119,595306396484, 31,6650276184082
      119,600944519043, -31,6658897399902
      119,603385925293, -31,669527053833
      119,60050201416, -31,6739158630371
      119,595664978027, -31,6728610992432
      119,593002319336, 31,6695003509522
    </ gml: coordinates>
  </ gml: LinearRing>
</ gml: Polygon>
```

3.3.9. Supplementary information

Any other descriptive information about the data set

3.4. Data content and structure

This section contains the terrain data model that is required to comply with the SARPs. The terrain information conceptual model (TICM) is a formal representation of terrain data requirements described in ICAO Annex 15, expressed as a set of UML diagrams. Terrain data are modelled in accordance with the coverage scheme of ISO 19123. Terrain model attribute requirements are provided and explained in detail in Annex 15, Appendix 8.

3.4.1. Description of coverage

Technical description of coverage.

3.4.2. Type of coverage

Type of coverage.

3.4.3. Specification (name of role)

Information on additional coverage.

3.5. Reference systems

The spatial reference system used must be a reference coordinate system, as defined in ISO 19111. In accordance with Annex 15, the horizontal datum horizontal is WGS-84, and the

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vertical datum is MSL using the appropriate geoid model, such as EGM-96. The Gregorian calendar and coordinated universal time (UTC) shall be used as the temporal reference system.

3.5.1. Spatial reference system

Identifier of the spatial reference system

3.5.2. Temporal reference system

Identifier of the temporal reference system

3.6. Quality of data

Information on the quality of available terrain data sets is vital for the data set selection process, where the data value is directly related to their quality. In order to assess the quality of a data set, clearly defined procedures must be used in a consistent manner. The full description of the quality of a data set will promote the exchange and use of the appropriate geographical data sets.

Annex 5, Appendix 8, contains a set of terrain attributes:

- Area of coverage
- Data originator identifier
- Obstacle identifier
- Horizontal accuracy
- Horizontal confidence level
- Horizontal position
- Horizontal resolution
- Horizontal extension
- Horizontal reference system
- Elevation
- Elevation reference
- Vertical reference system
- Vertical resolution
- Vertical accuracy
- Vertical confidence level
- Surface type
- Recorded surface
- Penetration level
- Known variations
- Integrity
- Date and time stamp
- Unit of measurement used

3.6.1. Quality of data

Quality of the information on the data product

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3.7. Data capture

The DPS defines the attributes and metadata resulting from the terrain data capture methods that must be communicated. Likewise, data on real life geospatial phenomena and their features must be specified. Data included in this chapter on DPS must include a general description of the data capture process.

Quality conformity levels for intermediate levels that may be necessary for data production may be required.

3.7.1. Scope of capture

Scope of terrain.

3.7.2. Capture description

General description of the data capture procedure.

Example:

The USGS has collected the data set on the national elevation established for public mapping and the use of models in a variety of applications, aviation security being one of them. Terrain data were originally converted from mapping material and aerial photography sobre. The terrain data coordinates were converted from the North American Datum 1983 (NAD-83) to the WGS-84, and were then merged, resampled, quality controlled, and reformatted in the USGS DEM format for delivery.

3.8. Data maintenance

Terrain data sets are increasingly used in dynamic environments for the exchange, sharing, and use for purposes that require both precision and the temporal variable. Ongoing maintenance and updating of specific terrain databases are vital for the applications of the end user.

3.8.1. Frequency of maintenance and updating

Frequency with which changes or additions are made to the product.

3.9. Representation

The terrain DPS provides information on how the products will be presented as graphical output.

3.9.1. Reference to the representation catalogue

Bibliographic reference to the catalogue

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3.10. Provision of the product

The DPS does not contain specific requirements for the delivery of data products; however, a DPS implementation will identify the following elements: name of format, version, specification, file structure, language, set of characters, delivery units, transfer size, middle name, and delivery information.

Information on data set formats:

3.10.1. Name of format

Name of the data format

3.10.2. Version

Version of the format (date, number, etc.)

3.10.3. Specification

Name of a subset, profile, or format specification

3.10.4. File structure

Structure of the deliverable file

3.10.5. Language

Language(s) used in the data set

3.10.6. Set of characters

Full name of the character coding standard use for the data set

Information about the medium of the data set to be delivered:

3.10.7. Delivery units

Description of the delivery units (for example, layers, geographical areas)

3.10.8. Transfer size

Estimated size of one unit in the specified format, expressed in Mbytes.

3.10.9. Name of the medium

Name of the medium for the data

3.10.10. Other information for the delivery

Other information relatd to data delivery

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3.11. Additional information

This chapter of the DPS may include other aspects of the data product that are not mentioned in any part of the specifications.

3.12. Metadata

The metadata requirements for terrain data products are derived from ISO 19115. metadata are classified as identification information, quality information, maintenance information, spatial representation information, reference information of the information distribution system, measurement information, and reference information.

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4. Obstacle specifications

The items that must be included in obstacle specifications are described below.

4.1. Introduction to the product

4.1.1. DPS metadata

Title of the data set

The title of the data set. Alignment with the national infrastructure of spatial data may be required.

Example: Obstacles in accordance with the data contained in ICAO Annex 15 for <country>.

Date of the reference data set

Date in which the DPS was published.

Example: 23/08/2012.

Responsible for the data set

The party that is responsible for the creation of the DPS.

Example: <Name of the organisation>

<Address>

<Telephone>

<Fax>

<email >

<URL>

Language of the data set

The language in which the DPS and the data set are published.

Example: Spanish.

Data set category

A data set classification in accordance with the numbering list contained in MD_TopicCategoryCode of ISO 19115, optionally supported by the domain.

Example: 018 - Transportation (Aviation).

4.1.2. Terms and definitions

Important terms used in the DPS may be described in this section. The target audience of the DPS must be taken into account when compiling the list of terms (for example, there is no need to explain a geoid to inspectors).

Example: Integrity, obstacle, terrain data set, traceability.

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4.1.3. Abbreviations

All abbreviations used in the DPS are described in this section.
Example: AIP, AIXM, CRC, ICAO.

4.1.4. Informal description of the product

Given the importance of clearly defining the area for obstacle data collection, it will be beneficial to include a detailed description thereof; it would even be advisable to include a graph like those shown in Annex 15, Appendix 8, or those deemed more appropriate.

4.2. Field of application of the specifications

Taking into account item 3.2 of this document, which contains a diagram that is also valid for obstacles, the following scenarios shall be taken into account for defining them:

4.2.1. Scope identification

Identification of the scope for a given data specification
Example: Scope of obstacles.

4.2.2. Level

The code that identifies the hierarchical level of the data specified in the scope. ISO 19115 MD_ScopeCode numbering is used. For general application, it is assumed that it refers to the series level. Another level that may be useful within the context of terrain data is the feature type (Area 1 obstacle).
Example: 006 – series.

4.2.3. Level name

Name of the hierarchical level of the data specified by the scope.
Example: Detail valid for terrain data for <country>, as specified in ICAO Annex 15

4.2.4. Extension

Information about the spatial, vertical, and temporal extension of the data specified by the scope. The information will be provided only on the horizontal measure for terrain data. A simple description may also be provided.
Example: The area of <country> that defines Area 1.

4.2.5. Description of the level

Detailed description of the level of the data specified by the scope.
Example: "Obstáculo Área 1" scope level defines the requirements that are specific for obstacles in Area 1 and, thus, deviate from the "General Scope" and the "obstacle scope".

4.2.6. Coverage

Coverages to which this information applies:
General scope.

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4.3. Product identification

As indicated in 3.3, this section is independent from whether it is terrain or obstacle data. Accordingly, it shall be used as follows:

4.3.1. Title

Title of the data product.

Example: Terrain data for <country> in accordance with Annex 15.

4.3.2. Alternative title

Another name by which the data product is known.

4.3.3. Abstract

A brief narrative summary of the content of the data product.

Example: The product contains a terrain data set that meets the requirements established in ICAO Annex (Amendment 36).

4.3.4. Purpose

A summary of the idea behind the development of the data product.

Example: The purpose of the data product is described in the introduction to Annex 15, Chapter 10, which indicates the possible uses of the data. The user is responsible for determining whether the data product meets its needs.

4.3.5. Topic category

Specifies what main topic(s) the data product belongs to.

Example: 006 - Elevation

018 - Transportation.

4.3.6. Type of spatial representation

Form of spatial representation.

Example: 002 – Grid

4.3.7. Spatial resolution

Factor that provides a general understanding of the density of spatial data in the data set.

4.3.8. Geographical description

Description of the geographical area for which data are made available. DPS permits the definition of the geographical extension in a number of different ways, such as polygons (using Geography Markup Language - GML), selection conditions, or by a geographical identifier (which could be an ISO country code).

Example: SI - Slovenia.

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The junction box may be expressed as a polygon, coded in GML.

Example:

```
<gml:Polygon srsName="EPSG:4326">
  <gml:LinearRing>
    <gml:coordinates decimal="." ts=" " />
      119,593002319336, -31,6695003509522
      119,595306396484, 31,6650276184082
      119,600944519043, -31,6658897399902
      119,603385925293, -31,669527053833
      119,60050201416, -31,6739158630371
      119,595664978027, -31,6728610992432
      119,593002319336, 31,6695003509522
    </gml:coordinates>
  </gml:LinearRing>
</gml:Polygon>
```

4.3.9. Supplementary information

Any other descriptive information about the data set

4.4. Data content and structure

The exchange of obstacle data must comply with the application model and the object catalogue shown below.

4.4.1. Application model - Obstacles

The application model provides the common data model for obstacle data products and complies with ISO 19109

This model reflects the requirements specified in Annex 15 and, thus, may be used by system implementers to establish conforming data exchange processes and formats. However, the application model is not intended to impose a particular model but rather to identify and standardise all common obstacle features and attributes, thus allowing the exchange of standard information.

The use of the ISO 19100 series for geographical information as a frame of reference for data modelling implies adhering to a common methodology to ensure interoperability.

Therefore, the types available in ISO 19100 will be used as required. Furthermore, in the case of metadata, the data structure has been derived from the abstract metadata specification contained in ISO 19115.

The application scheme has been structured in two higher-level packages: object types and metadata types. Object types reflect obstacle features and use the attribute types and the types of ISO 19100 to define attributes and geometries.

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4.4.2. Object catalogue - Obstacle

This catalogue was developed in accordance with ISO 19110 and provides the minimum required set of attributes to be used. Attribute values, both the label and the code, must be provided in the file to be exchanged.

4.4.3. Supplementary objects

The object catalogue provides the optional and mandatory features and the attributes that may be included in a data set. Although it is expected that they will meet most applications, more attributes and supplementary attributes may be added.

In order to use supplementary attributes, specific standards related to the denomination convention and function of the mandatory information will be used. Each supplementary attribute may be described in a data exchange report file. In the event of using supplementary attributes, the following information must be used: attribute name, attribute description, geometry type, derivation method, and the data capture rule.

In order to use supplementary attributes and new attributes, the object catalogue must be modified using ISO 19131.

4.4.4. Supplementary object attributes

In case of using supplementary attributes, the following must be provided:

4.4.4.1. Object type

Textual description of the object type

4.4.4.2. Obstacle identification

Function-specific identifier

4.4.4.3. Data originator identifier

Name of the entity or organisation where the data provided originates. In the case of data being originated for the first time, the name of the author of the data shall be included.

4.4.4.4. Geometry

Characteristics of the point, line, or polygon, respectively

4.4.4.5. Elevation

Maximum elevation of the top of the object

4.4.4.6. Height

The maximum height of the top of the object

4.4.4.7. Horizontal extension

Radius of the circle around the centre of the object, including the object body and the associated structures, such as tensioning cables.

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4.4.4.8. Horizontal precision

Horizontal precision of the recorded position

4.4.4.9. Horizontal confidence level

The probability that the recorded value falls within the stated horizontal accuracy of the actual value

4.4.4.10. Vertical precision

The vertical accuracy of the object elevation

4.4.4.11. Vertical confidence level

The probability that the recorded value falls within the stated vertical accuracy of the actual value

4.4.4.12. Integrity

Data integrity is the degree of certainty that the data and their value have not been lost or altered since their origination or modified without authorisation.

4.4.4.13. Date-hour

Date of origination or last revision of the data

4.4.4.14. Effectiveness

Date-hour of construction, assembly, disassembly, or elimination

Attributes other than the aforementioned may be added. They shall be referenced to ISO 19131.

4.5. Reference systems

The spatial reference system used must be a reference coordinate system as defined in ISO 19111. In accordance with Annex 15, the horizontal datum is WGS-84, and the vertical datum is MSL, using the appropriate geoid model, such as EGM-96. The temporal reference system will be the Gregorian calendar and coordinated universal time (UTC).

4.5.1. Spatial reference system

Spatial reference system identifier

4.5.2. Temporal reference system

Temporal reference system identifier

4.6. Data quality

Information about the quality of obstacle data sets is vital for the data set selection process, in which the value of the data is directly related to its quality. In order to assess the

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quality of a data set, clearly defined procedures must be used consistently. The full description of the quality of a data set will encourage the exchange and use of the appropriate geographical data sets.

Annex 5, Appendix 8, contains a set of obstacle attributes:

- Area of coverage
- Data originator identifier
- Obstacle identifier
- Horizontal accuracy
- Horizontal confidence level
- Horizontal position
- Horizontal resolution
- Horizontal extension
- Horizontal reference system
- Elevation
- Height
- Vertical accuracy
- Vertical confidence level
- Elevation reference
- Vertical resolution
- Vertical reference system
- Obstacle type
- Geometry type
- Integrity
- Date and time stamp
- Unit of measurement used
- Operations
- Effectivity
- Lighting
- Marking

4.6.1. Quality of data

Quality of the information about the data product

4.7. Data capture

The DPS defines the attributes and metadata whereby the results of the obstacle data capture methods may be communicated. Likewise, the data on real-world geospatial phenomena and their characteristics must be specified. The information contained in this DPS chapter must include a general description of the data capture process.

The quality conformity levels of intermediate data that may be required for data production may be required.

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4.7.1. Capture scope

Obstacle scope

4.7.2. Description of the capture

General description of the obstacle capture procedure.

Example:

The global obstacle data set uses updated data received electronically, as well as digitalised data from updated mapping sources.

4.8. Data maintenance

Obstacle data sets are increasingly used in dynamic environments: for the exchange, sharing, and utilisation for purposes that require both precision and temporal variable relevance. Ongoing maintenance and updating of specific terrain databases is vital for the application process of the end user.

4.8.1. Maintenance and updating frequency

Frequency with which changes and additions are made to the product

4.9. Representation

The obstacle DPS provides information about how data will be presented as a graphical output.

4.9.1. Reference to the representation catalogue

Bibliographic reference in the representation catalogue

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4.10. Product delivery

The DPS does not contain specific requirements for the delivery of data products. However, a DPS implementation will identify the following elements: name of the format, version, specification, file structure, language, character set, delivery units, transfer size, middle name, and delivery information.

Information about the format of the data set to be delivered:

4.10.1. Name of the format

Name of the data format

4.10.2. Version

Format version (date, number, etc.)

4.10.3. Specification

Name of a format subset, profile, or specification

4.10.4. File structure

Structure of the deliverable file

4.10.5. Language

Language(s) used in the data set

4.10.6. Set of characters

Complete name of the character coding standard used for the data set

Information about the medium of the data set to be delivered:

4.10.7. Delivery units

Description of the delivery units (e.g., layers, geographic areas)

4.10.8. Transfer size

Estimated size of a unit in the specified format, expressed in Mbytes

4.10.9. Name of the medium

Name of the medium for the data

4.10.10. Other information about the delivery

Other information related to data delivery

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4.11. Additional information

This chapter of the DPS may include other aspects of the data not contained in any other part of the specifications.

4.12. Metadata

Metadata requirements of obstacle data products are derived from ISO 19115. Metadata are classified as identification information, quality information, maintenance information, spatial representation information, reference information of the information distribution system, measurement information, and reference information.

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Appendix 1 – ISO 19131:2007 – Geographical information. Data product specifications

This international standard describes the specification requirements for geographical data products, based on the concepts contained in other ISO 19100 international standards. It describes the content and structure of a data product specification. It also provides assistance for the creation of data product specifications so that they may be easily understood and customised as required.

A data product specification is a detailed description of a data set or a series of data sets, with additional information on its creation, provision, and use. It is a precise technical description of the data product in terms of the requirements it will or might meet. It serves as the basis for data production or acquisition. It may also assist possible users in the assessment of the data product in order to determine its useability.

The specification information about the data product may be used to create metadata for a particular data set that is created in accordance with the data product specification. However, the information contained in a data product specification is different from that contained in the metadata. Metadata provide information about a physical data set in particular; the data product specification only defines how the data set should be. For various reasons, some implementation adjustments may be required.

Metadata related to the product data set should reflect the current status of the product data set.

A data product specification may be created and used on various occasions, by different parties, and for various reasons. For example, it may be used for the original data collection process as well as for products derived from existing data. It may be created by producers to specify their product or by users to determine their requirements.

A data product specification does not need to describe the production process, but only the resulting data product. However, it may include production and maintenance aspects if deemed necessary to describe the data product.

A data product specification contains main sections that cover the following aspects of the data product:

- General — Clause 7
- Scope of the specification — Clause 8
- Data product identification — Clause 9
- Data content and structure — Clause 10
- Reference systems — Clause 11
- Quality of data — Clause 12
- Metadatos — Cláusula 18.

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A data product specification may also contain sections covering the following aspects of the data product:

- Data capture — Clause 13
- Data maintenance — Clause 14
- Graphic representation — Clause 15
- Additional information — Clause 17.

The minimum description of a data product contains mandatory elements in each section.

APPENDIX C

SAM Region	PROJECT DESCRIPTION (DP)	DP N° G1	
<i>Programme</i>	Project Title	Start date	End date
<i>AIM</i> (ICAO programme coordinator: Roberto Arca Jaurena)	Developments for the provision of electronic terrain and obstacle data (e-TOD) (SAM) Project coordinator: Juan González (Uruguay) Experts contributing to the project: SAM/AIM IG	26/09/11	31/12/15
Objective	Support the implementation of e-TOD provision by SAM States, and provide them with guidance for the acquisition and management of a GIS.		
Scope	The scope of the project contemplates the assessment and identification of implementation levels associated to the provision of electronic terrain and obstacle data. It contemplates the drafting of an action plan and e-TOD implementation guides to support the provision of electronic terrain and obstacle data for the evolution of digital terrain models (DTM) to gradually enhance electronic aeronautical charts and other similar products supported by tools such as geographic information systems (GIS).		
Metrics	Number of States that have acquired and are operating a GIS. Number of experts trained in GIS. Number of States that have implemented an action plan for the e-TOD standard. Number of States that establish SLAs.		

Strategy	<p>Project activities will be coordinated through communications amongst project members, the project coordinator, and the programme coordinator, mainly through teleconferences (GoToMeeting application), and meetings held from time to time concurrently with events envisaged in the work programme. The project coordinator will coordinate with the programme coordinator the incorporation of additional experts as may be required for the tasks to be performed.</p> <p>The results of the work done will be submitted to the consideration and review of State experts in the form of a final consolidation document for analysis, revision, and approval, and subsequent submittal to the GREPECAS PPRC by the programme coordinator.</p>				
Justification	<p>Compliance with the SARPs contained in Annex 15 and Annex 4 to expedite the implementation of performance-based air operations and move forward with the AIS-to-AIM Roadmap. Close connection with other projects is required to collect the operational requirements needed by the aforementioned applications and their respective tentative implementation dates.</p>				
Related projects	<p>It is related to Project G2 “Aeronautical information/data management” and Project G3 “Assessment and development of the AIM QMS in SAM States.”</p>				
Project deliverables	Relationship with the regional performance-based plan (PFF)	Responsible party	Status of implementation*	Delivery date	Remarks
Questionnaire on e-TOD status of implementation	PFF: SAM AIM/02	Juan González Uruguay		30/11/2011	Completed on schedule.
Generate e-TOD implementation report	PFF: SAM AIM/02	Juan González Uruguay		30/04/2012	Completed on schedule.

Draft the Guidance Document containing the objectives of the e-TOD project	PFF: SAM AIM/02	Juan González Uruguay		03/09/2012	Completed on schedule. Delivered: 03/09/2012
Define the technical specifications of the e-TOD project	PFF: SAM AIM/02	Juan González Uruguay		03/09/2012	Completed on schedule. Delivered: 03/09/2012
Draft the document with the e-TOD technical specifications	PFF: SAM AIM/02	Juan González Uruguay		03/09/2012	Completed on schedule. Delivered: 03/09/2012
Develop a training programme and the documentation for e-TOD operators	PFF: SAM AIM/02	Juan González Uruguay		02/08/2013	
Guide for the procurement of a geographic information system (GIS)	PFF: SAM AIM/01	Juan González Uruguay		09/03/2012	Completed on schedule.
GIS implementation manual	PFF: SAM AIM/01	Juan González Uruguay		09/03/2012	Completed on schedule.
Develop a training programme and documentation for GIS/AIXM operators	PFF: SAM AIM/01	Juan González Uruguay		30/10/2013	
Necessary resources	Designation of experts for the execution of some of the deliverables. More commitment by States in supporting coordinators and experts conducting the work.				

*Grey *Task not started yet*



















Green *Activity underway as scheduled*

Yellow *Activity started with some delay but expected to be completed on schedule*

Red *This activity has not been implemented as scheduled; mitigation measures are required*

Timetable in MS Project, with tasks, sub-tasks, deliverables, and responsible parties

Desarrollos para el suministro de los datos electrónicos sobre el terreno y los obstáculos (e-TOD) en los Estados SAM + GIS/Development for the provision of terrain and obstacle electronic data (e-TOD) in SAM States + GIS

ID	Nombre de tarea	Duration	2012						2014						
			Qtr 1	Qtr 3	Qtr 1	Qtr 3	Qtr 1	Qtr 3	Qtr 1	Qtr 3	Qtr 1	Qtr 3			
1	 Desarrollos para el suministro de los datos electrónicos sobre el terreno y los obstáculos (e-TOD) en los Estados SAM + GIS/Development for the provision of terrain and obstacle electronic data (e-TOD) in SAM States + GIS	1076 days													
2	  Identificar el nivel de implantación de la Norma para la provisión de datos electrónicos sobre el terreno (e-TOD) para el Área 1 (Anexo 15, 10.1.3)/Identify the level of implementation of the Regulation for the provision of electronic terrain data (e-TOD)	118 days													
3	 Generar Formulario de Consulta/Generate survey form	10 days													
4	 Circular a los Estados/Circulate to States	7 days													
5	 Reunir información de los Estados/Gather information from States	12 days													
6	 Generar Informe de Implantación/Generate implementation report	64 days													
7	Plan de acción e-TOD/e-TOD action plan	958 days													
8	 Objetivos/Objectives	89 days													
9	 Establecer y priorizar objetivos del proyecto de implantación del e-TOD (tareas, costos, plazos de ejecución, riesgos del proyecto)/Establish and prioritise objectives of e-TOD implementation project (tasks, costs, impl. Target dates, project risks)	30 days													
10	 Elaborar el Documento Guía con los objetivos del proyecto/Prepare guidance document with project objectives	60 days													
11	 Especificaciones técnicas/Technical specifications	94 days													
12	 Definir las especificaciones técnicas y del proyecto/Define technical specifications of the project	60 days													
13	 Elaborar el documento con las especificaciones técnicas/Prepare the document with technical specifications	30 days													
14	Realizar Acuerdos/Carry out agreements	90 days													
15	  Definir cláusulas contractuales para el uso de la información (protección, almacenamiento, distribución, etc)/Define contract clauses for use of information, storage, distribution, etc)	30 days													
16	  Firmar cartas de acuerdos, socializando los datos electrónicos de terreno y de obstáculos en las áreas comunes entre las fronteras de los Estados/Sign LOAs socialising e-TOD in common areas between States' boundaries	50 days													
17	 Firmar acuerdo de nivel de servicio (SLA) entre proveedores y servicio AIS/Sign service agreement - SLA between providers and AIS service	31 days													
18	Capacitación/Training	499 days													

Desarrollos para el suministro de los datos electrónicos sobre el terreno y los obstáculos (e-TOD) en los Estados SAM + GIS/Development for the provision of terrain and obstacle electronic data (e-TOD) in SAM States + GIS

ID	Nombre de tarea	Duration	2012				2014					
			Qtr 1	Qtr 3	Qtr 1	Qtr 3	Qtr 1	Qtr 3	Qtr 1	Qtr 3		
19	Desarrollar un programa de capacitación y la documentación para operadores de e-TOD/Develop training programme and documentation for e-TOD operators	67 days			Juan González 02/05 - 02/08							
20	Conducir programas de capacitación/Conduct training programmes	40 days			Juan González 02/08 - 26/09							
21	Realizar seminarios orientados a los especialistas e-TOD, indicando los planes y los beneficios operacionales y económicos esperados/Hold seminars oriented towards e-TOD experts, indicating plans and operational and economical benefits expected.	133 days						Juan González 26/09 - 31/03				
22	Análisis de requerimientos tecnológicos / Technological requirements analysis	146 days										
23	Evaluación de costos del proyecto en general/General project cost assessment	87 days			Estados 31/10 - 28/02							
24	Elaborar la documentación financiera/Draft financial documentation	44 days			Estados 04/03 - 02/05							
25	Presentar a la alta gerencia del documento final para su aprobación/Present the High Level Management the final document for approval	13 days			Estados 06/05 - 22/05							
26	Adquisición de herramientas tecnológicas/Acquisition of technological tools	326 days										
27	Adquirir los software, hardware y aplicativos de última tecnología/Acquire software and hardware and applications of state-of-the-art technology	152 days						Estados 02/09 - 01/04				
28	Instalar y poner en funcionamiento de las herramientas tecnológicas adquiridas/Install and put into operation technology tools acquired	132 days						Estados 01/04 - 01/10				
29	Entrenar al personal especializado en el manejo de estas herramientas/Train specialised personnel in handling these tools	43 days						Estados 02/10 - 01/12				
30	Implantación propiamente dicha (bajo GIS)/Implementation itself (under GIS)	261 days										
31	Carga de datos>Loading of data	150 days						Estados 01/01 - 29/07				
32	Verificación de carga/Check data loading	100 days						Estados 30/07 - 16/12				
33	Análisis de resultados/Analysis of the results	11 days						Estados 17/12 - 31/12				
34												
35	Desarrollo del GIS en Estados SAM para gestión de datos e-TOD, y gestionar info requerida para apoyar aplicaciones de nav aérea definidas/Development of GIS in SAM States for e-TOD and manage info required to support air nav applications	910 days										
36	Diagnóstico/Diagnosis	224 days										
37	Evaluación: costo beneficio, personal especializado, equipamiento de hardware y software/Cost-benefit assessment, specialised personnel, hardware and software	43 days			Estados 01/03 - 30/04							
38	Guía para la adquisición de un sistema de información geográfica/Guidance material for acquisition of a GIS	50 days			Juan González 02/01 - 09/03							

Desarrollos para el suministro de los datos electrónicos sobre el terreno y los obstáculos (e-TOD) en los Estados SAM + GIS/Development for the provision of terrain and obstacle electronic data (e-TOD) in SAM States + GIS

ID	Nombre de tarea	Duration	2012						2014						
			Qtr 1	Qtr 3	Qtr 1	Qtr 3	Qtr 1	Qtr 3	Qtr 1	Qtr 3	Qtr 1	Qtr 3			
39	Manual Guía Implantación de un GIS/Guidance for GIS implementation	50 days			Juan González 02/01 - 09/03										
40	Selección y adquisición de software y hardware más adecuado/Selection and acquisition of most adequate software	174 days			Estados 12/03 - 08/11										
41	Realizar Acuerdos/Carry out agreements	201 days													
45	Capacitación/Training	303 days													
46	Desarrollar un programa de capacitación y documentación para operadores de GIS + AIXM/Develop a training programme and documentation for operators of GIS + AIXM	63 days						Juan Gonzalez/Coordinador OACI 05/08 - 30/10							
47	Conducir programas de capacitación/Conduct training programmes	40 days						Estados 30/10 - 24/12							
48	Realizar seminarios orientados a los especialistas e-TOD, indicando los planes y los beneficios operacionales y económicos esperados/Make seminars oriented to e-TOD experts indicating plans and operational and economic benefits expected	200 days						Estados 26/12 - 01/10							
49	Generar base de datos/Generation of data bases	402 days													
50	Definición de bases de datos/Definition of data bases	100 days						Estados 30/08 - 16/01							
51	Carga de datos/Data loading	150 days													
52	Verificación de carga/Check data loading	100 days													
53	Análisis de resultados/Analysis of results	11 days													
54	Generación AIXM/AIXM Generation	40 days													
55	Generar productos basados en AIXM/Generate AIXM-baed products	40 days												Estados 04/05 - 26/06	

APPENDIX E

SERVICE LEVEL AGREEMENT

Aeronautical Information Service (Other Office)

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SERVICE LEVEL AGREEMENT

Aeronautical Information Service (Other Office)

No section of this work may be reproduced or copied, stored, transmitted, en electronic format, photocopy, recording, or any other technology, outside of its own framework without the consent of the two intervening parties

	<i>Prepared by:</i>	<i>Reviewed by:</i>	<i>Approved by:</i>
<i>Position</i>			
<i>Signature</i>			
<i>Date</i>			

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Scope and Field of Application

The scope of this Agreement covers the provision of data by (other Office) and the Aeronautical Information Service (AIS) and subsequent management thereof, which involves:

- entering;
- editing;
- formatting;
- publication/storage, and
- distribution/provision

aeronautical information/data through:

- the AIP, with the corresponding amendments;
- the AIP supplements;
- NOTAMs and PIBs;
- AIC and AIRAC; and
- checklists and lists of valid NOTAMs.

This agreement applies to both the Aeronautical Information Service (AIS) and the office (other Office).

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Control of changes

Document

<i>Coding:</i>	AC
<i>Title:</i>	Service Level Agreement
<i>Owner:</i>	AIS – (other Office)
<i>Location of the master copy:</i>	AIS (country)
<i>Date of last update:</i>	19/10/2012

Control of modifications

<i>Date</i>	<i>Version</i>	<i>Reason for the modification</i>	<i>Responsible party</i>
19/10/2012	01	Document definition	SAM/AIM/4

This Agreement will be updated whenever a new versión thereof is produced.

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TERMS AND DEFINITIONS..... ERROR! BOOKMARK NOT DEFINED.

1. INTRODUCTION..... ERROR! BOOKMARK NOT DEFINED.

2. DESCRIPTION OF THE SERVICE ERROR! BOOKMARK NOT DEFINED.

2.1. Regulations applicable to the data originator 11

 2.1.1. Data originator rights..... 11

 2.1.2. Data originator duties..... **Error! Bookmark not defined.**

2.2. Regulations applicable to the AIS..... 12

 2.2.1. AIS rights with respect to the data 12

 2.2.2. AIS duties with respect to the data 12

2.3. Período de validez Error! Bookmark not defined.

3. LEVEL OF THE SERVICES TO BE PROVIDED ERROR! BOOKMARK NOT DEFINED.

3.1. Quality requirements..... Error! Bookmark not defined.

3.2. Metadata 14

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3.5. Means for data delivery 14

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3.6. Service level indicators..... Error! Bookmark not defined.

4. MANAGEMENT OF THE AGREEMENT..... ERROR! BOOKMARK NOT DEFINED.

4.1. Conflict settlement Error! Bookmark not defined.

4.2. Revision of the Agreement Error! Bookmark not defined.

5. SIGNATURES..... ERROR! BOOKMARK NOT DEFINED.

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Reference Documentation

Regarding the regulatory technical documents applicable to the AIS:

- ICAO Annex 4 – Aeronautical Charts
- ICAO Annex 5 – Units of Measurement to be used in Air and Ground Operations
- ICAO Annex 11 – Air Traffic Services
- ICAO Annex 14 – Aerodromes
- ICAO Annex 15 – Aeronautical Information Services
- ICAO Doc 8126 – Aeronautical Information Services Manual
- ICAO Doc 8400 – ICAO Abbreviations and Codes
- ICAO Doc 8697 – Aeronautical Chart Manual
- ICAO Doc 9674 – WGS-84 Manual
- (National regulations)

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Terms and definitions

The abbreviations contained in the State AIP are adopted.

Definitions

- Service Level Agreement (SLA): is a written contract between a service provider and its customer to define the agreed level of quality of that service. For this Agreement, the “service provider” will be considered to be the data originator, and the “customer” will be considered to be the Aeronautical Information Service.
- Accuracy: A degree of conformance between the estimated or measures value and the true value.
- Integrity (aeronautical data): The classification is based on the potential risk resulting from the use of altered data. Aeronautical data are classified as:
 - a) Ordinary data: very low probability that the use of altered ordinary data will seriously jeopardise the safe continuation of the flight and landing of an aircraft to such an extent as to cause a catastrophe;
 - b) Essential data: low probability that the use of altered essential data will seriously jeopardise the safe continuation of the flight and landing of an aircraft to such an extent as to cause a catastrophe; and
 - c) Critical data: high probability that the use of altered critical data will seriously jeopardise the safe continuation of the flight and landing of an aircraft to such an extent as to cause a catastrophe.
- Metadata: Information about data, or the set of features associated to any data. Therefore, metadata describe the content, quality, format, and other characteristics of a resource. In general, they respond to the following questions:
 - What: Title and description of a data set or service
 - When: When the data set or service, and the various updates, if any, were created. It may also indicate until when this data set is reliable.
 - How: How data was obtained and processed and how can it be accessed. In the case of service metadata, it must indicate how to access or use the service.

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– **Where:** The geographical area or extension covered by the data, based on latitude/longitude, x and y coordinates, or an administrative area described by its name.

- **Data originator:** (Other Office)
- **Precision:** The smallest different that can be reliably distinguished by a measurement process.
- **Resolution:** Number of units or digits with which a measured or estimated value is expressed or used.

Abbreviations

- **SLA:** Service level agreement

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1. Introduction

The **Service Level Agreement (SLA)** is a formal agreement between:

The Aeronautical Information Service (AIS) and
(other Office);

that defines the services provided, the indicators associated to said services, acceptable and non acceptable levels, the responsibility of the data originator and the Aeronautical Information Service, and the measures to be adopted under specific circumstances.

Likewise, the Director of Civil Aviation is also included in this Agreement as regulator in those cases in which conflicts cannot be resolved between the parties to the SLA

The basic objectives of this SLA are as follows:

- Improve communication. It facilitates two-way communication between the parties. This communication starts at the beginning of the SLA process and continues throughout the life of the agreement. Both parties must get together in order to understand the needs, priorities, and concerns of their counterpart, and thus understand the consequences of not meeting their obligations.
- Protect against excessive expectations. The process facilitates the identification and discussion of expectations and the resources needed to meet them. Consequently, it helps to identify the service levels that are acceptable to both parties and that are attainable and achievable.
- Define mutually agreed standards. A standard is set against which performance can be measured. Customer expectations are identified, the boundaries of service provision are defined, and responsibilities are clarified. An SLA and the communication process involved in its establishment help to minimise conflicts between the parties and provide a means for conflict resolution should a problem arise.
- Measure service effectiveness. As the SLA defines the standards against which the service can be measured and assessed, it provides the basis for assessing the efficacy of the service.

The Agreement must ensure that both parties have a clear understanding of the bases on which data shall be provided, received and used.

This is especially important since most of such data will be part of the Integrated Aeronautical Information Package and will be disseminated to all the aeronautical community, both national and international.

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An agreement of these characteristics is based on the fact that Annex 15 “Aeronautical Information Services”, 3.2, states the need to implement a Quality Management System in AIS which, in turn, means that data entering the system must have a level of quality that meets the requirements contained in that Annex.

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2. Service Description

A description follows of a set of rights and obligations of both the originator and the AIS, which they shall comply with in relation to the provision and handling, respectively, of the data involved.

2.1. Regulations applicable to the data originator

2.1.1. Data originator rights

- a) Request the information generated by the AIS, both in relation to the data specified in 3. and to any other contained in the Integrated Aeronautical Information Package, which may be delivered in printed or digital format.
- b) Make all the changes to data specified in 3. as and when so required, provided the established deadlines are met.

2.1.2. Data originator obligations

- a) Provide the data established in 3. with the requirements and/or formats defined in this agreement in both Spanish and English (see “AIS obligations concerning data”).
- b) Introduce any changes to such data as promptly as possible, meeting the requirements and/or formats established in this agreement.
- c) For those cases in which data is directly related to operational changes (Annex 15, Appendix 4), its delivery shall be based on the AIRAC cycles. In order to know the dates and operation of the AIRAC system, refer to the current Aeronautical Information Circular (AIC) “Use of the AIRAC system”. The reported information will not be modified again at least up to 28 days after the effective date, unless the reported circumstance is of a temporary basis and does not prevail throughout the period (Annex 15, Ch. 6, 6.1 General specifications, 6.1.1).

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2.2. Regulations applicable to the AIS

2.2.1. AIS concerning data

- a) The data received may be converted to other formats (example: digital)
- b) All the information generated by the AIS may be placed at the disposal of users through printed, digital, and other media, included the AIS website.
- c) All the information generated by the AIS may be exchanged with other AIS that so request, in accordance with the conventions listed in Annex 15 15, 3.3.4 and 3.3.5.
- d) All data that, upon being sent to the AIS, does not meet the requirements and/or formats established in this agreement will be sent back to the originator and will not be used to generate any product of the Integrated Aeronautical Information Package until the established requirements have been met.

2.2.2. AIS obligations in relation to data

- a) Data received will be kept in its original format
- b) All information generated by the AIS may be requested by the data originator, and may be delivered in printed or digital format
- c) In the case of any changes or report of changes that affect the data indicated in 3. and that do not come from the originator, the AIS will primarily contact the originator and until such time that the latter does not send the new data with the requirements and/or formats established in this agreement, they will not be used to generate any products of the Integrated Aeronautical Information Package.
- d) When new data or modifications to existing data made by the originator are received, the AIS will conduct the corresponding verifications and will prepare a draft for its publication, which will be sent to the originator for approval, without which no changes to the data involved will be published.
- e) In case the information is not received in English, the AIS may proceed to its translation, and the originator may not ask for the modification of the terms or phrases used, unless the meaning of the information is the opposite to what it was intended.

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2.3. Validity

This Agreement will be valid during the following period (2 years at the most):

<i>Start</i>	<i>End</i>
00/00/0000	00/00/0000

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3. Level of the services to be provided

3.1. Quality requirements

The data and the quality requirements to be met by such data are listed below.

<i>Data</i>	<i>Accuracy</i>	<i>Resolution</i>	<i>Integrity</i>	<i>Remarks</i>

3.2. Metadata

<i>Data</i>	<i>What</i>	<i>When</i>	<i>How</i>	<i>Where</i>

3.3. Dates

All data will be provided in accordance with the following criteria:

- Data will include the effective date (“as of” date) in the following format:
 - Day/month/year time:minute in UTC (e.g.: 05/10/2011 08:27 UTC)
- Data will include the effectiveness period (“until” date), which may be of a permanent nature:
 - Day/month/year hour:minute in UTC (e.g.: 05/10/2011 08:27 UTC, or permanent)
 The “Estimated” concept may also be included when specifying a given date/time for the end of the effectiveness period.

3.4. List of persons authorised to deliver data

<i>Name</i>	<i>Position</i>	<i>Telephone</i>

3.5. Means for delivering data

Data indicated in 3.1 and 3.2 may be delivered through the following means:

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3.5.1. Digital

This will be the preferred format. Data shall be delivered with its corresponding value, with the indicated precision, and with the 32-bit cyclic redundancy check (CRC) resulting from the application of that algorithm to the new data.

In turn, such data shall be accompanied by the signature of the authorised person (which shall appear in 3.6).

To this end, the CDs, DVDs, or emails containing the data together with the 32-bit cyclic redundancy check (CRC) will be valid.

3.5.2. Printed

This will be the alternative format. Data shall be delivered with its corresponding value, with the indicated precision, and with the 32-bit cyclic redundancy check (CRC) that results from applying such algorithm to the new data.

In turn, such data shall be accompanied by the signature of the authorised person (which shall appear 3.6).

To this end, the printed material, fax or email will be valid.

If so requested by the originator, the AIS may deliver an application so that the originator may calculate the 32-bit CRC.

3.6. Service level indicators

In order to assess service performance, the following measurements will be used:

<i>Measurement</i>	<i>Description</i>	<i>Objective</i>
Quality of the data	Data are delivered by the originator with the required quality levels	100 %
Terms	Data will be delivered by the originator to the AIS within the stipulated terms	<ul style="list-style-type: none"> – 100%: 56 days before the date of publication for data affecting safety, in accordance with Annex 15, Appendix 4. (See current AIC “Use of the AIRAC system”). – 95%: during the seven days prior to the effective

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		<p>date, for data not affecting safety.</p> <ul style="list-style-type: none"> – 100%: during the three days prior the effective date for data not affecting safety. <p>After the three days prior to the effective date, the AIS shall be consulted. The publication of this last information will be subject to negotiation.</p>
Format	Data will be delivered by the originator to the AIS without errors in accordance with the format established in this SLA	95 %
Draft for publication	The AIS will deliver to the originator the draft publication for validation within the established timetable	<ul style="list-style-type: none"> – 100%: 20 days after the date of publication for data affecting safety – 95%: on the two days prior to the effective date, for data not affecting safety. – 100%: one day before the effective date, for data not affecting safety.
Publication	The AIS will publish the information on the stipulated deadlines, preferably using the AIRAC cycle	95 %
Quality of the publication	The Integrated Aeronautical Information Package will be provided in accordance with the applicable standards	95 %

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4. Management of the Agreement

4.1. Conflict settlement

In case of differences with respect to that established in this SLA, the following procedure will be followed:

- a) the person responsible for the Aeronautical Information Service will consult with the persons authorised to send data, stating the difference and striving to jointly abide by the agreement;
- b) in case no solution is found, the problem will be referred to the Director of Civil Aviation so that he/she may establish an *ad-hoc* group to study the problem and find a solution to it.

Until such time that the problem is resolved, the data involved will be kept in abeyance.

4.2. Revision of the Agreement

This Agreement will be in force for the following period (2 years at the most), after which it will be reviewed.

During the effective period of this Agreement, the parties may not unilaterally modify it totally or partially.

In the event any of the parties deems it advisable to review it before that period, a meeting will be held between the parties to analyse the changes and then, if agreed, to include them in a new SLA that shall supersede the existing one.

After the validity period, the Agreement must be reviewed by both parties, modified (if necessary), or l período de validez, el Acuerdo deberá ser revisado obligatoriamente por ambas partes, modificado (si fuese necesario) or endorsed by signing a new Agreement, which will be valid for no more than 2 years.

APPENDIX F

AERONAUTICAL INFORMATION SERVICE OF (country)

LETTERS OF AGREEMENT

<i>Location in the AIP</i>	<i>Responsible office</i>	<i>Data</i>	<i>Accuracy</i>	<i>Resolution</i>	<i>Integrity</i>	<i>Remarks</i>
<i>GEN</i>						
National regulations and requirements – Authorities – Address, Phone, mail (GEN 1.1)	– (Directorate of Civil Aviation): airport charges, commercial air transport inspectors, – MET – CUSTOMS – HEALTH – MIGRATION – SERVICE to third parties – ANIMAL HEALTH – PLANT HEALTH – Air Force (country)	Postal address	real value	real value	ordinary	
		Phone	real value	real value	ordinary	
		Fax	real value	real value	ordinary	
		Telex	real value	real value	ordinary	
		e-mail	real value	real value	ordinary	
Entry, transit, and exit of aircraft (GEN 1.2)	(Directorate of Civil Aviation): Legal, Air traffic	Aeronautical code	real value	real value	ordinary	
		Digest	real value	real value	ordinary	
		Decrees	real value	real value	ordinary	
Entry, transit, and exit of passengers and crew (GEN 1.3)	CUSTOMS	Customs requirements	real value	real value	ordinary	
	(Directorate of Migration)	Migration requirements	real value	real value	ordinary	
	HEALTH (MSP)	Public health requirements	real value	real value	ordinary	
Entry, transit, and exit of goods (GEN 1.4)	CUSTOMS	Customs requirements related to cargo	real value	real value	ordinary	
	ANIMAL HEALTH PLANT HEALTH	Plant health requirements	real value	real value	ordinary	
Measurement systems, aircraft marks, holidays (GEN 2.1)	(Directorate of Civil Aviation): AIS	Units of measurements	real value	real value	ordinary	
		Time system	real value	real value	ordinary	
		Geodetic reference	real value	real value	ordinary	
		Nationality marks and registration of aircraft	real value	real value	ordinary	
		Holidays	real value	real value	ordinary	
Abbreviations used in AIS	(Directorate of Civil Aviation):	Abbreviation and meaning	real value	real value	ordinary	

publications (GEN 2.2)	AIS					
Mapping symbols (GEN 2.3)	(Directorate of Civil Aviation): AIS	Symbol and meaning	real value	real value	ordinary	
Location indicators (GEN 2.4)	(Directorate of Civil Aviation): Air traffic, telecommunications	Indicator and location	real value	real value	ordinary	
		Addressee indicators and designators of official entities and aeronautical services	real value	real value	ordinary	
List of navigation aids (GEN 2.5)	(Directorate of Civil Aviation): Electronics – Radio aids	Name of station	real value	real value	ordinary	
		Identification	real value	real value	ordinary	
		Type of radio aid	real value	real value	ordinary	
		Purpose (aerodrome/route)	real value	real value	ordinary	
		Magnetic variation (for VOR)	1 degree	1 degree	essential	Preferred accuracy: 1 minute
Aeronautical Information Services (GEN 3.1)	(Directorate of Civil Aviation): AIS	AIS information	real value	real value	ordinary	
Aeronautical charts (GEN 3.2)	(Directorate of Civil Aviation): AIS	Chart information	real value	real value	ordinary	
Air traffic services (GEN 3.3)	(Directorate of Civil Aviation): Air traffic	Postal address	real value	real value	ordinary	
		Phone	real value	real value	ordinary	
		Fax	real value	real value	ordinary	
		Telex	real value	real value	ordinary	
		e-mail	real value	real value	ordinary	
		Documents on which the service provided is based	real value	real value	ordinary	
		Area of responsibility	real value	real value	ordinary	
		Type of service provided	real value	real value	ordinary	
		Operator/ATS coordination	real value	real value	ordinary	
		Aerodrome circling separation	real value	real value	ordinary	
		Minimum flight altitude	real value	real value	ordinary	
Addresses of ATS units	real value	real value	ordinary			
Aeronautical Communication Services (GEN 3.4)	(Directorate of Civil Aviation): Telecommunications	Postal address	real value	real value	ordinary	
		Phone	real value	real value	ordinary	
		Fax	real value	real value	ordinary	
		Telex	real value	real value	ordinary	
		e-mail	real value	real value	ordinary	
		Area of responsibility	real value	real value	ordinary	
		Types of services provided	real value	real value	ordinary	
		Requirements and conditions on	real value	real value	ordinary	

		which the service is based				
Aerodrome/Heliport rates (GEN 4.1)	(Directorate of Civil Aviation): Administration and finance	Applicable decrees	real value	real value	ordinary	Must be reviewed annually or when modified
		Tables applied, with the corresponding amounts	real value	real value	ordinary	
<i>ENR</i>						
General rules (ENR 1.1)	(Directorate of Civil Aviation): Air traffic	Applicable documents	real value	real value	ordinary	
		Launching of objects	real value	real value	ordinary	
		Acrobatic flights	real value	real value	ordinary	
		Tow and advertisement flights	real value	real value	ordinary	
		Hours and units of measurements	real value	real value	ordinary	
		Airspace structure	real value	real value	ordinary	
		Prohibited areas and flight restrictions	real value	real value	ordinary	
		Glider flights between clouds	real value	real value	ordinary	
		Aircraft take-offs and landings outside of aerodromes in which they are admitted	real value	real value	ordinary	
		Climb of balloons, kites, etc.	real value	real value	ordinary	
Holding, approach, and departure procedures (ENR 1.5)	(Directorate of Civil Aviation): Air traffic,	Uruguay State flights	real value	real value	ordinary	
		General	real value	real value	ordinary	
		Incoming flights	real value	real value	ordinary	
		Outgoing flights	real value	real value	ordinary	
Radar services and procedures (ENR 1.6)	(Directorate of Civil Aviation): Air traffic, Electronics	Holding speeds	real value	real value	ordinary	
		Radar service	real value	real value	ordinary	
		Application of the radar control service	real value	real value	ordinary	
		Emergency procedures	real value	real value	ordinary	
		Radar and communication failure procedure [ordinary] Code assignment system	real value	real value	ordinary	
		Criteria for checking the accuracy of flight level information derived from Mode C	real value	real value	ordinary	
		Radar coverage representation	real value	real value	ordinary	
Location of the radar antenna	1 tenth of a second (lat/long)	1 tenth of a second (lat/long)	ordinary	Preferred accuracy: 1 hundredth of a		

						second
Altimeter setting procedures (ENR 1.7)	(Directorate of Civil Aviation): Air traffic	Methods used	real value	real value	ordinary	
		Basic procedures: general, take-off and climb, en-route vertical separation, approach and landing, missed approach	real value	real value	ordinary	
		Procedures applicable to operators (including pilots)	real value	real value	ordinary	
		Cruise level tables	real value	real value	ordinary	
Air traffic service airspace (ENR 2.1)	(Directorate of Civil Aviation): Air traffic, Inspections	FIR, UIR, TMA, CTR, ATZ, FIZ, CTA: Lateral boundaries – Precisions - Latitude/Longitude: 1 second; altitude: rounded to 10 metres.	1 second (lat/long)	1 second (lat/long)	ordinary	Preferred accuracy: 1 tenth of a second
		Vertical boundaries	10 metres	1 metre	ordinary	Preferred accuracy: 1 metre
		Class of airspace	real value	real value	ordinary	
		Unit providing the service	real value	real value	ordinary	
		Call sign	real value	real value	ordinary	
		Languages	real value	real value	ordinary	
		Area and conditions of use	real value	real value	ordinary	
		Duty hours	real value	real value	ordinary	
		Frequency/purpose	real value	real value	ordinary	
Observations	real value	real value	ordinary			
Lower international ATS routes (ENR 3.1)	(Directorate of Civil Aviation): Air traffic, Inspections	Route designator	real value	real value	ordinary	
		RNP	real value	real value	ordinary	
		Name of significant points	real value	real value	ordinary	
		Coordinates	1 second (lat/long)	1 second (lat/long)	ordinary	Preferred accuracy: 1 tenth of a second
		Magnetic heading	1 degree	1 degree	ordinary	Preferred accuracy: 1 tenth of a degree
		Radial of the VOR	1 degree	1 degree	ordinary	Preferred accuracy: 1 tenth of a degree

		Distance	1 tenth of a NM	1 tenth of a NM	ordinary	Preferred accuracy: 1 metre
		Upper limit	10 metres	1 metre	ordinary	Preferred accuracy: 1 metre
		Lower limit	10 metres	1 metre	ordinary	Preferred accuracy: 1 metre
		Airspace classification	real value	real value	ordinary	
		Lateral limit	1 tenth of a NM	1 tenth of a NM	ordinary	Preferred accuracy: 1 metre
		Direction of cruising levels	real value	real value	ordinary	
		Control unit	real value	real value	ordinary	
		Frequency	real value	real value	ordinary	
		Observations	real value	real value	ordinary	
		Route designator	real value	real value	ordinary	
		RNP	real value	real value	ordinary	
		Name of significant points	real value	real value	ordinary	
		Coordinates	1 second (lat/long)	1 second (lat/long)	ordinary	Preferred accuracy: 1 tenth of a second
		Magnetic heading	1 degree	1 degree	ordinary	Preferred accuracy: 1 tenth of a degree
		VOR radial	1 degree	1 degree	ordinary	Preferred accuracy: 1 tenth of a degree
		Distance	1 tenth of a NM	1 tenth of a NM	ordinary	Preferred accuracy: 1 metre
		Upper limit	10 metres	1 metre	ordinary	Preferred accuracy: 1 metre
		Lower limit	10 metres	1 metre	ordinary	Preferred accuracy: 1 metre
Lower domestic ATS Routes (ENR 3.1)	(Directorate of Civil Aviation): Air traffic, Inspections					

		Airspace classification	real value	real value	ordinary	
		Lateral limit	1 tenth of a NM	1 tenth of a NM	ordinary	Preferred accuracy: 1 metre
		Direction of cruising levels	real value	real value	ordinary	
		Control unit	real value	real value	ordinary	
		Frequency	real value	real value	ordinary	
		Observations	real value	real value	ordinary	
Upper international ATS routes (ENR 3.2)	(Directorate of Civil Aviation): Air traffic, Inspections	Route designator	real value	real value	ordinary	
		RNP	real value	real value	ordinary	
		Name of significant points	real value	real value	ordinary	
		Coordinates	1 second (lat/long)	1 second (lat/long)	ordinary	Preferred accuracy: 1 tenth of a second
		Magnetic heading	1 degree	1 degree	ordinary	Preferred accuracy: 1 tenth of a degree
		VOR radial	1 degree	1 degree	ordinary	Preferred accuracy: 1 tenth of a degree
		Distance	1 tenth of a NM	1 tenth of a NM	ordinary	Preferred accuracy: 1 metre
		Upper limit	10 metres	1 metre	ordinary	Preferred accuracy: 1 metre
		Lower limit	10 metres	1 metre	ordinary	Preferred accuracy: 1 metre
		Airspace classification	real value	real value	ordinary	
		Lateral limit	1 tenth of a NM	1 tenth of a NM	ordinary	Preferred accuracy: 1 metre
		Direction of cruising levels	real value	real value	ordinary	
		Control unit	real value	real value	ordinary	
		Frequency	real value	real value	ordinary	
Observations	real value	real value	ordinary			

Area navigation routes (RNAV) (ENR 3.3)	(Directorate of Civil Aviation): Air traffic, Inspections	Route designator	real value	real value	ordinary	
		RNP	real value	real value	ordinary	
		Name of significant points	real value	real value	ordinary	
		Coordinates	1 second (lat/long)	1 second (lat/long)	ordinary	Preferred accuracy: 1 tenth of a second
		Magnetic heading	1 degree	1 degree	ordinary	Preferred accuracy: 1 tenth of a degree
		VOR radial	1 degree	1 degree	ordinary	Preferred accuracy: 1 tenth of a degree
		Distance	1 tenth of a NM	1 tenth of a NM	ordinary	Preferred accuracy: 1 metre
		Upper limit	10 metres	1 metre	ordinary	Preferred accuracy: 1 metre
		Lower limit	10 metres	1 metre	ordinary	Preferred accuracy: 1 metre
		Airspace classification	real value	real value	ordinary	
		Lateral limit	1 tenth of a NM	1 tenth of a NM	ordinary	Preferred accuracy: 1 metre
		Direction of cruising levels	real value	real value	ordinary	
		Control unit	real value	real value	ordinary	
		Frequency	real value	real value	ordinary	
Observations	real value	real value	ordinary			
Helicopter routes (ENR 3.4)	(Directorate of Civil Aviation): Air traffic, Inspections	Route designator	real value	real value	ordinary	
		RNP	real value	real value	ordinary	
		Name of significant points	real value	real value	ordinary	
		Coordinates	1 second (lat/long)	1 second (lat/long)	ordinary	Preferred accuracy: 1 tenth of a second
		Magnetic heading	1 degree	1 degree	ordinary	Preferred accuracy:

						1 tenth of a degree
		VOR radial	1 degree	1 degree	ordinary	Preferred accuracy: 1 tenth of a degree
		Distance	1 tenth of a NM	1 tenth of a NM	ordinary	Preferred accuracy: 1 metre
		Upper limit	10 metres	1 metre	ordinary	Preferred accuracy: 1 metre
		Lower limit	10 metres	1 metre	ordinary	Preferred accuracy: 1 metre
		Airspace classification	real value	real value	ordinary	
		Lateral limit	1 tenth of a NM	1 tenth of a NM	ordinary	Preferred accuracy: 1 metre
		Direction of cruising levels	real value	real value	ordinary	
		Control unit	real value	real value	ordinary	
		Frequency	real value	real value	ordinary	
		Observations	real value	real value	ordinary	
Radio navigation aids - En Route (ENR 4.1)	(Directorate of Civil Aviation): Electronics – Radio aids, Inspections	Name of station Precisions - Latitude/Longitude: 1 tenth of a second; magnetic variation: 1 minute; elevation: 30 metres.	real value	real value	ordinary	
		Magnetic variation	1 tenth of a second	1 tenth of a second	ordinary	Preferred accuracy: 1 hundredth of a second
		Identification	real value	real value	ordinary	
		Frequency	real value	real value	ordinary	
		Hours of operation	real value	real value	ordinary	
		Coordinates	1 tenth of a second (lat/long)	1 tenth of a second (lat/long)	ordinary	Preferred accuracy: 1 hundredth of a second
		DME antenna elevation	30 metres	1 metre	ordinary	Preferred

						accuracy: 1 metre
		Observations	real value	real value	ordinary	
Significant point designator or code name (ENR 4.3)	(Directorate of Civil Aviation): Air traffic	Designator	real value	real value	ordinary	
		Coordinate	1 second for en-route points; 1 hundredth of a second for standard approach, departure or arrival points	1 second for en-route points; 1 hundredth of a second for standard approach, departure or arrival points	ordinary	Preferred accuracy: 1 tenth of a second for en-route points; 1 thousandth of a second for standard approach, departure or arrival points
		Affected route	real value	real value	ordinary	
		Identification	real value	real value	ordinary	
Aeronautical ground lights - En Route (ENR 4.4)	(Directorate of Civil Aviation): Electronics, Inspections	Coordinates	1 second	1 second	ordinary	Preferred accuracy: 1 tenth of a second
		Type and intensity	100 candles	100 candles	ordinary	Preferred accuracy: 10 candles
		Characteristics	real value	real value	ordinary	
		Hours of operation	real value	real value	ordinary	
		Observations	real value	real value	ordinary	
Prohibited, restricted, and danger areas (ENR 5.1)	(Directorate of Civil Aviation): Air traffic, legal	Identification, name Precisions – Lateral limits (Latitude/Longitude): 1 second; Upper/lower limit: 10 metres	real value	real value	ordinary	
		Lateral limits	1 second (lat/long)	1 second (lat/long)	ordinary	Preferred accuracy: 1 tenth of a second
		Upper limit	10 metres	1 metre	ordinary	Preferred accuracy: 1 metre
		Lower limit	10 metres	1 metre	ordinary	Preferred accuracy:

						1 metre
		Observations	real value	real value	ordinary	
		Working hour	real value	real value	ordinary	
		Type of restriction	real value	real value	ordinary	
		Nature of risk	real value	real value	ordinary	
		Interception risk	real value	real value	ordinary	
		Resolution or decree	real value	real value	ordinary	
Volcanic ash	(Directorate of Civil Aviation): Air traffic, MET	Duration of effect (from, to)	Day/month/year hour:minute	Day/month/year hour:minute	ordinary	
		Volcano name and number	real value	real value	ordinary	
		Colour code level	real value	real value	ordinary	
		Horizontal/vertical extent of the cloud	1 second (lat/long) 10 metres (alt)	1 second (lat/long) 10 metres (alt)	ordinary	Preferred accuracy: 1 tenth of a second 1 metre
		Routes affected	real value	real value	ordinary	
		Closed areas or routes and alternate routes	real value	real value	ordinary	
Military manoeuvre and training area (ENR 5.2)	(Directorate of Civil Aviation): Air traffic, Air Force	Identification	real value	real value	ordinary	
		Lateral limits	1 second (lat/long)	1 second (lat/long)	ordinary	Preferred accuracy: 1 tenth of a second
		Upper limit	10 metres	10 metres	ordinary	Preferred accuracy: 1 metre
		Lower limit	10 metres	10 metres	ordinary	Preferred accuracy: 1 metre
		Announcement activation systems/media, civil flight information	real value	real value	ordinary	
		Observations, time of operation	real value	real value	ordinary	
Location indicator and name of aerodrome (AD 2.1)	(Directorate of Civil Aviation):	Location indicator (4-letter code)	real value	real value	ordinary	
		Complete name of the aerodrome	real value	real value	ordinary	
Aerodrome geographical and administrative data (AD 2.2)	(Directorate of Civil Aviation):	ARP coordinate	1 second (lat/long)	1 second (lat/long)	ordinary	Coordinate: 1 second

		Location	real value	real value	ordinary	Location: 1 metre
		Direction and distance from (city)	real value	real value	ordinary	Precisions – Direction: N, S, E, W, up to 2 directions; Distance: 1 kilometre
		Elevation	1 metre	1 metre	essential	Preferred accuracy: 1 tenth of a M
		Reference temperature	1 degree	1 degree	ordinary	Preferred accuracy: 1 tenth of a degree
		Geoid undulation at AD measuring position	1 metre	1 metre	essential	Preferred accuracy: 1 tenth of a M
		Magnetic variation/annual change	1 minute	1 minute	ordinary	Preferred accuracy: 1 second
		AD management, address, phone, telefax, telex, AFS	real value	real value	ordinary	
		Types of traffic allowed (IFR or VFR)	real value	real value	ordinary	
		Observations	real value	real value	ordinary	

Agenda Item 2: Implementation of systems for aeronautical information data exchange and aeronautical data.

2.1 The Meeting noted that the Secretariat developed the deliverables based on the information available at the SAM/AIM/3 meeting, but the implementation of the project for the application of the aeronautical information/data exchange model is behind schedule.

2.2 The meeting recalled that, since this project is one of the pillars for the subsequent management of the SWIM platform, it is necessary to consider the convenience of designating a new project coordinator or to recommend GREPECAS that the project be deactivated until the States can provide more support for this project.

2.3 The Meeting recalled that this Project was one of the pillars for the future management of the SWIM platform, and deemed it necessary to analyse in detail the future impact of the deactivation of a Project that contained tasks that had been entrusted by GREPECAS.

2.4 In this regard, the Meeting noted that, for those States that had made a big effort to obtain the quality certification, it was extremely important to continue with this Project in order to start the exchange of quality aeronautical information and data as soon as possible.

2.5 The delegates of Brazil, Chile, Ecuador, Peru, and Uruguay expressed that, within their possibilities and time available, they were willing to cooperate with the Secretariat in the production of documents and the sharing of material for its processing if the Secretariat could maintain the Project and coordinate both the Programme and the Project. The Secretariat accepted the offer provided their experts cooperate by virtual means in the development of some documents.

2.6 The Meeting noted that, on issues related to the exchange of aeronautical information and data, it was necessary to generate more specialised knowledge since there were very few AIM experts in the Region that could really develop and cooperate with this Project.

2.7 In this regard, the Meeting considered that the Project had to be reformulated to include deliverables that provided for more training on aeronautical information and data exchange systems, and tasks that reflected the current needs of AIS offices in order to create a knowledge base for the implementation of information exchange models.

2.8 Accordingly, the Secretariat was charged with developing a proposal to review the Project description and its corresponding GANTT, and circulating it to the States for comments, in order to obtain their support for such reformulation and the cooperation of experts to assist in aspects related to the exchange of information in AIXM format.

Agenda Item 3: implementation of the Quality Management System in AIM units

3.1 During the SAM/AIM/2 and SAM/AIM/3 meetings the importance of making quick progress in the Region towards the elimination of AIS deficiencies, was recognised, with emphasis on those directly affecting compliance with the SARPs contained in Annexes 4 and 15.

3.2 It was recalled that the Region is focused on the completion of phase 1 of the AIS-to-AIM transition roadmap, so as to proceed to the next phase and meet the requirements of the ATM operational concept by providing aeronautical information and data in accordance with current user requirements.

3.3 GREPECAS Project G3 focuses on quality management to prevent performance-based navigation (PBN) from having a negative impact on the Region due to lack of quality processes in the management of aeronautical information and the provision of aeronautical data. **Appendices A and B** to this part of the report contain the Project description and GANTT template, respectively, were updated by the meeting.

3.4 The meeting noted that, under the auspices of Regional Project RLA/06/901, an expert was hired to draft a Plan for the Implementation of a Quality Management System for Aeronautical Information Services, addressing each article of ISO 9001:2008, the content of each component, the framework for the implementation of the quality management system, the responsibilities of the various areas, and the actions required for its implementation. This plan for the implementation is shown in **Appendix C** to this part of the report.

3.5 Likewise, the meeting analysed, modified and approved the 6 models for the documented process that appear in **Appendix D** to this part of the report.

3.6 The products approved by the meeting, which guide and assist States in the implementation of Quality Management in AIM processes within the framework of GREPECAS Project G3 are as follows:

- a) QMS System Implementation Plan
- b) Procedures of QMS Corrective and preventive action procedure
- c) QMS internal audit
- d) Control of documents of the AIS management system
- e) Procedure for drafting quality management system documents
- f) Procedure for controlling QMS non-conforming services/products
- g) Control of records of the AIS management system

AIM QMS implementation process in Argentina

3.7 The Argentinean Administration will send its QMS action plan to the Regional Office in November.

AIM QMS implementation process in Colombia

3.8 The meeting noted the QMS implementation process in Colombia, by the NTCGP-1000:2009 (National Quality Standard) which permits compliance with international standard ISO 9001:2008, since it adjusts the terminology and requirements of the latter to its specific application in the entities. The meeting noted that the *Aeronáutica Civil de Colombia* is committed to the guidelines set forth in the various reports. Thus, at present, AIM has a technical team responsible for following up its activities, in accordance with the respective specifications, based on technical standard NTCGP-1000:2009 and on ISO 9001:2008, which applies to Process Letter GSAN-2.2 for managing aeronautical information services.

3.9 Also the Colombian Administration confirmed through a letter to ICAO the date foreseen for implementation of QMS in AIM units, for the first half of 2013

AIM QMS implementation in Uruguayan AIM

3.10 The meeting was informed that the commitment of the Uruguayan *Dirección General de Administración* the commitment for the compliance of the roadmap, the creation of a task force and the designation of a task coordinator, in order to define objectives and scope of the project.

3.11 Also, note was taken on the work team training in Quality Assurance, based on ISO 9001 2008 standard. And the planning for the definition of processes and procedures to document. A schedule was established for the development of the implementation and implementation sessions of processes and procedures were established. The corresponding records were generated, which would be analysed by internal audit.

3.12 To date, the corresponding corrections are being carried out by Internal Audit and also the Service Level Agreements (SLA) have been included to be signed with aeronautical information data received by providers, and it is estimated that they will present for certification by the end of July 2013.

3.13 Uruguay informed that the main reason through which the definition and the signing of Service Level Agreement (SLA) with such providers is due to the fact that there is no information available regarding the certification of those providers.

Complementary NOF and AIS-I Certification in Brazil

3.14 The Brazilian administration presented to the Secretariat a Certificate issued by the Institute of Meteorology, Quality and Technology INMETRO of Brazil, certifying in Quality the *Centro Integrado de Defensa Aérea y Control de Tránsito Aéreo CINDACTA I*, integrating in this certification the NOF and AIS I Offices, complementing the rest of Quality Certifications previously presented on the Aeronautical Information Management Systems of Brazil.

APPENDIX A

SAM Region	PROJECT DESCRIPTION (DP)	PD N° G3	
<i>Programme</i>	Project Title	Start	End
<p><i>AIM</i></p> <p>(ICAO programme coordinator: Roberto Arca Jaurena)</p>	<p>Assessment and development of the AIM QMS in SAM States</p> <p>Project coordinator: Oscar Dioses (Peru)</p> <p>Experts contributing to the project: SAM/AIM IG Eng. David Díaz (Peru)</p>	03/10/11	31/12/12
Objective	Implement guidance material on the implementation of a quality management system in the AIM digital/electronic environment in the SAM Region, based on the regional performance objectives of the performance-based implementation plan for the SAM Region.		
Scope	The project contemplates the assessment and identification of implementation levels associated to quality management in AIM services in the Region. Drafting of an action plan and guides for the implementation of QMS in the AIM digital/electronic environment.		
Metrics	Number of States with ISO 9001:2008 QMS certification		
Goals	50% of States having implemented ISO 9001:2008 by 2012		
Strategy	<p>The implementation of project activities will be coordinated amongst project members, the project coordinator and the programme coordinator, mainly through teleconferences (GoToMeeting tool) as well as meetings that may be held from time to time concurrently with events scheduled in the work programme. The Project Coordinator will coordinate with the Programme Coordinator the inclusion of additional experts if so required by the tasks and work to be performed.</p> <p>The results of the work done will be submitted to State experts in the form of a final consolidated document for analysis, revision, and approval, and will be submitted by the Programme Coordinator to the GREPECAS PPRC.</p>		

Justification	The AIM quality management system must give users the necessary assurance that the distributed aeronautical information/data meet quality requirements in terms of accuracy, resolution, and integrity. A close relationship with other projects is needed in order to collect the operational requirements of the aforementioned applications and their respective tentative implementation dates.				
Related projects	It is related to Projects G1 “Developments for the provision of terrain and obstacle data - ETOD” and G2 “ Aeronautical information/data management”				
Project deliverables	Relationship with the Regional Performance-based Plan (PFF)	Responsible party	Status of implementation*	Delivery date	Remarks
Prepare surveys to establish the levels of compliance and implementation of the AIM QMS based on ICAO guides	PFF: SAM AIM/01	ICAO coordinator		25/11/11	Completed on schedule.
Circulate surveys to States	PFF: SAM AIM/01	ICAO coordinator		17/02/12	Completed on schedule.
Collect and tabulate information from the States	PFF: SAM AIM/01	ICAO coordinator		13/04/12	Completed on 30/03/12.
Describe the steps for QMS implementation	PFF: SAM AIM/01	SAM/AIM/WG		30/03/12	Completed on schedule.

QMS self-evaluation questionnaire	PFF: SAM AIM/01	David Diaz RLA/06/901		30/03/12	Completed on schedule.
Template with QMS assessment results	PFF: SAM AIM/01	David Diaz Peru		30/03/12	Completed on schedule.
Generate implementation report	PFF: SAM AIM/01	ICAO Coordinator Oscar Dioses Peru		01/08/13	Will be completed on schedule.
QMS Implementation plan	PFF: SAM AIM/01	David Díaz RLA/06/901		19/10/12	Completed to date.
QMS corrective and preventive action Procedure	PFF: SAM AIM/01	ICAO Coordinator Oscar Dioses Peru		19/10/12	Completed on date.
Internal audit QMS procedure	PFF: SAM AIM/01	ICAO Coordinator Oscar Dioses Peru		19/10/12	Completed on date.
Control and registration procedure for QMS AIS Service	PFF: SAM AIM/01	ICAO Coordinator Oscar Dioses Peru		19/10/12	Completed on date.
Drafting QMS Documents Procedure	PFF: SAM AIM/01	ICAO Coordinator Oscar Dioses Peru		19/10/12	Completed on date.
Controlling QMS non-conforming services/products Procedure	PFF: SAM AIM/01	ICAO Coordinator Oscar Dioses Peru		19/10/12	Completed on date.
AIS QMS documents control procedure	PFF: SAM AIM/01	ICAO Coordinator Oscar Dioses Peru		19/10/12	Completed on date.

Model SLA with service providers to ensure the quality of information and AIM data exchange.	PFF: SAM AIM/01	Juan J. González Uruguay		19/10/12	Completed on date.
Collect information on certifications and generate report on ISO 9001:2008 certifications in the SAM Region	PFF: SAM AIM/01	ICAO Coordinator		01/08/13	Estimated to be completed on schedule.
Necessary resources	Designation of experts to execute some of the deliverables. Greater commitment of States to support coordinators and experts that are working.				

**Grey Task not started*

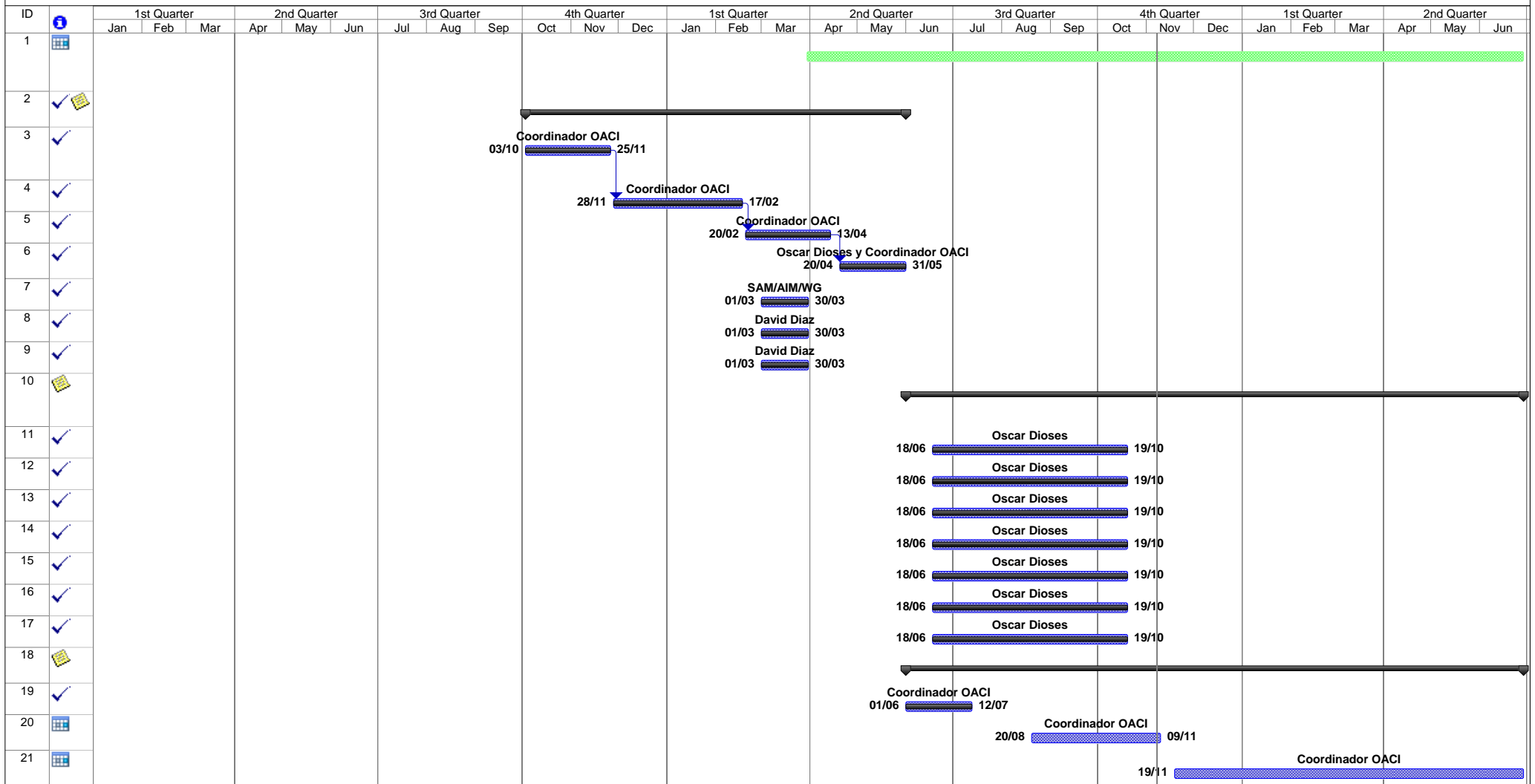
Green Activity underway as scheduled

Yellow Activity started with some delay but would be completed as scheduled

Red This activity has not been implemented as scheduled and mitigation measures are required

MS Project timetable with tasks, sub-tasks, deliverables, and responsible parties

EVALUACION Y DESARROLLO DEL QMS APLICADO A LA AIM DE LOS ESTADOS DE LA REGION SAM/EVALUATION AND DEVELOPMENT OF QMS APPLIED TO AIM IN THE SAM REGION



PLANIFICACIÓN AIS: PROYECTO G3	Tarea		Tareas externas		Resumen inactivo		Sólo el comienzo	
	División		Hito externo		Tarea manual		Sólo fin	
	Hito		Tarea inactiva		Sólo duración		Progreso	
	Resumen		Tarea inactiva		Informe de resumen manual		Fecha limite	
	Resumen del proyecto		Hito inactivo		Resumen manual			

APPENDIX C

CHAPTER	CONCEPTS		QUALITY MANAGEMENT SYSTEM IMPLEMENTATION FRAMEWORK	RESPONSIBLE AREA	HOW WILL I IMPLEMENT THE FRAMEWORK (Action Plan)
	DESCRIPTION	STRATEGY			
<p>Chapter IV, Quality Management System (ISO 9001:2008). The organisation must establish, document, and maintain a quality management system and continuously improve its efficacy in accordance with this International Standard.</p>	<p>General requirements (4.1) a) documented quality policy and quality objective statements; b) a quality manual; c) documented procedures required by this International Standard, d) documents required by the organisation to ensure effective planning, operation, and control of its processes, and e) the records required by this International Standard (see 4.2.4)</p>	<p>In order to achieve sustainable success, top management must adopt a quality management approach. The quality management system of the organization must be based on the principles described in the framework. These principles describe the concepts that are the foundation of an effective quality management system. The organisation must develop a quality management system to ensure that: a) resources are used efficiently; b) decisions are based on objective evidence; and c) it seeks customer satisfaction, and to</p>	<p>a) Focused on the external and internal customer: understand present and future needs of external and internal customers, meet the requirements of external customers and other stakeholders</p>	<p>Responsible Area AIS</p>	<p>Determine the needs of external customer (operators, organizations using the Notam bank) internal customers (ATS, FIS/AFIS, MET control unit; internal/external providers (DGCA, Infrastructure, Standards and Procedures, aerodrome concessionaires, administrative areas, and training centres) Value criteria: Legality, efficacy, continuous improvement Objective: Have guidelines for organisational processes. Focus interest on balancing the needs of emerging stakeholders (vision) Impact assessment: Efficacy of the quality management system.</p>

CHAPTER	CONCEPTS		QUALITY MANAGEMENT SYSTEM IMPLEMENTATION FRAMEWORK	RESPONSIBLE AREA	HOW WILL I IMPLEMENT THE FRAMEWORK (Action Plan)
	DESCRIPTION	STRATEGY			
		meet the needs and expectations of other stakeholders			
			<p>b) Leadership: leaders establish the purpose and orientation of the organisation. It is necessary to create and keep an internal environment in which people feel fully engaged with attaining the goals of the organisation.</p> <p>a) benefits: individuals will understand the goals and objectives of the organisation and will be driven towards them; activities are assessed, aligned, and implemented in a unified manner; and poor communication between the different levels of the organization will be minimized.</p>	General management	<p>Top management must provide members of the organisation with the resources (described in the operating plan), training (training programmes), and the legal framework (procedures) necessary to act responsibly in the processes of the services they provide. It must inspire, promote, and recognize the contributions of its members (establishing motivational policies)</p> <p>Value criteria: Legality, Procurement of resources for AIS processes</p> <p>Objective: Create a proactive learning-driven approach, empowering people at all levels</p>

CHAPTER	CONCEPTS		QUALITY MANAGEMENT SYSTEM IMPLEMENTATION FRAMEWORK	RESPONSIBLE AREA	HOW WILL I IMPLEMENT THE FRAMEWORK (Action Plan)
	DESCRIPTION	STRATEGY			
			<p>c) Participation of individuals: Individuals at all levels are the essence of an organisation and their full commitment makes it possible to use their skills for the benefit of the organization. Benefits: Individuals motivated, committed, and engaged with the organisation – Innovation and creativity upon promoting the objectives of the organisation – People are responsible for their own performance – Individuals who wish to participate and contribute to continuous improvement</p>	<p>General management and Head of the area</p>	<p>Create awareness among the members of the organisation so that: they understand the importance of their contribution to the processes they perform; they identify the limitations to their performance; who take ownership of problems and assume their responsibilities; who actively seek opportunities to enhance their competencies, knowledge, and experience; who debate openly about problems and issues. Objective: Integrate worker’s proactive attitudes. Value criteria: Generate skills for creativity, innovation, participation, transparency, and teamwork. Impact assessment: Level of commitment of the organisation’s personnel.</p>

CHAPTER	CONCEPTS		QUALITY MANAGEMENT SYSTEM IMPLEMENTATION FRAMEWORK	RESPONSIBLE AREA	HOW WILL I IMPLEMENT THE FRAMEWORK (Action Plan)
	DESCRIPTION	STRATEGY			
			<p>d) Process-based approach: An expected result is achieved more efficiently when the activities and related resources are managed as a process. Benefits: lower costs and shorter timeframes through the efficient use of resources; improved, consistent, and predictable results; focused and prioritized opportunities for improvement</p>	Head of AIS area	<p>Comply with ISO 9001:2008 article 4.1, in order to:</p> <ul style="list-style-type: none"> a) Define systematically the activities necessary to achieve the desired result b) Establish clear responsibilities, including accountability, for the management of key activities c) Analyse and measure the capacity of key activities d) Identify key activity interfaces within and among organizational functions e) Focus on factors such as resources, methods, and materials to improve key activities of the organization f) Assess risks, consequences, and impact of activities on customers, providers, and other stakeholders <p>Objective: Effective quality management systems with good interactions among its processes, and which support prompt improvements. Processes respond to the needs</p>

CHAPTER	CONCEPTS		QUALITY MANAGEMENT SYSTEM IMPLEMENTATION FRAMEWORK	RESPONSIBLE AREA	HOW WILL I IMPLEMENT THE FRAMEWORK (Action Plan)
	DESCRIPTION	STRATEGY			
					of stakeholders Value criteria: Legality, efficacy, continuous improvement
			<p>e) Management systems approach: The identification, understanding, and management of interrelated processes as one system contribute to the effective and efficient achievement of objectives in a deficient organisation. Benefits: a) integration and alignment of processes to obtain the desired results in the best possible conditions b) capacity to focus efforts in key processes c) give confidence to stakeholders on consistency, efficacy, and efficiency of the organisation</p>	Head of the AIS area	<p>Structure a system to attain the objectives of the organisation in the most effective manner. Understand interdependencies of system processes. Structured approaches that harmonise and integrate processes. Improve understanding of functions and responsibilities required to achieve common objectives, and, thus, minimize barriers between crossing functions. Understand the capacities of the organisation and define resource limitations before acting. Focus and define how specific activities should operate within a system. Continuously improve the system through measurement and assessment. Objective: Design a quality management system under a systematic approach. Value criteria: Legality,</p>

CHAPTER	CONCEPTS		QUALITY MANAGEMENT SYSTEM IMPLEMENTATION FRAMEWORK	RESPONSIBLE AREA	HOW WILL I IMPLEMENT THE FRAMEWORK (Action Plan)
	DESCRIPTION	STRATEGY			
					efficacy, efficiency and continuous improvement
			<p>Continuous improvement: A permanent objective of the organisation must be the continuous improvement of its overall performance. Benefits:</p> <ul style="list-style-type: none"> a) Better performance due to improved capacities of the organisation. b) Alignment of improvement activities at all levels with the strategic goals of the organisation. c) Flexibility to react quickly to opportunities. 	Head of the AIS area	<p>Apply a consistent approach in the entire organisation based on continuous improvement of the organisation's performance. Train staff on continuous improvement methods and tools—which could be the result-based management method. Make sure continuous improvement of products, processes, and systems is the objective of each individual working in the organisation. Establish goals and measurements for continuous improvement (objectives to ensure the quality of AIS information). Accept and recognize improvements.</p> <p>Objective: Set improvement priorities based on the needs and expectations of stakeholders, and of the organisation's providers and personnel.</p> <p>Value criteria: Efficacy and continuous improvement</p>

CHAPTER	CONCEPTS		QUALITY MANAGEMENT SYSTEM IMPLEMENTATION FRAMEWORK	RESPONSIBLE AREA	HOW WILL I IMPLEMENT THE FRAMEWORK (Action Plan)
	DESCRIPTION	STRATEGY			
			<p>Fact-based approach for decision making; Efficient decisions are based on data and information analysis. Benefits: a) make informed decisions b) improve capacity to demonstrate the efficacy of previous decisions using factual records c) improve capacity to review, challenge, and change opinions and decisions</p>	Head of the AIS area	<p>Make sure data and information about internal and external AIS providers are sufficiently exact and reliable; make sure that the service manages the information available to those who need it. Analyse data and information using valid methods, such as those required to prepare an AIP. Make decisions and take action based on fact analysis, balanced out by experience and intuition. Objective: Ensure that decisions are effective. Value criteria: Efficacy and continuous improvement</p>

CHAPTER	CONCEPTS		QUALITY MANAGEMENT SYSTEM IMPLEMENTATION FRAMEWORK	RESPONSIBLE AREA	HOW WILL I IMPLEMENT THE FRAMEWORK (Action Plan)
	DESCRIPTION	STRATEGY			
			<p>Mutually beneficial relationship with the provider: For the organization and particularly for the AIS service, providers are independent parties and a mutually beneficial relationship is the key for increasing either party's capacity to create value. Benefits:</p> <ul style="list-style-type: none"> a) increase capacity to create value for both parties. b) flexibility and promptness in responding to the changing market or customer needs and expectations. c) cost and resource optimization. 	Head of the AIS area	<p>This is one of the most important principles for the AIS service since it must ensure the quality of the information it receives. To that end, it must pool experience and resources with internal and external providers, identifying and selecting key providers, keeping clear and open communications. It shall share information and future plans with providers, establishing joint activities for development and improvement. It is also important to inspire, encourage, and recognize the improvements and achievements of providers.</p> <p>Objective: Ensure that AIS information system is interoperable</p> <p>Value criteria: Efficacy and compliance with requirements</p>
			<p>b) Document control: Documents required for the quality management system must be controlled. Records are a special</p>	Head of the AIS area	<p>In this regard, we should ask: What documents must I have to support the efficacy and efficiency of the organisation's processes? In other words, do current</p>

CHAPTER	CONCEPTS		QUALITY MANAGEMENT SYSTEM IMPLEMENTATION FRAMEWORK	RESPONSIBLE AREA	HOW WILL I IMPLEMENT THE FRAMEWORK (Action Plan)
	DESCRIPTION	STRATEGY			
			type of document and must be controlled in accordance with the requirements listed in 4.2.4. Reference: 4.2.3 of ISO 9001:2008 Note: A DOCUMENTED PROCEDURE IS REQUIRED		documents allow for controlling the entire supply chain of aeronautical information from the time documents are generated to their distribution to the next scheduled user? Reference 3.2.2 Annex 15. Having defined the aforementioned assumption, we must generate a documented procedure that meets all the requirements of article 4.2.3 of ISO 9001:2008. Objective: Generate the necessary documents to support the effective and efficient operation of the organisation's processes as well as those required by ISO 9001:2008 and keep them under control. Value criteria: Efficacy and compliance with the requirements of ISO 9001:2008 and Annex 1
			b) Record control: Records must be established and kept as evidence that requirements are being	Head of the AIS area	In this regard, we should also ask: What records show compliance with the requirement? In other words, Do current records prove

CHAPTER	CONCEPTS		QUALITY MANAGEMENT SYSTEM IMPLEMENTATION FRAMEWORK	RESPONSIBLE AREA	HOW WILL I IMPLEMENT THE FRAMEWORK (Action Plan)
	DESCRIPTION	STRATEGY			
			met, and of the effective operation of the quality management system. Records must remain legible, easily identifiable, and retrievable. A documented procedure must be established to define the controls required for the identification, storage, protection, retrieval, retention time, and disposal of records. Note: A DOCUMENTED PROCEDURE IS REQUIRED		compliance with all of the requirements set out in Annex 15 or Doc 4444? Another question: What records show the efficacy of AIS processes? (reduction of FPLs, Notam with errors), What records show continuous improvement? Status of implementation of the corrective and preventive action specified in internal audits and/or management reviews. Objective: Generate the necessary records that show compliance with requirements, efficacy, and continuous improvement. Value criteria: efficacy and continuous improvement

CHAPTER	CONCEPTS		QUALITY MANAGEMENT SYSTEM IMPLEMENTATION FRAMEWORK	RESPONSIBLE AREA	HOW WILL I IMPLEMENT THE FRAMEWORK (Action Plan)
	DESCRIPTION	STRATEGY			
<p>Chapter V Management Responsibility. Leadership, commitment and active participation of top management are essential to develop and maintain an effective and efficient quality management system to attain benefits for all stakeholders. To obtain these benefits, it is necessary to establish, maintain and increase customer satisfaction. Top management should consider actions such as:</p> <p>a) establish a vision, policies and strategic objectives consistent with the purpose of the organisation, b) lead by example, in order to gain the trust of the personnel, c) communicate the vision of the organisation as well as the values concerning quality and the quality management system, d) participate in</p>	<p>Management Responsibility. Top management must provide evidence of its commitment with the development and implementation of the quality management system, as well as with the continuous improvement of its efficacy by:</p> <p>a) communicating to the organisation the importance of meeting customer as well as legal and regulatory requirements, b) establishing the quality policy, c) ensuring that quality objectives are set, d) conducting management reviews, and e) making sure resources are available (5.1)</p>	<p>As a supplement to phased or gradual continuous improvement, top management must also consider radical changes to process as a way to upgrade the organisation's performance. During such changes, management should take appropriate measures to ensure that resources and communications are in place to maintain the quality management system functions. Top management should identify the organisation's production processes, since these are directly related to the organisation's success. Top management should also identify those supporting processes</p>	<p>a) Management commitment: Top management defines and establishes the organisation's quality and safety policies and objectives, making sure it has the necessary elements to improve efficacy, efficiency and reduce the risks of processes, and it undertakes to:</p> <p>(1) Enforce, maintain and improve the quality and safety policy to meet the expectations of customers and stakeholders, leading and obtaining the commitment of its employees. (2) Ensure that procedures and work instructions are carried out consistently and in compliance with customer requirements and the established legal and regulatory</p>	<p>General manager</p>	<p>a) Ensure that the sequence and interaction of AIS processes are designed to effectively and efficiently achieve the desired results. What are the desired results? b) Ensure that inputs, activities, and outputs of AIS processes are be clearly defined and controlled. c) Follow up inputs and outputs to ensure individual processes are interrelated and operate effectively and efficiently, d) Identify and manage risks, and take advantage of opportunities for improving performance, e) Conduct the data analysis to facilitate continuous improvement of processes, f) Identify the owners of each process and give them full responsibility and authority, g) Manage each process to reach its objectives, h) Needs and expectations of stakeholders. Objective: Make sure that all processes operate as an</p>

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<p>improvement projects in the search for new methods, solutions and products, e) obtain direct feedback on the efficacy and efficiency of the quality management system, identify production processes that contribute value to the organisation, f) identify supporting processes that affect the efficacy and efficiency of production processes, g) create an environment that promotes active participation and personal development, and h) provide the structure and resources needed to support the strategic plans of the organisation.</p>		<p>that affect the efficacy and efficiency of production processes of the needs and expectations of stakeholders. Management should ensure that all processes operate as an effective and efficient network. Management should analyse and optimise process interaction, including both production and supporting processes.</p>	<p>requirements; that problems are identified and resolved; and that the organisation reviews and continuously improves its procedures and work instructions. (3) Ensure that problems and hazards are identified and resolved by reviewing and continuously improving the documents of the documentary structure. (4) Provide the necessary resources for an effective and efficient compliance with the processes that contribute and maintain value.</p> <p>Note: MUST BE CONSIDERED IN THE QUALITY MANUAL</p>		<p>effective and efficient network. Value criteria: efficacy and continuous improvement</p>

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			<p>b) Focus on the customer and the needs of other stakeholders. The success of the organisation depends on understanding and meeting current and future needs and expectations of current and future customers and potential end users, and understanding and considering those of other stakeholders. Note: MUST BE CONSIDERED IN THE QUALITY MANUAL</p>	General manager	<p>In order to meet the needs and expectations of all stakeholders, the organisation shall:</p> <p>a) Identify its stakeholders and give a consistent response to their needs and expectations, and translate the identified needs and expectations into requirements,</p> <p>b) Communicate the requirements to all the service, focusing on process improvement to make sure value is created for the identified stakeholders.</p> <p>In order to meet customer and end user needs and expectations, management must:</p> <p>a) Understand the needs and expectations of its customers, including potential customers,</p> <p>b) Comply with product characteristics established in Annex 15 for customers and end users,</p>

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			<p>c) Quality policy: Top management shall use the quality policy as a means to lead the organisation towards performance improvement.</p> <p>The organisation's quality policy shall be assigned equal importance as, and be consistent with, other overall policies and strategies of the organisation</p> <p>Note: MUST BE CONSIDERED IN THE QUALITY MANUAL AND BE PUBLISHED IN THE ORGANISATION</p>	General manager	<p>The quality policy must:</p> <p>a) Be consistent with top management's vision and strategy for the organisation's future.</p> <p>b) Permit the understanding and pursuit of quality objectives through the organisation, demonstrate top management's commitment to quality, and provide sufficient resources to achieve the objectives.</p> <p>c) Help promote a commitment to quality at all levels of the organisation, with a clear leadership from top management.</p> <p>d) Apply continuous improvement to the satisfaction of needs and expectations of customers and other stakeholders, and allow for an effective formulation and efficient communicate.</p> <p>Objective: Establish guidelines for designing a good quality policy.</p>

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			<p>D) Planning quality objectives: The strategic planning and quality policy of the organisation provides a frame of reference for the establishment of quality objectives. Top management shall establish these objectives to improve the performance of the organisation. Objectives shall be measurable to facilitate an effective and efficient management review.</p>	General manager	<p>In setting the objectives, the organisation must consider:</p> <ul style="list-style-type: none"> a) Current and future needs of the organisation and those considered in the ATM operational concept, b) Significant findings of management reviews, c) Current performance of products and processes, levels of satisfaction of stakeholders, the results of self-assessments, comparative studies (benchmarking) d) Opportunities for improvement and resources needed to meet the objectives.
			<p>E) Planning of the quality management system: The head of the AIS area shall assume the responsibility for planning the quality of its service. This planning shall focus on the definition of the processes needed to effectively and efficiently meet the</p>	Head of the AIS area	<p>The results of AIS service quality planning shall define:</p> <ul style="list-style-type: none"> a) The processes for generating the product and support needed in terms of the skills and knowledge required for the service, b) The responsibility and authority for the implementation of process improvement plans, c) The resources needed, such as financial resources and

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			quality objectives and requirements established in accordance with the organisation’s strategy. Input data for effective and efficient planning include the organisations’ strategies, defined objectives, defined needs and expectations of customers and other stakeholders, the assessment of legal and regulatory requirements, the assessment of legal and regulatory requirements, the assessment of product performance data, assessment of process performance data, lessons learned from previous experiences, opportunities for improvement, and data related to risk assessment and mitigation.		infrastructure, d) Indicators to assess service performance improvement, e) Improvement requirements, including methods and tools. f) Documentation requirements, including records.

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			<p>F) Responsibility, authority and communication: The head of the AIS area shall define and then communicate the responsibility and authority in order to implement and maintain an effective and efficient quality management system. The personnel of the organisation must be assigned the responsibility and authority that will enable them to contribute to the achievement of quality objectives, and their participation, motivation and commitment must be established.</p>	<p>Head of the AIS area</p>	<p>Many public organizations have a Functions Manual and internal work regulations, which, in addition to the responsibilities established in the procedures, permit full compliance with ISO 90001:2008</p>
			<p>G) Management representative: Top management shall appoint and confer authority upon a management</p>	<p>General manager</p>	

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			representative to manage, follow up, assess, and coordinate the quality management system. The purpose of this appointment is to increase the efficacy and efficiency of the operation and of the improvement of the quality management system. The representative shall respond to top management and shall communicate with customers and other stakeholders on matters related to the quality management system. Note: DESIRABLE, IN THE QUALITY MANUAL		
			H) Internal communication: The organisation's top management shall define and implement an effective and	General manager	a) Communication conducted by management in the working areas, team informative meetings and other meetings, <i>e.g.</i> , those to acknowledge achievements,

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			efficient process to communicate the quality policy, the quality requirements, the quality objectives, and the achievements. The provision of this information can help improve AIS service performance, and directly commits people to the achievement of quality objectives. Management should actively promote feedback and communication of AIS personnel to engage their participation. Note: “WHAT” AND “HOW” IN THE QUALITY MANUAL		b) Newsletters, newspapers, and internal journals, c) Audio-visual and electronic means, such as email or websites, and surveys to the members of the AIS service and suggestion schemes. Objective: Ensure communication between top management and the members of the AIS service Value criteria: Proactive communication
			I) Management review: Top management shall develop the management review activity beyond the verification of efficacy and efficiency of the	General manager	In order to bring value to the organisation from the management review, top management shall control the performance of the production and support processes through systematic reviews based on quality management

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			quality management system, turning it into a process that covers the entire organisation and that also assesses the efficiency of the system. Through its leadership, top management should encourage the exchange of new ideas through open discussions and input assessment during management reviews. Review inputs and outputs are specified in articles 5.6.2 and 5.6.3 NOTE: IT IS PREFERABLE TO HAVE A PROCEDURE.		principles. The frequency of the review shall be determined based on the needs of the organisation. Input data for the review process shall provide results beyond the efficacy and efficiency of the quality system. The results of the reviews shall provide data that can be used to plan the improvement of the organisation's performance. AIS is a service that operates on the basis of the information provided by its internal and external providers; quality of information is an AIM requirement. The entire organisation must be aimed at the implementation of systems that ensure the quality of data Objective: Structure a decision-making body in the organisation for continuous improvement. Value criteria: Continuous improvement.

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<p>Chapter VI Resource management. Top management must ensure that the essential resources both for strategy implementation and the achievement of the organisation’s objectives are identified and available. This shall include resources for the operation and improvement of the quality management system, as well as for customer and other stakeholder satisfaction. Resources may be individuals, infrastructure, workplaces, information, providers and business partners, natural and financial resources.</p>	<p>Human resources (6.2). The personnel performing work that affects the quality of the product must be qualified based on appropriate education, training, skills, and experience.</p>	<p>The chief of the AIS service must improve both the efficacy and efficiency of the organisation, including the quality management system, through participation and support from individuals. To assist in the achievement of its performance improvement objectives, the organisation must promote participation and development of its personnel.</p>	<p>Awareness and training The planning of education and training requirements must take into account the changes resulting from the nature of AIS service processes, personnel development stages, and organisational culture.</p> <p>The objective is to provide personnel with knowledge and skills that, along with experience, will improve their competence.</p> <p>Education and training must emphasise the importance of meeting the requirements and the needs and expectations of customers and other stakeholders. It shall also include awareness of the consequences that failure to meet the</p>	<p>Head of the AIS area</p>	<p>In order to support the achievement of AIS service objectives and the development of its personnel, education and training planning shall consider:</p> <ul style="list-style-type: none"> a) Personnel experience. b) Tacit and explicit knowledge. c) Leadership and management skills. d) Planning and improvement tools. e) The establishment of teams. f) Problem solving. g) Communication skills. h) Culture and social behaviour. i) Knowledge of the needs and expectations of customers and other stakeholders. j) Creativity and innovation.

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			requirements has on the organisation and its personnel NOTE: IT IS PREFERABLE TO HAVE A PROCEDURE.		
	<p>Infrastructure (6.3). The organisation must determine, provide and maintain the infrastructure required to achieve conformity with product requirements. Infrastructure includes, where applicable:</p> <ul style="list-style-type: none"> a) buildings, workspace and associated services, b) Process equipment (both hardware and software), and c) Support services (such as transportation or communication). 	<p>The head of the AIS service shall define the infrastructure required for the generation of AIS products, taking into account the needs and expectations of stakeholders. Infrastructure includes resources such as premises, working space, tools y equipments, support services, information and communication technology, and transportation facilities.</p>	<p>Infrastructure definition process. The process by which the required infrastructure is defined in order to achieve effective and efficient product completion. It shall include the following:</p> <ul style="list-style-type: none"> a) provide an infrastructure in terms of objectives, function, performance, availability, cost, safety, protection and renewal; b) develop and implement maintenance methods to ensure that the infrastructure continues meeting the organisation’s needs; 	Head of the AIS area	<p>Maintenance plans include equipments of interconnected processes, such as communication, IT.</p>

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			these methods shall consider maintenance kind and frequency, and verification of the operation of each infrastructure element, based on its criticality and application; c) assess the infrastructure against needs and expectations of all stakeholders; d) consider environmental aspects associated with the infrastructure, such as conservation, pollution, wastes, and recycling. NOTE: IT IS PREFERABLE TO HAVE PROCEDURES ESTABLISHING “HOW” AND “WHEN” MAINTENANCE IS CARRIED OUT		

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<p>Chapter VII Product completion (7). The organisation must plan and develop the processes required for product completion. Planning of product completion must be consistent with the requirements of the other processes of the quality management system (see 4.1).</p> <p>During product completion planning, the organisation must determine, when appropriate, the following:</p> <p>a) Quality objectives and requirements for the product,</p> <p>b) The need to establish processes, documents, and to provide specific resources for the product,</p> <p>c) Activities required for verification, validation, follow-up, inspection, trial / test specified for the product, as well as product acceptance criteria,</p> <p>d) Records needed to demonstrate that the</p>	<p>Planning product completion (7.1). The organisation must plan and develop the necessary processes for product completion. The planning of product completion must be consistent with the requirements of the other processes of the quality management system (see 4.1).</p> <p>During product completion planning, the organisation must determine the following, when appropriate:(see 7.1)</p>	<p>In order to plan the AIS service, we must have a clear understanding of the requirements established in Annex 15. The process-based approach ensures that process inputs are defined and recorded to serve as a basis for the formulation of requirements, which may be used for verification and validation of results. Inputs may be internal or external to the AIS service.</p>	<p>Inputs and outputs and process review</p> <p>Compliance with input requirements may imply consultation with internal and external parties. Inputs derived from activities not yet fully assessed should be subject to evaluation through subsequent review, verification and validation. The AIS service must identify significant or critical features of the products and processes in order to develop an effective and efficient plan for controlling and following up process activities.</p> <p>Process results that have been verified against process input requirements, including acceptance criteria, shall consider the needs and</p>	<p>Head of the AIS area</p>	<p>The AIS service shall carry out regular reviews on process performance to ensure that the process is consistent with the operating plan.</p> <p>Some examples of elements to be considered in this review:</p> <p>a) Reliability and repeatability of the process.</p> <p>b) Identification and prevention of potential non-conformities.</p> <p>c) Consistency of inputs and results with planned objectives, the potential for improvement, and unresolved matters.</p>

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completion processes and the resulting product meet the requirements (see 4.2.4). The result of this planning must be properly submitted for the organisation's operational methodology.			expectations of the customer and other stakeholders. For verification purposes, the results shall be recorded and assessed against input requirements and acceptance criteria. This assessment must identify corrective action, preventive action, or potential improvements required for process efficacy and efficiency. The product verification can be carried out during the process in order to identify variations.		

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	Customer-related processes (7.2). Determining product-related requirements (see 7.2.1)	The organisation must determine: a) the requirements specified by the customer, including requirements for the delivery and subsequent activities and, b) the requirements not established by the customer but necessary for the specified or foreseen use, when known, c) legal and regulatory requirements related to the product, and d) any additional requirement defined by the organisation.	The AIS service determines the requirements of its product through the application of Annex 15, Annex 4, and local regulations established by the aeronautical authority.	Head of the AIS area			
	Review of product-related requirements (see 7.2.2)	The organisation must review product-related requirements. This review must be carried out before the organisation is committed to providing a product to	The AIS service must have records proving compliance with the requirements defined by the customer along with additional requirements determined by the	Head of the AIS area	When product and/or service requirements are modified, the organisation must ensure that the documentation is modified and that the personnel are aware of the modified requirements.		

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		the customer (for example, sending offers, acceptance of contracts or orders, acceptance of changes to contracts or orders) and must ensure that a) product requirements are defined, b) differences between contract or order requirements and those previously established are resolved, and c) the organisation can meet the defined requirements.	organisation, before acceptance, that they can be met and that they are coordinated with all stakeholders.		
	Communication with the customer (see 7.2.3)	The organisation must determine and implement effective provisions for communicating with customers related to a) product information, b) queries, contracts or orders, including modifications, and c)	The AIS service must ensure that the organisation has defined mutually accepted processes for an effective and efficient communication with customers and other stakeholders. The organisation must	Head of the AIS area	The organisation must establish the means of communication it will use to communicate with customers. For example: For service information: the web to inform current and future customers about the services it provides. For queries, new requirements, and modifications: documents,

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		customer feedback, including customer complaints.	implement and maintain such processes to ensure proper understanding of the needs and expectations of stakeholders, and to facilitate their translation into organisational requirements. These processes shall include the identification and review of relevant information and should actively involve the customer and other stakeholders.		electronic means, fixed telephony, cell phones and fax. For customer feedback: satisfaction surveys and processing of customer complaints.
	Procurement (7.4). 7.4.1 Procurement process	The organisation must ensure that the purchased product meets the specified procurement requirements. The type and scope of control applied to the provider and the purchased product must depend on the effect of the purchased product on	The head of the AIS service must ensure that effective and efficient procurement processes are defined and implemented for the assessment and control of purchased products, in order to meet the needs and requirements of the organisation, as well as those of stakeholders.	Head of the AIS area	Is the information received by AIS for dissemination coming from internal and external providers? Do we have a process to assess and control the information received? Do we have a process defining the type and scope of the provider? Example of data providers: mapping office, DGAC, geographic institutes, originators of NOTAM information.

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		<p>subsequent product completion or on the final product.</p> <p>The organisation must assess and select providers based on their capacity to supply products in accordance with the organisation requirements. Selection, assessment and re-assessment criteria must be established. Records must be kept of assessment results and any other necessary action derived from them.</p>	<p>The head of the AIS area must establish effective and efficient processes to identify potential sources of purchased materials, to develop existing providers or business partners, and to assess their capacity to provide the required products, in order to ensure the efficacy and efficiency of all procurement processes.</p>		
	7.4.2 Procurement information	<p>Procurement information must describe the product to be purchased, including, where appropriate:</p> <ul style="list-style-type: none"> a) requirements for the approval of the product, procedures, processes and 	<p>To ensure effective and efficient performance of the organisation, the head of the AIS area must ensure that the procurement processes consider the following activities:</p> <ul style="list-style-type: none"> a) Timely, effective 	Head of the AIS area	<p>Have we sent our providers information about our requirements (data)?</p>

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		<p>equipments, b) personnel qualification requirements, and c) quality management system requirements. The organisation must ensure the adequacy of the specified procurement requirements before communicating them to the provider.</p>	<p>and precise identification of the needs and specifications of the product to be purchased b) Needs and criteria of the organisation for the verification of purchased products. c) Identification and traceability of the product, preservation of the product, documentation, including records, control of purchased products deviating from requirements, access to provider facilities. d) History of delivery, installation, and application of the product, development of the provider. e) Identification and mitigation of risks associated to the purchased product.</p>		

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	7.4.3 Verification of the purchased products	The organisation must establish and implement inspection or other activities necessary to ensure that the purchased product meets the specified procurement requirements. When the organisation or its customer want to conduct the verification at the provider’s facilities, the organisation must establish in the procurement information the provisions for the intended verification and the method for product release.	In order to ensure the effective and efficient performance of the organisation, the head of the AIS area must ensure that verification processes meet the requirements, especially data requirements, since the requirement is the quality of the information.	Head of the AIS area	Quite apart from the processes used by the AIS service to verify the products it purchases, the question is: What data-related processes does the AIS service have to verify the data received?
	7.5.2 Validation of the production processes and provision of services	The organisation must validate those production and service provision processes where the resulting products cannot be verified by subsequent follow-up	Note: THE “WHAT” AND “HOW” IN THE QUALITY MANUAL	Head of the AIS area	AIS services can be verified by follow-up activities or subsequent measurements, deficiencies or non-conformities, if any, appear only after the product is in use or the service has been provided. Therefore, the AIS

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		<p>or measurement activities. This includes any process in which deficiencies become apparent only after the product is in use or the service has been provided. The validation must demonstrate the capacity of such processes to achieve the planned results. The organisation must establish provisions for these processes, including, if applicable:</p> <ul style="list-style-type: none"> a) the criteria defined for process review and approval, b) equipment approval and personnel qualification, c) the use of specific methods and procedures, d) recording requirements, and e) re-validation. 			<p>service must validate the capacity of processes to achieve the planned results, using the following tools:</p> <ul style="list-style-type: none"> a) The identified deficiencies or non-conformities, corrective and preventive actions and defences implemented are controlled through the corresponding records; b) Procedures or work instructions have been validated, confirmed for the required operations, demonstrating efficacy, compliance with international and local regulations, as well as with quality and safety standards established by the organisation. c) Audits; d) Risk control and mitigation

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	7.5.3 Identification and traceability	<p>When appropriate, the organisation must identify the product by suitable means, throughout the product completion process.</p> <p>The organisation must identify the status of the product with respect to follow-up and measurement requirements. Where traceability is a requirement, the organisation must control and record the unique identification of the product.</p>	<p>The Head of the AIS area must establish an identification and traceability process that goes beyond the requirements in order to collect data that can be used for improvement.</p> <p>The need for identification and traceability may be derived from the status of the product, including its component.</p> <p>The status and capacity of the processes.</p> <p>Requirements in Annex 15 and Annex 4.</p> <p>Mitigation of identified risks.</p>	Head of the AIS area	<p>The AIS establishes and applies the identification and traceability of the product or service, through control processes performed by the heads or shift supervisors of AIS organic units, keeping records of main and support activities, as required.</p> <p>Note: THE “WHAT” AND “HOW” IN THE QUALITY MANUAL</p>

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	7.5.4 Property of the customer	The organisation must take care of the goods of the customer while they are under the control of the organisation or are being used by it. The organisation must identify, verify, protect and safeguard customer goods that have been supplied for use or incorporation into the product. Any customer good that is lost, damaged, or otherwise considered unsuitable for use must be recorded and reported to the customer.			

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	7.5.5 Preservation of the product	The organisation must preserve the conformity of the product during the development of the internal process and delivery to its foreseen destination. This preservation must include identification, handling, packaging, storage and protection. Preservation must also apply to product components.			<p>The AIS preserves the conformity of products or services, in accordance with customer requirements, during the development of internal processes, by controlling the activities and reporting occurrences affecting service operations, for the purpose of decision making.</p> <p>Note: THE “WHAT” AND “HOW” IN THE QUALITY MANUAL</p>

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<p>Chapter VIII Measurement, analysis and improvement. The organisation must plan and implement the follow-up, measurement, analysis and improvement processes needed to:</p> <ul style="list-style-type: none"> a) demonstrate product conformity, b) ensure quality management system conformity, and c) continuously improve the efficacy of the quality management system. <p>This must include the identification of applicable methods, including statistical techniques and the scope of their use.</p>	8.2.1 Customer satisfaction	As one of the measures of quality management system performance, the organisation must follow-up the information on the perception of customers regarding the fulfilment of their requirements by the organisation. The methods for obtaining and using such information must be determined.	<p>Measurement data is important for fact-based decision-making. AIS shall ensure effective and efficient measurement, collection and validation of data to ensure service performance and stakeholder satisfaction. This must include the revision of the validity and purpose of measurements and the expected use of data to make sure they will add value to the service.</p> <p>The following are examples of the measurement of the organisation's process performance: Measurement and assessment of products, process capacity, achievement of project objectives, and</p>	Head of the AIS area	<p>Follow-up and measurement of customer satisfaction are based on the revision of customer-related information. The collection of such information can be either active or passive. Management must recognize that there are many sources of information on customers, and shall establish effective and efficient processes for collecting, analysing, and using this information to improve the organisation's performance. The AIS must identify available internal or external sources of information on customers, both written and oral.</p> <p>The following are examples of information on customers: Customer and user surveys, Feedback on all aspects of the product, customer requirements, and data on service provision.</p> <p>The head of the AIS area must use the measurement of customer satisfaction as a vital tool. The process used by the</p>

CHAPTER	CONCEPTS		QUALITY MANAGEMENT SYSTEM IMPLEMENTATION FRAMEWORK	RESPONSIBLE AREA	HOW WILL I IMPLEMENT THE FRAMEWORK (Action Plan)
	DESCRIPTION	STRATEGY			
			<p>customer and stakeholder satisfaction. The AIS must do a continuous follow-up of its actions to improve performance and record their implementation, since this could provide data for future improvements.</p> <p>The results of the analysis of data on improvement activities must be one of the inputs for the management review in order to provide information to improve the organisation's performance.</p>		<p>organisation to request, measure, and follow-up feedback on customer satisfaction must provide information on a continuous basis. This process must consider conformity with requirements, and compliance with customer needs and expectations.</p> <p>The AIS must establish and use sources of information on customer satisfaction and shall cooperate with customers to anticipate future needs. The AIS must plan and establish processes to effectively and efficiently listen to "the voice of the customer". Process planning must include the definition and implementation of methods for collecting data, including sources of information, frequency of collection, and the revision of data analysis.</p>

CHAPTER	CONCEPTS		QUALITY MANAGEMENT SYSTEM IMPLEMENTATION FRAMEWORK	RESPONSIBLE AREA	HOW WILL I IMPLEMENT THE FRAMEWORK (Action Plan)
	DESCRIPTION	STRATEGY			
	8.2.3 Process follow-up and measurement	The organisation must apply proper methods for follow-up, and when applicable, measurement of the quality management system. These methods must demonstrate the process capacity to achieve the planned results. When planned results are not achieved, corrections and corrective action must be implemented as appropriate, to ensure product conformity.	<p>The organisation must identify measurement methods and measure process performance. The organisation must incorporate these measurements into the processes and use them for process management.</p> <p>Measurements must be used for managing daily operations, for assessing processes that may be subject to continuous or phased improvement, as well as for significant improvement projects, in accordance with the organisation's vision and strategic objectives.</p> <p>Note: A DOCUMENTED PROCEDURE IS REQUIRED.</p>	Head of the AIS area	<p>Process performance measurements must cover stakeholder needs and expectations in a balanced manner. Some examples are given below:</p> <ul style="list-style-type: none"> • Capacity • Performance • Efficacy and efficiency of the individuals in the organisation. • Use of technologies.

CHAPTER	CONCEPTS		QUALITY MANAGEMENT SYSTEM IMPLEMENTATION FRAMEWORK	RESPONSIBLE AREA	HOW WILL I IMPLEMENT THE FRAMEWORK (Action Plan)
	DESCRIPTION	STRATEGY			
	8.5 Improvement 8.5.1 Continuous improvement	The organisation must continuously improve the efficacy of the quality management system by using the quality policy, the quality objectives, the results of audits, data analysis, corrective and preventive action, and management review.	The AIS must endeavour to continuously improve the efficacy and efficiency of the processes of the organisation rather than waiting for a problem to reveal opportunities for improvement. Improvements may range from phased activities to long-term strategic improvement projects. The AIS must have a process to identify and manage improvement activities. These improvements can result in changes to the process or product and even to the quality management system or the service.	Head of the AIS area	

CHAPTER	CONCEPTS		QUALITY MANAGEMENT SYSTEM IMPLEMENTATION FRAMEWORK	RESPONSIBLE AREA	HOW WILL I IMPLEMENT THE FRAMEWORK (Action Plan)
	DESCRIPTION	STRATEGY			
	8.5.2 Corrective action	<p>The organisation must take action to eliminate the cause of non-conformities in order to prevent them from occurring again. Corrective action must be commensurate to the effects of the non-conformities found.</p> <p>A documented procedure must be established to define requirements concerning: a) the revision of non-conformities (including customer complaints), b) the identification of the causes of non-conformities.</p>	<p>The AIS must ensure that corrective action is used as a tool for improvement. Planning of the corrective action must include the assessment of the importance of the problems in terms of the potential impact on aspects such as operating costs, non-conformity costs, product performance, safety in the operations, safety and satisfaction of customers and other stakeholders. Personnel from the appropriate areas must participate in the corrective action process. Likewise, emphasis must be placed on process efficacy and efficiency when taking action, and actions must be followed up to ensure achievement of the</p>	Head of the AIS area	<p>During follow-up of corrective action, the AIS must identify sources of information and collect information to define the corrective action required. The corrective action so defined must focus on eliminating the cause of non-conformities in order to prevent them from occurring again. The following are examples of sources of information to be considered in the corrective actions:</p> <ul style="list-style-type: none"> • Customer complaints • Non-conformity reports • Internal audit reports • The results of management reviews • The results of data analyses • The results of satisfaction measurements • Relevant records of the quality management system • Organisation's personnel • Process measurements • The results of self-assessments

CHAPTER	CONCEPTS		QUALITY MANAGEMENT SYSTEM IMPLEMENTATION FRAMEWORK	RESPONSIBLE AREA	HOW WILL I IMPLEMENT THE FRAMEWORK (Action Plan)
	DESCRIPTION	STRATEGY			
			desired goals. Consideration must be given to the inclusion of corrective actions in the management review. Note: A DOCUMENTED PROCEDURE IS REQUIRED.		
	8.5.3 Preventive Action	The organisation must determine actions to eliminate the causes of potential non-conformities to prevent them from occurring. Preventive actions must be commensurate to the effects of potential problems. A documented procedure must be established to determine the requirements for: a) determining potential non-conformities and their causes,	The AIS must plan for the mitigation of effects of service loss, in order to maintain process and product performance. Loss prevention must be applied when planning product generation and support processes, activities, and products, to ensure stakeholder satisfaction. For loss prevention planning to be effective and efficient, it should be systematic. It must be based on	Head of the AIS area	Data can be generated from the use of risk analysis tools, such as failure mode and effects analysis; the review of customer needs and expectations; the results of management review; the results of data analysis; satisfaction measurements; process measurement; systems consolidating sources of information of stakeholders; significant records of the quality management system; lessons learned from past experience; self-assessment results; processes providing early approach warning of out-of-control operating conditions. These data will provide

CHAPTER	CONCEPTS		QUALITY MANAGEMENT SYSTEM IMPLEMENTATION FRAMEWORK	RESPONSIBLE AREA	HOW WILL I IMPLEMENT THE FRAMEWORK (Action Plan)
	DESCRIPTION	STRATEGY			
		b) assessing the need to act to prevent the occurrence of non-conformities, c) determining and implementing the required action, d) recording the results of action taken, and e) reviewing the preventive action taken.	data coming from appropriate methods, including the assessment of historical trends, and critical aspects of the performance of the organisation and its products, to generate quantitative data. Note: A DOCUMENTED PROCEDURE IS REQUIRED.		information allowing for effective and efficient loss prevention planning and setting of appropriate priorities for each process and product in order to meet stakeholder needs and expectations. The results of efficacy and efficiency assessment of loss prevention planning must also be included in the management review, and must be used as input for modifying plans and for improvement processes.

APPENDIX D

APPENDIX D

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QMS CORRECTIVE AND PREVENTIVE ACTION PROCEDURE

Revision 00

2012

DRAFTING OF THE DOCUMENT	REVISION OF THE DOCUMENT	APPROVED
		General Manager

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<p>SUMMARY</p> <ol style="list-style-type: none"> 1. Objectives 2. Scope 3. Responsibilities 4. Legal and administrative basis 5. Requirements 6. Description of activities 7. Records 8. Glossary of terms 9. Annexes
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MATRIX FOR CONTROLLING THE REVISION STATUS

CODE: R01-OyM.CD-05

REVISION: 03/04-03-2011

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1. OBJECTIVE

1.1 Establish guidelines for the implementation of the corrective and preventive actions of the quality management system (QMS) in order to eliminate:

- the causes of non-conformities to prevent them from occurring again; and
- the causes of potential non-conformities *to prevent them from occurring*;

1.2 Assessment of the efficacy of corrective and preventive actions

2. SCOPE

2.1 This procedure applies to all organic units that provide air navigation and airport services at national level (name of the organisation)

3. RESPONSIBILITIES

3.1 The Organisation and Methods Area, in coordination with the ATS Quality Management Area, is responsible for the dissemination, implementation, and compliance with this procedure;

3.2 The central manager of Air Navigation and the central manager of Airports are responsible for promoting follow-up audits to verify the efficacy of corrective or preventive actions;

3.3 The establishment and maintenance of this procedure is the responsibility of the ATS Quality Management area, in coordination with the areas and organic units that provide air navigation and airport services;

3.4 The heads of area and employees of air navigation and airport services at national level are responsible for:

- a) Identifying actual or potential non-conformities in the processes of their competence or in the quality management system, taking immediate corrective action, or requesting the formulation of actions and reporting them in the established service sheet;
- b) Identifying the root cause of actual or potential non-conformities, and planning the corrective or preventive actions to be implemented;
- c) Implementing corrective and/or preventive actions within their area of competence, or submitting them to their immediate superior if they fall beyond their scope; and
- d) Documenting corrective or preventive actions in Record R03-AGC.ACP-01.

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3.5 The head of each organic unit of Air Navigation and Airport Services or whoever acts on his/her behalf, will validate and record the efficacy of the identified non-conformities. He/she will also define and follow up the corrective and/or preventive actions within the scope of his/her competence, reporting the results obtained to his/her immediate superior.

The head of each Air Navigation and Airport Service area will complete the follow-up records R03-AGC.ACP-02 - R03-AGC.ACP-03 and will send copies of the records of corrective, preventive, and follow-up actions to the management representative and the internal auditor of the quality management system for management review.

3.6 The head of each organic unit will plan and organise the availability of the resources necessary for the actions to be executed.

3.7 The internal auditor of the quality management system is responsible for verifying at national level the degree of timely compliance with corrective and/or preventive actions.

4. LEGAL AND ADMINISTRATIVE BASIS

4.1 Strategic plan of (name of the organisation) 2009-2013

4.2 "Procedure for drafting quality management system documents", latest version;

4.3 "Procedure for the control of QMS documents", latest version

4.4 Doc 8126 – Aeronautical Information Services Manual

5. REQUIREMENTS

5.1 ISO 9001:2008 (Clause 8.5.2 and 8.5.3)

5.2 ISO 9000:2005 (Clause 2.7.2 Types of documents used in quality management systems)

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6. DESCRIPTION OF ACTIVITIES

6.1 Identification and recording of non-conformities

Non-conformities (non-compliance with requirements) occur in any of the activities of the processes of air navigation and airport services or in the quality management system. Therefore, they need to be identified and recorded.

The origin of non-conformities may be identified through:

- a) The activities of air navigation and airport service processes;
- b) Customer complaints or suggestions;
- c) Internal quality audits;
- d) Management reviews;
- e) The quality management system;
- f) Service sheet reports of the organic units of air navigation services. The systematic occurrence of errors or observations in air navigation products or services constitutes a non-conformity;
- g) QMS indicator trends;
- h) Inoperative condition of air navigation and airport service equipment and systems.

When identifying non-conformities, the following must be considered:

- a) The sub-process or organic unit where the non-conformity or observation has been identified;
- b) The description of the actual or potential non-conformity;
- c) Name of the person who identified the non-conformity;
- d) Date on which the non-conformity is identified; and
- e) Name of the person responsible for implementing corrective and/or preventive action.

6.2 Analysis of the causes of the actual or potential non-conformity

The person in charge of implementing corrective and/or preventive action will analyse, individually or with a team of the services concerned, the available documentation in order to identify the root cause of the actual or potential non-conformity.

6.3 Planning of actions

Based on the identification of the root cause of the non-conformity, two types of actions may be planned and organised:

a) Corrective action

When action is aimed at preventing actual non-conformities from occurring again.

b) Preventive action

When action is aimed at resolving potential non-conformities to prevent their occurrence.

The format used for the planning, organisation, supervision, and control of corrective or preventive action appears in Annex I.

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6.4 Control and follow-up of corrective and/or preventive action

The head of each organic unit responsible for executing the corrective and/or preventive action or whoever acts on his/her behalf will do the control and follow-up of the actions, making notes in the "control" box to reflect the execution of actions or inserting the follow-up date in the "remarks" box (see Record R03-AGC.ACP-01).

6.5 Monitoring the efficacy of corrective and/or preventive actions

Following the date of the action plan, the head of each organic unit of air navigation or airport services responsible for executing the corrective or preventive action, or whoever acts on his/her behalf, will verify the efficacy of such action after a reasonable time of completing the action. If the proposed action was effective, record R03-AGC.ACP-01 will be completed with the closing date and signature. If the proposed action was not effective, the cause of the non-conformity will be analysed and another action will be planned in a new record, and the previous record will not be closed.

6.6 Follow-up of records of corrective and/or preventive action

The head of the organic unit of air navigation or airport services will complete follow-up records R03-AGC.ACP-02 - R03-AGC.ACP-03. Furthermore, in coordination with the ATS quality management area, he/she will send the records of the corrective and/or preventive actions to the management representative and the internal auditor of the quality management system for management review.

7. RECORDS

IDENTIFICATION	STORAGE	PROTECTION	CHRONOLOGICAL	RETENTION	DISPOSAL
R03-AGC.ACP-01 Report on corrective or preventive action.	<i>(name of the organic unit)</i>	Printed/Digital	Chronological	03 years	Eliminate
R03-AGC.ACP-02 Corrective action follow-up table	<i>(name of the organic unit)</i>	Printed/Digital	Chronological	03 years	Eliminate
R03-AGC.ACP-03 Preventive action follow-up table	<i>(name of the organic unit)</i>	Printed/Digital	Chronological	03 years	Eliminate

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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 it 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** to prevent its occurrence.

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

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

Conformity:

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

Correction:

Action taken to eliminate an identified non-conformity

Note 1. A correction may be executed together with a corrective action.

Note 2. A correction may be, for example, a reprocess or a reclassification.

Efficacy:

Extent to which planned activities are executed and planned results achieved

Efficiency:

Relationship between the results achieved and the resources used

Non-conformity:

Non-compliance with, or absence of, specified requirements, which affects the effectiveness of the QMS to meet its established goals or objectives

Requirement:

Established need or expectation, generally implicit or mandatory

Records:

Records are established and maintained as evidence of compliance with the requirements and of the effective operation of the quality management system. Records must remain easily identifiable and retrievable.

Records R01 indicate compliance with the requirements; records R02 refer to efficacy; and records R03 refer to continuous improvement.

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Quality management system (SGC):

Set of human and material resources coordinated through structured documents and based on the Safety Manual, aimed at ensuring conformity of processes with the recommendations of ISO 9001:2008.

Air navigation services:

This expression covers services provided to air traffic during all phases of operations (approach, aerodrome control, and en-route): air traffic management (ATM), communication, navigation, and surveillance systems (CNS), air navigation meteorological services (MET), search and rescue (SAR), and aeronautical information services (AIS).

9. ANNEXES

Annex I : Report on corrective or preventive action

Annex II : Corrective action follow-up table

Annex III : Preventive action follow-up table

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ANNEX I
REPORT ON CORRECTIVE OR PREVENTIVE ACTION

Area/Unit :.....

Code: R03-AGC.ACP-01

Revision:01/04-03-2011

Request for action:	Corrective	Preventive	Date of issuance:	Number:
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Sub-process where the problem was detected:

Name of the person requesting the format:

Origin	Complaints or suggestions	Management review	Non-conforming product or service or <i>observation</i>	Service sheet reports
	<i>Quality system</i>	Audit	Other:	

Responsible for executing the action:	Date of assignment:
Area assigned:	

Description of the actual or potential problem:

Identification of the root cause of the problem:

Corrective or preventive action to be taken:

Controls for ensuring execution of the action:

Follow-up dates	Plan	Actual	Remarks
Date of start of Action Plan			
Date of end of Action Plan			
Verification of efficacy			

Result of the efficacy verification:

Closing date:

Name and signature

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ANNEX II

CORRECTIVE ACTION FOLLOW-UP TABLE

Area/Unit :.....
Code: R03-AGC.ACP-02

Revision:01/04-03-2011

Action N°	Date of issuance	Non-conformity	Corrective action	End date	Closing date

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ANNEX III

PREVENTIVE ACTION FOLLOW-UP TABLE

Area/Unit :.....
Code: R03-AGC.ACP-03

Revision: 01/04-03-2011

Action N°	Date of issuance	Non-conformity	Preventive action	End date	Closing date

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QMS INTERNAL AUDIT

Revision 02

2011

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<p>SUMMARY</p> <ol style="list-style-type: none"> 1. Objectives 2. Scope 3. Responsibilities 4. Legal and administrative basis 5. Requirements 6. Description of activities 7. Records 8. Glossary 9. Annexes

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1. OBJECTIVE

1.1 Establish the criteria for planning and conducting, at planned intervals, the internal audits of the quality management system (QMS) to be performed by the internal auditing personnel of (name of the organisation) to assess the degree of compliance with ICAO standards and recommended practices, current national legislation, customer requirements, ISO 9001: 2008 requirements, and also to identify opportunities for improving the QMS.

2. SCOPE

2.1 This procedure applies to all aeronautical information and data providers that provide air navigation and airport services in States.

3. RESPONSIBILITIES

3.1 Each State will designate and/or determine the responsible for:

- Approving the annual QMS internal audit plan, as well as the budget to execute the operational and investment plan of the current fiscal year;
- Informing top management on QMS status in the audited aeronautical information and data providers;
- Requiring the execution of corrective and preventive action in the audited aeronautical information and data providers;
- Ensuring the necessary resources are available to execute corrective and preventive actions;
- Making sure that the internal auditor does the follow-up of the degree of compliance with corrective and preventive actions.

3.2 Each State will designate and/or determine the person responsible for:

- Planning at least two QMS internal audits by prioritised service, in coordination with the head of the quality management area, in order to ensure that all processes of the prioritised services are audited;
- Informing the organic units to be audited duly in advance;
- Approving the annual QMS internal audit plans;

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- Informing the responsible of each State of the degree of execution of the actions derived from the QMS internal audits;
- Maintaining the QMS internal audit team of the organisation trained and up-to-date;

3.3 The aeronautical information and data providers are responsible for:

- Determining the root cause of the identified non-conformities;
- Identifying possible solutions and corrective actions to eliminate root causes, as well as preventive actions to prevent them from occurring again;
- Planning the action to be taken to correct non-conformities and/or observations identified in the final internal audit report;
- Assessing the efficacy of the action taken, whether corrective or preventive, for continuous improvement.

3.4 The auditor of services is responsible for:

- Leading the activities for the preparation and conduction of the QMS internal audits, in coordination with the internal auditors of the audit team;
- Requiring the designating QMS internal auditors, during the preparation phase, to prepare their checklists and methodology to be used in the audit process, taking into account the scope and audit criteria pre-established in the planning phase, the corrective and preventive action follow-up reports, the results of customer satisfaction surveys, the results of the action taken on non-conforming services, incidents, and hazardous events that have affected safety oversight;
- Supervising and advising the designated QMS internal auditors on the conduction of internal audits to ensure their proper execution;
- Immediately reporting non-conformities, observations, and opportunities for improving the system of the audited area;
- Monitoring, together with the audit team, the assessment of effects of corrective and preventive action taken as a result of previous audits;
- Submitting the final report and the results of the internal quality audit.

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3.5 The internal audits are responsible for:

- Developing the methodology and checklists based on the pre-established audit scope and criteria;
- Assessing the QMS of the organic units to be audited in order to obtain, analyse and record any relevant evidence to establish conformities, non-conformities, correction requirements, and opportunities for improvement;
- Identifying, together with the audited area, any possible solutions to the identified non-conformities and observations.

4. LEGAL AND ADMINISTRATIVE BASIS

LEGAL BASIS

4.1 *Current civil aviation law and regulations of each country of the Region;*

4.2 *Resolutions and/or legal applications that support the management, operation, and preservation of the aeronautical services provided.*

ADMINISTRATIVE BASIS

4.3 *Strategic plan of (name of the organisation);*

4.4 *Procedures for drafting quality management system documents.*

5. REQUIREMENTS

5.1 ISO 9001:2008 (Clause 8.2.2 Internal audit);

5.2 Standard 19011 (Guidelines for quality system audits);

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

6. ACTIVITIES

6.1 Drafting of the annual QMS internal audit plan

The auditor must develop an annual internal quality audit and follow-up plan for the aeronautical information and data providers of services in accordance with record R03-AGC.AI-01. This annual internal quality audit plan must be reviewed every year, making sure that all aeronautical information and data providers of each service are audited at regular intervals within a period of three (3) years.

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6.2 Planning and preparation of the QMS internal audit

The auditor of services will define the following:

- The audit scope and criteria;
- The audit programme, defining the areas to be audited and the competencies required from the audit team;

The internal audit team shall:

- Prepare the audit, establishing checklists and the methodology to be used, based on the scope, criteria, and areas to be audited, according to the established priorities;
- Prepare the QMS internal audit plan in accordance with the established format R03-AGC.AI-02;
- Inform the areas to be audited, duly in advance, about the dates of the internal audit, indicating the objective, scope, criteria, and tentative programme of the audit.

6.3 Conduction of the QMS internal audit

6.3.1 Opening meeting

At the opening meeting, the auditor must brief the person responsible on the objective, scope, criteria, and proposed schedule of the audit. The specific arrangements, including personnel availability for interviews, must be discussed and agreed before starting the event.

6.3.2 QMS internal audit procedure

The methodology established in the audit preparation phase are the techniques of the audit team for collecting information on the aspects defined in the scope and the pre-established audit criteria, taking into account the conceptual framework of this procedure.

The audit team must work systematically on the basis of the established audit plan and the checklists developed.

The internal audit reports include the following:

- When the audit team identifies a fact that might be considered a deviation or a shortfall and/or deficiency in the regulations, it will analyse and discuss the facts with the representative of the organic unit being audited and will record it in R03-AGC.AI-03;

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- Once the non-conformity has been recorded, the person responsible for the organic unit being audited, together with the internal auditor, shall define in writing the corrective or preventive actions to be applied in order to resolve each of the non-conformities identified, after conducting a root cause analysis, and shall set the dates for the follow-up audits to verify the efficacy of such planned actions.

6.3.3 QMS internal audit interviews

The audit team must take into account that, in order to obtain information on the performance of the area to be audited, it must observe and ask questions such as: who? what? why? where? when? how? show me? what if? This provides information other than the available written material and gives the audited personnel a chance to explain work and system practices. The interview will allow the audit team to assess the level of understanding of the audited area with respect to the requirements;

A managerial, supervisory, and operational approach shall be applied to the persons to be interviewed, as applicable;

The objective of the audit interview is to obtain information and not to get into arguments or confrontations.

6.3.4 Conformities, non-conformities, corrections required as a result of the internal audit;

Once the conformities, non-conformities, corrections required, or potential hazards have been defined, the audit team will meet with the lead auditor to confirm and/or correct the deviations identified with the audited area.

6.3.5 Closing meeting

Before this meeting, the audit team shall:

- Reach an agreement on the conclusions of the audit;
- All deviations must have been discussed and agreed upon before the closing meeting and the audited area must have been informed of the results of the audit;
- Analyse the need for subsequent follow-up audits.

Once audit activities have been completed, a closing meeting must be held with the persons responsible, to:

- Thank them for their hospitality;
- Confirm the scope;
- Summarise the results;
- Make recommendations for improvement, if applicable;
- Explain confidentiality;
- Acknowledge and close the meeting.

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6.4 Final report of the QMS internal audit

The final report of the QMS audit must be an objective presentation of internal audit results in accordance with record R03-AGC.AI-04. Upon completing audit activities, the auditor shall present a preliminary audit report to the person responsible of the service. Any comment made shall be considered in the drafting of the final report of the QMS internal audit.

7. RECORDS

IDENTIFICATION	STORAGE	PROTECTION	RETRIEVAL	RETENTION	DISPOSAL
R03-AGC.AI-01 Annual QMS internal audit plan	Quality management area	Printed/digital	Chronological	3 years	Eliminate
R03-AGC.AI-02 QMS internal audit plan	Quality management area	Printed/digital	Chronological	3 years	Eliminate
R03-AGC.AI-03 Deviation report	Quality management area	Printed/digital	Chronological	3 years	Eliminate
R03-AGC.AI-04 Final report of the QMS internal audit	Quality management area	Printed/digital	Chronological	3 years	Eliminate

8. GLOSSARY

Audit:

Systematic, independent, and documented process for obtaining audit evidence and objectively assess it 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 organisation for internal purposes, or may serve as the basis for the self declaration of conformity of an organisation.

External audits include what is normally called “second or third party audits”.

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

Third party audits are conducted by external independent organisations. Such organisations provide **conformity certification or registration, with records such as ISO 9001 and ISO 14001:1996.**

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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 it 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** to prevent their occurrence.

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 it from happening again.

Auditor:

A person with the competencies to conduct an audit.

Lead auditor:

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

Correction:

Action taken to eliminate an identified non-conformity.

Note 1. - A correction may be executed together with a corrective action.

Note 2. - A correction may be, for example, a reprocess or a reclassification.

Conformity:

Compliance with a requirement. Statement of facts, situation identified in the course of an audit that meets audit criteria.

Competence:

Demonstrated ability to apply knowledge and skills

Audit conclusions:

Audit results provided by the audit team after considering the audit objectives and all the audit findings.

Audit criteria:

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

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Internal audit team:

Group of internal auditors established to conduct quality management internal audits.

Efficacy:

Extent to which planned activities are executed and planned results achieved.

Efficiency:

Relationship between the results achieved and the resources used.

Audit evidence:

Records, statements of facts, or any information relevant for the audit criteria that is verifiable.

Note.- Evidence may be qualitative or quantitative.

Objective evidence:

Data supporting or verifying the existence of something.

Non-conformity:

Non-compliance with any requirements of the QMS standard or the corporate procedures.

Observations:

Minor sporadic non-compliances or early signs of a problem for which more information is required and that have not affected QMS operation and may be easily corrected. Recommendations of improvement by the auditor.

Opportunity for improvement:

Recommendations that only state that something is already being done well and that could be improved. Opportunities for improvement are treated as preventive actions.

Process:

Set of mutually related or interacting activities that transform inputs into results.

Procedure:

A specified way of conducting 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 “procedure document”.

Audit programme:

Set of one or more audits planned for a given period of time and aimed at a specific purpose.

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Records:

Records are established and maintained as evidence of compliance with the requirements and of the effective operation of the quality management system. Records must remain easily identifiable and retrievable.

Records **R01** indicate **compliance** with the requirements; records **R02** refer to **efficacy**; and records **R03** refer to **continuous improvement**.

8. ANNEXES

Annex I : Annual QMS internal audit plan
R03-AGC.AI-01

Annex II: QMS internal audit plan
R03-AGC.AI-02

Annex III: Deviation report
R03-AGC.AI-03

Annex IV: Final report of the QMS internal audit
R03-AGC.AI-04

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ANNEX I

ANNUAL QMS INTERNAL AUDIT PLAN

CODE: R03-AGC.AI-01

REVISION: 01/28-06-2011

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

LEGEND – TYPES OF AUDITS	OBSERVATIONS
INTERNAL AUDIT	In accordance with the QMS implementation plan
EXTERNAL AUDIT	

PREPARED:	APPROVED:	UPDATED:
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ANNEX II

QMS INTERNAL AUDIT PLAN

CODE: R03-AGC.AI-02

REVISION: 01/28-06-2011

<p>QMS Internal Audit Plan</p> <p><u>INTRODUCTION</u></p> <p>This section must contain the type(s) of audit(s) to be conducted for the audit.</p> <p><u>PURPOSE</u></p> <p>The purpose, objectives, scope, and criteria based on which the audit will be conducted.</p> <p><u>METHODOLOGY</u></p> <p>This section specifies the assessment techniques.</p> <p><u>AREAS TO BE AUDITED</u></p> <p>This section must clearly specify the area that will be audited.</p> <p><u>PLANNED ACTIVITIES</u></p> <p>This section must identify and describe the activities to be conducted and the documents that must be available for the auditor and whether the audit will include interviews with the areas to be audited.</p> <p><u>PROGRAMME</u></p> <p>This section must include a tentative programme for each of the planned activities.</p> <p><u>AUDIT</u></p> <p>This section must present the audit member.</p>
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**ANNEX III
DEVIATION REPORT**

CODE: R03-AGC.AI-03

REVISION: 01/22-12-2006

DEVIATION REPORT	
Audited area:	N°:
Organic unit audited:	Date of the audit:
Document references / ISO 9001:2008:	
Non-conformity____(NC) Requires correction ____ (RC) Opportunity for improvement____(ODM)	
(Description of the fact)	
Notes:	
Severity (minor/major):	Prepared by: (Auditor)
Signature of the person responsible for the audited area:	Date of reception:

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ANNEX IV

FINAL REPORT OF THE QMS INTERNAL AUDIT

CODE: R03-AGC.AI-04

REVISION: 01/28-06-2011

<p>FINAL REPORT OF THE QMS INTERNAL AUDIT</p> <p><u>INTRODUCTION</u> This section must identify the type of audit.</p> <p><u>NAME OF THE AUDITOR:</u> Name of the lead auditor</p> <p><u>AUDIT OF:</u> Example: <ul style="list-style-type: none"> QMS documentation Management responsibility Resource management Measurement, analysis and improvement, etc. </p> <p><u>AUDITED PERSONNEL</u> Lists the names of the audited personnel</p> <p><u>AUDIT ROUTES AND SOURCES OF EVIDENCE</u> This section must indicate the requirements of the audited quality management system and the documented procedures used during the audit.</p> <p><u>ASSESSMENTS AND CONCLUSIONS</u> This section must describe, in general terms, the non-conformities, observations, or opportunities for improvement. This section must not only focus on problems but also highlight positive points. At the end, insert the final conclusion of the audit.</p>
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Signatures:

Lead auditor

Internal auditor

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<p>LOGO OF THE ORGANISATION</p>	<p>CONTROL OF DOCUMENTS OF THE AIS MANAGEMENT SYSTEM</p> <p>CONTROLLED DOCUMENT</p>	<p>CODE: PR-4.2-AGC-2</p> <p>PAGE 1 OF 14</p>
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CONTROL OF DOCUMENTS OF THE AIS MANAGEMENT SYSTEM

Revision 00

2012

<p>PREPARED</p>	<p>REVIEWED</p>	<p>APPROVED</p>

<p>REVISION</p>		<p>DATE</p>
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<p>SUMMARY</p> <ol style="list-style-type: none"> 1. Objectives 2. Scope 3. Responsibilities 4. Legal and administrative basis 5. Requirements 6. Description of activities 7. Records 8. Glossary 9. Annexes 		
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1. OBJECTIVE

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

- Approval of MS documents
- Revision and updating of MS documents
- Make sure that changes to, and the revision status of, MS documents are identified
- Make sure that current versions of documents are available at the point of use
- Make sure that documents are kept legible and identifiable
- Make sure that external documents that the organisation deems necessary for the planning and operation of the quality management system are identified and their distribution is controlled
- Prevent unintended use of obsolete documents

2. SCOPE

2.1 This procedure applies to all aeronautical information and data providers that deliver AIS for air navigation.

3. RESPONSIBILITIES

3.1 The aeronautical information and data providers that deliver AIS for air navigation are responsible for:

- Drafting, reviewing, and validating MS documents (procedures and work instructions) for the planning, operation, and control of their respective processes.
- Mandatory use of MS documents.

3.2 The unit in charge of the MS is responsible for:

- Drafting, reviewing, and validating the documented procedures and records required by ISO 9001.
- Participating in the drafting, revision, and validation of AIS MS documents
- Managing the life cycle of this procedure
- Reviewing and validating MS documents and sending them to higher authorities for the respective approval.
- Keeping a digital file of QMS documents and deciding their printing for use in basic and update training courses, keeping control of the virtual record "Control of the physical distribution of QMS documents" and sending a virtual copy by e-mail to the quality management area.

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3.3 The management representative is responsible for:

- Managing and publishing MS documents on the intranet of (*name of the organisation*) to ensure availability of current versions of QMS documents to AIS aeronautical information and data providers.

3.4 The head and/or responsible person of the AIS of (*name of the organisation*) is responsible for:

- Reviewing and validating MS documents and submitting them to superior instances for approval.
- Identifying and controlling the external documents required for the planning and operation of the QMS.

4. LEGAL AND ADMINISTRATIVE BASIS

LEGAL BASIS

4.1 ISO 9001:2008 (Clause 4.2.3 Control of Documents)

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

4.3 Doc 8126 – Aeronautical Information Services Manual

4.4 Civil aviation law and its regulations (of the country concerned)

ADMINISTRATIVE BASIS

4.5 Strategic plan of (*name of the organisation*)

4.6 Management manual of the air navigation AIS service

4.7 Drafting and presentation of MS documents (PR-4.2-AGC-1).

5. DESCRIPTION OF ACTIVITIES

5.1 Description of activities in order to define controls for approval, revision, and updating, and to identify the status of revision, availability at the points of use, and distribution control.

5.2 Approval and dissemination of AIS documents

- a) MS documents must be approved by top management
- b) The MS document related to the operation of the services, approved by top management, shall be submitted to the appropriate aeronautical authority.

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- c) Top management decides on the implementation and dissemination of approved MS documents in *(name of the organisation)*.
- d) The original signed physical and digital MS document will become part of the documentary files of the organisation.
- e) The implementation of AIS MS documents must meet contractual, legal, and regulatory requirements, as well as the needs and expectations of customers and other stakeholders, if any.
- f) The responsible party designated by each State will make sure that the original signed document is published on the intranet of *(name of the organisation)*.

5.3 Review and update AIS MS documents as necessary, and approve them again

- a) MS documents are modified and updated *as a result of continuous revision*, changes to activities or introduction of new ones, and/or as a result of internal MS audits.
- b) Once the draft MS document (procedure or work instructions) has been prepared and updated following continuous revision of the documentation by any member of the AIS, it will be reviewed by the head and/or person in charge of the AIS to ensure compliance with current MS procedures. The aforementioned documents are submitted for validation and corresponding approval by higher authorities.
- c) Any modification or change will be written in italics for quick identification; however, in case of a major modification, this will not apply.
- d) Once the MS documents have been modified, the status of revision changes.
- e) The new approved revision will comply with item 6.1 of this procedure.

5.4 Ensure that changes and the status of revision are identified in QMS documents

- a) The revision control matrix must be published in each document posted on the intranet of *(name of the organisation)*.

5.5 Ensure that current versions of the documents are available at the points of use

- a) The original signed document must be published on the intranet of *(name of the organisation)* so that current versions may be available to internal and external providers under this procedure.
- b) For the purpose of communication, training or induction of the personnel

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c) of (*name of the organisation*), documents must be printed as uncontrolled copies

5.6 Ensure that documents are kept legible and easily identifiable

- a) The documentation system established in the procedure "Drafting and presentation of QMS documents" PR-4.2-AGC-1, through its coding, permits the traceability of the established documentation.
- b) QMS documents will be identified and followed up using the following matrices:
 - "General matrix of MS documents Level 1", which corresponds to the quality policy, the management manual, the plan of objectives, and the documented procedures, as required by ISO 9001.
 - "General matrix of MS documents Level 2", that corresponds to AIS procedures for national and international air navigation.
 - "General matrix of documents Level 3", that, in this case, corresponds to AIS work instructions for air navigation.

5.7 Make sure that external documents are identified and their distribution is controlled

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

5.8 Prevent unintentional use of obsolete documents and, in case they are kept for any reason, identify them appropriately

- a) The current version of the AIS MS document is published on the intranet of (*name of the organisation*), making sure that obsolete documents are not used.
- b) The original physical AIS MS documents that, for retention configuration reasons, will be filed by the corresponding providers will be stamped as "Obsolete document".

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6. RECORDS

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

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7. GLOSSARY

Approval:

Formal acceptance of a document, product, service, item, or activity

Quality:

Degree to which a set of inherent characteristics meet the requirements

Data:

Any formal knowledge used as input for processes, serving in general as the basis for the drafting of controlled documents. Controlled data are, *inter alia*: drawings, external standards.

Document:

Information and its support medium

Efficacy:

Extent to which planned activities are executed and the planned results achieved

Efficiency:

Relationship between the result achieved and the resources used

Management:

Coordinated activities for managing and controlling an organisation

Aeronautical information:

The result of grouping, analysing, and formatting of aeronautical data

Work instructions:

A procedure that describes the activities carried out by organic units

Quality management manual

A document that contains the technical and administrative conception of the quality management system and that:

- permits the definition of the scope of the system and the commitment of top management with respect to the quality of its established processes, products, and services.
- permits the provision of control tools through the development and use of procedures or work instructions, documents, formats, records, and documents related to the management of the organisation.
- serves as a guide in the pursuit of customer satisfaction and process optimisation.

Quality policy

Action criterion or guideline chosen to guide the decision-making process, through the implementation of strategies, plans, programmes, and projects specifically related to the quality of the AIS service for national and international air navigation, formally expressed and disseminated by top management.

Procedure:

A specified way of conducting an activity or process

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Process:

A set of mutually related or interacting activities that transform inputs into results

Revision:

The current status of the document, numbered in sequential and ascending, starting with 00 (e.g., Revision 00, Revision 01...). Activity undertaken to ensure the convenience, adaptation, and efficacy of the subject matter of the revision, in order to attain the established objectives

Records:

Records are established and maintained as evidence of compliance with the requirements and of the effective operation of the quality management system. Records must remain easily identifiable and retrievable.

Records R01 indicate compliance with the requirements; records R02 refer to efficacy; and records R03 refer to continuous improvement.

Requirement:

An established need or expectation, generally implicit or mandatory

Quality management system (QMS):

System for managing and controlling quality in an organisation. Group of human and material resources, coordinated through structured documents and based on the Safety Manual, aimed at ensuring that processes comply with the recommendations of ISO 9001:2008.

8. ANNEXES

Annex I: "General Matrix of QMS documents Level 1"
R01-AGC.CD-01

Annex II: "General Matrix of QMS documents Level 2"
R01-AGC.CD-02.

Annex III: "General Matrix of QMS documents Level 3"
R01-AGC.CD-03

Annex IV: "Control matrix of the status of revision of QMS documents"
R01-AGC.CD-04.

Annex V: "Identification and control of external documents"
R01-AGC.CD-05

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ANNEX III

GENERAL MATRIX OF QMS DOCUMENTS LEVEL 3

CODE: R01-AGC.CD-03

REVISION: 00/XX-XX-2012

Example:

D E S C R I P T I O N	C O D E	R E V I S I O N	D A T E
Example: IT of the aeronautical publications sub-process	IT-4 2-AISSPIM-02	00	dd/mm/yy

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ANNEX V

IDENTIFICATION AND CONTROL OF EXTERNAL DOCUMENTS

CODE: R01-AGC.CD-05

REVISION: 00/XX-XX-2011

DOCUMENT	ISSUING BODY	DISTRIBUTION CONTROL	RESPONSIBLE FOR THE DISTRIBUTION

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PROCEDURE FOR DRAFTING QUALITY MANAGEMENT SYSTEM DOCUMENTS

Revision 00

2012

DRAFTING OF THE DOCUMENT	REVISION OF THE DOCUMENT	APPROVED
		General Manager

REVISION		DATE
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LOGOTYPE OF THE ORGANISATION	PROCEDURE FOR DRAFTING QUALITY MANAGEMENT SYSTEM DOCUMENTS	CODE: PR-4.2-OyM-01 PAGE 2 OF 5
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<p>SUMMARY</p> <ol style="list-style-type: none"> 1. Objective 2. Scope 3. Responsibilities 4. Legal and Administrative Basis 5. Requirements 6. Description of Activities 7. Records 8. Glossary of Terms 9. Annexes

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LOGOTYPE OF THE ORGANISATION	PROCEDURE FOR DRAFTING QUALITY MANAGEMENT SYSTEM DOCUMENTS	CODE: PR-4.2-OyM-01 PAGE 3 OF 5
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1. OBJECTIVE

Establish guidelines for drafting the different types of documents of the Quality Management System (hereinafter QMS) in (name of the organisation), applying a methodology based mainly on documented policy statements, the plan of quality objectives, the quality manual, procedures and work instructions.

2. SCOPE

This procedure applies to all aeronautical information and data providers that provide air navigation and airport services in the various States (name of the organisation).

3. RESPONSIBILITIES

3.1 The aeronautical information and data providers that provide the services are responsible for:

- a) Proposing, drafting, maintaining, reviewing, signing, and disseminating amongst its personnel the documents for planning, operating, and controlling its operational processes and working as a team with the enabling personnel of the air traffic service quality management area.

3.2 Each State will identify and/or designate the party responsible for:

- a) Coordinating the establishment of work teams to develop the required QMS documents.
- b) Proposing, formulating, maintaining, reviewing, signing, and disseminating the Documented Procedures required by ISO standard 9001.
- c) Formulating, reviewing, and signing the documents (Procedures and Work Instructions) of the operational processes of aeronautical information services, in work team sessions with the personnel of the respective aeronautical information and data providers, ensuring compliance with customer, legal, and regulatory requirements applicable to the product or service and those of the organisation.
- d) Ensure the validity of this procedure.

4. LEGAL AND ADMINISTRATIVE BASIS

LEGAL BASIS

4.1. Civil Aviation Law and regulations of the country

4.2. The required documentation

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4.3. Supreme decrees

ADMINISTRATIVE BASIS

- 4.4. Strategic plan of the organisation
- 4.5. Current operational plan of the organisation

5. REQUIREMENTS

- 5.1 ISO Standard 9001:2008 (Clause 4.2. Documentation requirements)

6. DESCRIPTION OF ACTIVITIES

EACH STATE WILL DESIGNATE AND/OR IDENTIFY THE PARTY RESPONSIBLE FOR THE QMS

- 6.1. Conceptualize, plan, and document the QMS documentation drafting requirement in order to comply with the documentation requirements established by the QMS or to comply with the current regulations concerning the activities of aeronautical information services.
- 6.2. Designate and establish a work team for drafting the required documentation.

If the documentation required involves documented procedures under ISO 9001, go to item 6.3. Otherwise, go to item 6.4.

EACH STATE WILL DESIGNATE AND/OR IDENTIFY THE PARTY RESPONSIBLE FOR THE QMS

- 6.3. Draft the documented procedures required by ISO 9001, in team work sessions, taking into account the concepts for drafting the policy, the plan of quality objectives, the quality manual, and the procedures or work instructions (see annex I), as well as the structure of a procedure or work instructions (see annex II).

Proceed to item 6.5.

EACH STATE WILL DESIGNATE AND/OR IDENTIFY THE PARTY RESPONSIBLE FOR QMS

- 6.4. Design the documents (procedures or work instructions) in teamwork sessions, in relation to one aspect of the activities of the process--planning, operation, and control—in aeronautical information services, taking into account the structure of a procedure or work instructions (see annex II).

EACH STATE WILL DESIGNATE AND/OR IDENTIFY THE PARTY RESPONSIBLE FOR THE QMS

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6.5. Print and sign the final document for its revision at higher hierarchical levels.

7. RECORDS

Not applicable

8. GLOSSARY OF TERMS

For purposes of this procedure, the following definitions will apply:

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:

Mechanism for assigning an individual code to a document of the management system, enabling its identification and relationship with other documents

Data:

Any knowledge used as input for the processes based on which SMS documents are drafted

Document:

Information and its supporting medium

Management:

Coordinated activities for managing and controlling an organisation

Work instructions:

Establishes the detailed sequence of activities carried out by organic units

Aeronautical information:

The result of the grouping, analysis, and formatting of aeronautical data

Quality manual:

A document containing the technical and administrative conception of the quality management system that:

- Permits the determination of the scope of the system and the commitment of top management with respect to the quality of its established processes, products, and services.
- Provides control tools, through the development and use of procedures or work instructions, documents, formats, records, and documents related to the management of the organisation.

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- Serves as a guide for customer satisfaction and process optimisation

Quality policy:

Action criterion or guideline selected as a guide for the decision-making process when implementing or executing the strategies of specific quality plans, programmes and projects in air navigation and airport services for domestic and international air navigation, formally expressed and disseminated by top management

Quality plan:

Establishes the methodology to follow-up the provision of services through indicators, in order to achieve the objectives that will enable the attainment of high quality levels. Programmed planning to exceed customer expectations as well as the quality standards established by the organisation

Procedure:

Specified form of conducting 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 often used. The document containing a procedure may be called “procedure document”.

Process:

Set of mutually related or interacting activities that transform inputs into results

Requirement:

An established need or expectation, generally implicit or mandatory

Revision:

Current status of the document, sequentially numbered in ascending order, starting with 00 (e.g., Revision 00, Revision 01...). Activity undertaken to ensure the advisability, adaptation, and efficacy of the subject matter to attain the established objectives.

Records:

Records are established and maintained as evidence of compliance with requirements and of the effective operation of the quality management system. Records must be easily identifiable and retrievable.

Records R01 indicate compliance with requirements, R02 refer to efficiency, and R03 are related to continuous improvement.

Quality Management System (SGC):

Management system used for directing and controlling an organisation with respect to quality. Group of human and material resources coordinated through structured documents and based on the Quality Manual that seeks to ensure processes comply with ISO 9001 requirements.

Sub-process:

Set of related activities that fall within the scope of a process.

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9. ANNEXES

- Annex I : Concepts for drafting ISO 9001 documented procedures
- Annex II : Structure of a procedure or work instructions
- Annex III : Control of revision status

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Annex I

Concepts for Drafting ISO 9001 Documented Procedures

A. Concept for drafting the quality policy and objectives plan

The Quality Policy is a written document published under the authority of (name of the organisation) and contains a tangible indication of the direction and quality commitment of the organisation.

The Quality Policy document will be coded:

PQ-5.3-GG-NN where:

- PQ : Quality Policy
- 5.3 : Corresponds to 5.3 of ISO 9001
- GG : The highest managerial level of the organisation
- NN : Correlative number of the status of revision 01, 02...etc.

The Quality Objectives Plan is established by the various units that provide aeronautical information services, and contains quantifiable objectives that are consistent with the quality policy.

The Quality Objectives Plan document will be coded as follows:

PC-5 4-CCCCCCCC-NN, where:

- PC : Quality Objectives Plan
- 5.4 : Item 5.4 of ISO 9001
- CCCCCCCC : Abbreviation of the organic unit
- NN : Correlative number, 01, 02...etc.

B. Concept and structure of the Quality Manual

The Quality Manual (MC) is the technical, operational, and administrative conception of how aeronautical information services operate with respect to quality and safety management.

The Quality Manual is divided into the following chapters:

- Chapter I: Introduction
- Chapter II: Process identification
- Chapter III: Terms and definitions
- Chapter IV: Quality Management System
- Chapter V: Management responsibilities

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Chapter VI: Resource management
Chapter VII: Execution of the product or service
Chapter VIII: Measurement, analysis, and improvement
Chapter IX: Appendix

The Quality Manual will be coded as follows:

MC-4.2-AGC, where:

MC : Quality Manual
4 2 : Item 4.2 of ISO 9001:2008
AGC : Abbreviation of the aeronautical information and data providers for quality management.

C. Concept for drafting the QMS Procedures or Work Instructions

- a) When drafting the aforementioned documents, the following must prevail:
- Make sure that the operating process and the methodology are described;
 - Make sure that the process or activity meets the established requirements;
 - Be simple;
 - Be clear;
 - Be objective;
 - The process must reflect current operations.
- b) The font to be used is Arial size 10 for the text and Arial 12 for the titles. For the heading and footnotes of the document, use will be made of Arial 10 in bold letters.
- c) The record “Control of the status of revision” R01-OyM-05 must be published together with each document in the intranet of the organization to indicate the status of the current version.

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Annex II

Structure of a Procedure or Work Instructions

I.- Heading

It will appear in all the pages of the procedure, and will contain the following:

- Logotype of the organisation
- Title of the procedure or work instructions – The purpose (subject matter) of the document must clearly and concisely stated.

Example: Meteorological service for international air navigation, Quality Manual, Work instructions for weather forecasts by the aerodrome meteorological office of (name of the aerodrome).

- Coding.- It will serve to identify the document and will have the following structure:

AA-BB-CCCCCCCC-DD:

AA : No more than two characters to indicate the type of document.

PR= Procedure that describes the processes of the competent organic units.

IT= Work instructions that describe the activities that organic units perform.

B.B : Characters that indicate the number of the ISO 9001 clause related to the document.

Example:

If it corresponds to item 7.5 of the standard, it will appear as 7.5.

CCCCCCCC : Abbreviation of the air navigation or airport service unit responsible for drafting the document and location indicator.

This abbreviation will contain no more than eight characters.

Example:

AIS - Aeronautical information area

MET - Meteorology area

TWRSPIM – Aerodrome air traffic control service - Lima

OMA - Aerodrome meteorological office

AGC - Quality management area

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DD : Correlative number of the document

Page number

II.-Footnote

The footnote will appear in all the pages of the procedure, and must contain the following:

- Revision.- The current version, numbered in ascending order, starting with 00. Example: Revision 00, Revision 01.... When the document is modified, the revision number will change and changes will appear in italics.
- Date.- Effective date of the procedure in DD/MM/YY format.

DD: Day
MM: Month
YY : Year

III.- Structure of procedures or work instructions

1) Objective

Clearly state the purpose of the work procedure or instruction

2) Scope

State the organic units to which the document applies

3) Responsibilities

Identify the responsibility of each position involved in the procedure or work instruction, according to the activities identified.

4) Legal and administrative basis

Document that serves as the basis for the preparation and structuring of a procedure or work instruction

5) Requirements

Identify the acceptance criteria in current regulations that constitute an established and mandatory need to execute the process and/or activity. Failure to comply with the acceptance criteria will constitute a non-conformity.

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6) Description of activities

Defines the form and lists the organic units, heads of area, supervisors or person(s) responsible for executing the tasks within the main activity. The process model and flow diagrams may be used for the tasks and responsible parties.

7) Records

Records are all those data and information stored in paper or in electronic format that demonstrate compliance with requirements related to current regulations, efficacy, and continuous improvement of the activities of air navigation and airport services.

Indicate formats, messages, reports, templates, recordings in various magnetic media, and others, including the following information: identification, storage, protection, retrieval, retention, and disposal of records).

This information is necessary for quality and safety studies, investigations, and audits.

8) Glossary of terms

Catalogue or vocabulary of words, with their explanation

9) Annexes

Lists all forms directly related to the document. Annexes are identified in Roman numbers

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Annex III

CONTROL OF THE REVISION STATUS

CODE: R01-OyM-05

REVISION: 02/14-01-2010

REVISION	PREPARED BY	REVISED	APPROVED	REASON FOR THE MODIFICATION	DATE

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CONTROL OF RECORDS OF THE AIS MANAGEMENT SYSTEM

Revision 00

2012

ISSUED	REVIEWED	APPROVED

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<p>SUMMARY</p> <ol style="list-style-type: none"> 1. Objectives 2. Scope 3. Responsibilities 4. Legal and administrative basis 5. Requirements 6. Description of activities 7. Records 8. Glossary 9. Annexes
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1. OBJECTIVE

- 1.1 This procedure establishes guidelines for:
- establishing and controlling the records that show conformity with requirements and effective operation of the management system.
 - defining controls for the identification, storage, protection, retrieval, retention, and disposal of records of the quality management system. Records must remain legible, easily identifiable, and retrievable.

2. SCOPE

- 2.1 This procedure applies to all aeronautical information and data providers that render AIS for air navigation.

3. RESPONSIBILITIES

- 3.1 Each State will designate and/or identify the party responsible for the implementation and maintenance of this procedure.

- 3.2 The parties responsible for providing AIS, in coordination with the aeronautical information and data providers, are responsible for establishing and controlling the use and maintenance of the records that show effective operation of the management system.

4. REFERENCES

- 4.1 Management manual
- 4.2 Drafting and presentation of QMS documents (PR-4.2-AGC-1).
- 4.3 Through document N° (number) of (date), the AIS quality management system implementation plan for air navigation was approved.
- 4.4 Strategic plan of (name of the organisation)
- 4.5 Doc 8126 "Aeronautical Information Services Manual.

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5. REQUIREMENTS

- 5.1. Management manual
- 5.2. ISO 9001:2008 (Clause 4.2.4) Control of records
- 5.3. ISO 9000:2005 (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 represents the needs and expectations of stakeholders. To meet these needs, processes are created, which are reflected in documents.

6.1.1 Records are generated in the documents (procedures or work instructions) as evidence of compliance with the requirements and of the effective and efficient operation of the quality management system.

6.1.2 Records have been classified as R01, R02, R03. **R01** records show compliance with requirements, such as customer requirements or those established in the standards listed in item 5 of this procedure.

6.1.3 **R02** records show efficacy, that is, the extent to which planned activities are executed and planned results are attained.

6.1.4 **R03** records show continuous improvement, that is, the efficacy of the quality management system, through the quality policy, quality objectives, audit results, data analysis, corrective and preventive action, and management review.

6.1.5 CONTROL OF RECORDS

A.- Identification

- The following records are established:
- **Records showing that requirements are being met**
 - Examples:
 - Pre-flight AIS information
 - Training course certificates.
 - Provider service assessment record.

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- **Records that show efficacy**

Examples:

- Progress and goal achievement charts.
- Non-conforming product or service report.
- Customer satisfaction assessment surveys.

- **Records that show 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.- Records of compliance with requirements
02.- Efficacy records
03.- Continuous improvement records

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

BBB : Abbreviation of the document, as detailed. These digits will not be used in the case of operational documents of air navigation, maintenance, and logistics services.

CD Document control
CR Record control
IC Quality indicators
AI Internal audit
CPN Non-conforming product control
ACP Corrective or preventive action
RAD Top management review
Others

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

The status of revision of each record is:

REVISION CC/FF – EE – DDDD, where:

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

FF: Day of revision of the record

EE: Month of revision of the record

DDDD: Year of revision of the record

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B.- Storage

- Each record generated by AIS providers must be placed in a given location and guarded by the personnel designated by the State.

C.- Protection

- Each MS record must be preserved in a physical or digital medium (cabinets, drawers, shelves or other computer medium) to avoid deterioration, damage, or loss of information.
- Records kept in a computer medium must have a backup.

D.- Retrieval

- MS records must be organised in such a way that they are of easy access for users in their daily operations and during quality audits. The party designated by each State is responsible for authorising personnel to have access to them.

E.- Retention

- MS records must comply with the specific conservation period, in accordance with the current legislation and that established jointly with aeronautical information and data providers.

F.- Disposal of records

- All records will be kept during the storage period in a physical or electronic file for each provider. Every year, the guardians of the records review their files and inform the responsible party designated by each State and the person responsible for the MS about the dates in which the custody expires. The latter disposes of such records and proposes their recycling, elimination, destruction, or transfer.

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7. RECORDS

IDENTIFICATION	STORAGE	PROTECTION	RETRIEVAL	RETENTION	DISPOSAL
R01-AGC.CR-01 General matrix of controlled MS records Level 1.	(name of MS provider)	Printed/Digital	Chronological	3 years	Eliminate
R01-AGC.CR-02 General matrix of controlled MS records Level 2.	(name of MS provider)	Printed/Digital	Chronological	3 years	Eliminate
R01-AGC.CR-03 General matrix of controlled MS records Level 3.	(name of MS provider)	Printed/Digital	Chronological	3 years	Eliminate
R01-AGC.CR-04 Matrix of MS records controlled in organic units	(name of MS provider)	Printed/Digital	Chronological	3 years	Eliminate

8. GLOSSARY

Quality:

Extent to which a set of inherent characteristics meet the requirements

Coding:

Mechanism for assigning an individual code to a QMS document for its identification and linkage with other documents

Data:

Any formal knowledge used as input for processes, serving in general as the basis for the drafting of controlled documents. Controlled data are, *inter alia*: drawings, external standards.

Document:

Information and its support medium

Example: Record, specification, documented procedure, map, report, standard.

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

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Note 2: A set of documents, for example, specifications and records, are frequently called "documentation".

Note 3: Some requirements (for example, the legibility requirement) are related to all types of documents, although there may be different requirements for specifications (for example, the requirement of controlling through revisions) and records (for example, the retrievability requirement).

Conformity:

Compliance with a requirement

Efficacy:

Extent to which planned activities are executed and the planned results achieved

Efficiency:

Relationship between the result achieved and the 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 conducting 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 "procedure document".

Process:

A set of mutually related or interacting activities that transform inputs into results

Revision:

The current status of the document, numbered in sequential and ascending, starting at 00 (e.g., Revision 00, Revision 01...). Activity undertaken to ensure the convenience, adaptation, and efficacy of the subject matter of the revision to attain the established objectives

Records:

Records are established and maintained as evidence of compliance with the requirements and of the effective operation of the quality management system. Records must remain easily identifiable and retrievable.

Records R01 indicate compliance with the requirements; records R02 refer to efficacy; and records R03 refer to 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 controlled MS records of aeronautical information and data providers

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PROCEDURE FOR CONTROLLING QMS NON-CONFORMING SERVICES/PRODUCTS

Revision 00

2012

DRAFTING OF THE DOCUMENT	REVISION OF THE DOCUMENT	APPROVED

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<p>SUMMARY</p> <ol style="list-style-type: none"> 1. Objectives 2. Scope 3. Responsibilities 4. Legal and administrative basis 5. Requirements 6. Description of activities 7. Records 8. Glossary 9. Annexes

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CONTROL OF THE REVISION STATUS

CODE: R01-OyM.CD-05

REVISION: 03/21-02-2011

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1. OBJECTIVE

1.1 Establish guidelines for identifying, controlling, and dealing with services/products that are not in compliance with ICAO standards, and recommended practices, the national legislation, and customer requirements, to make sure they are not used and that corrective action is established and taken.

2. SCOPE

2.1 This procedure applies to all aeronautical information and data providers that provide the air navigation and airport services of the different States.

3. RESPONSIBILITIES

3.1 Each State will designate and/or identify the party responsible for the implementation and maintenance of this procedure.

3.2 The personnel of aeronautical information services are responsible for identifying, recording, and communicating to their immediate supervisors any non-conforming services/products (non-conformities). They must also take immediate action, as established in the operational procedures, including reprocessing, correction, or amendment of the non-conformity identified.

3.3 Shift supervisors or whoever acts on their behalf must record the identified non-conforming services/products in the established service formats and deliver them to the corresponding officials. If the non-conformity is notified by the user, the official, head of area, head of team, head of operations at the airport office or the operational personnel will receive the documentation and record the fact in the physical service sheet or report, or through an Integrated Safety Reporting System (SIRSO), and, if necessary, will send this information to an immediate superior body.

3.4 Each State will designate and/or identify the party responsible for documenting non-conformities and defining the action to be taken.

3.5 Each State will designate and/or identify the party responsible for controlling non-conformity records and defining the corrective action to be taken, in coordination with the operational personnel, if they have not been contemplated in the operational work instructions.

4. LEGAL AND ADMINISTRATIVE BASIS

LEGAL BASIS

4.1 Civil Aviation Law and regulations of the country

4.2 AIS supporting documentation

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ADMINISTRATIVE BASIS

- 4.3 Strategic plan of (name of the organisation)
- 4.4 Doc 8126 – Aeronautical Information Services Manual

5. REQUIREMENTS

- 5.1. ISO 9001:2008 (Clause 8.3 Control of non-conforming products)

6. DESCRIPTION OF ACTIVITIES

6.1 Identification and reporting of non-conforming services/products in aeronautical information services

6.1.1 Non-conforming services/products will be identified in accordance with the following criteria:

- a) Failure to comply with:
 - Current national technical norms;
 - Aeronautical regulations of Peru;
 - ICAO regulatory documents and Annexes concerning air navigation or airport services;
 - Technical standards of the World Meteorological Organization (WMO); and
 - User complaints.
- b) The internal identification of non-conforming services/products is done by the operational personnel that provides the service, during operational process activities; if possible, immediate corrective action will be taken and if other action is required, it will be communicated to the immediate superior. In both cases, it will be recorded in the physical formats or sheets or will be reported in the service sheet or report;
- c) The identification of the non-conforming service/product will also be done through internal, external, and follow-up quality audits;

6.1.2 non-conforming services/products identified by the customer may follow the following steps:

- a) They will be communicated verbally, by phone, e-mail, or physical document to managerial, operational, or supervisory personnel responsible for each operational shift. The identified event must be recorded on the physical service sheets or in the integrated reporting system of the aerodromes involved, and, if necessary, communicated in writing to the immediate superior for action.
- b) They will be communicated to the appropriate aeronautical authority and this appropriate authority will communicate the event to the officials in charge of operational services. The corresponding operational area will record this information in the respective registry or format for taking action; for example, the registry of customer complaints.

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6.2 Analysis of the non-conforming service/product

6.2.1 Each State will designate and/or identify the party responsible for completing the non-conformity record established by the QMS internal audit procedure (PR-8.2-AGC-01) and, working as a team, will analyse the root causes of non-conformities and plan the action to be taken.

6.3 Adoption of actions and verification of non-conforming services/products

6.3.1 The operational personnel will take immediate action with respect to non-conforming services/products, including reprocessing, corrections, or amendments as established in their operational procedures. If the non-conformity requires other unforeseen action, the information will be submitted to the immediate superior for handling.

6.3.2 Each State will designate and/or identify the party responsible for prescribing any actions not foreseen in their operational procedures to eliminate the causes of non-conformities, in accordance with the corrective and preventive action procedure (PR-8.5-AGC-1) of the QMS, and will advise the personnel responsible for such actions for their implementation. The aforementioned responsible parties designated by each State will check the efficacy and efficiency of planned and implemented actions.

The non-conforming service/product identified during internal or external audits will be addressed through corrective action or in accordance with the corrective and preventive action procedure (PR-8.5-AGC-1) of the QMS.

6.4 Follow-up of actions to address non-conforming services/products

6.4.1 Each State will designate and/or identify the party and the internal auditors responsible for following up the actions planned to address non-conforming services/products and for reporting the results to the immediate superior authorities.

7. RECORDS

Identification	Storage	Protection	Retrieval	Retention	Disposal
R01-AGC.CNC-01 Letters of complaint from operators regarding non-conforming services or products.	Area/Organic Unit	Printed/digital	Chronological	3 years	Eliminate
R01-AGC.CNC-02 E-mails of complaint from operators regarding non-conforming services or products.	Area/Organic Unit	Printed/digital	Chronological	3 years	Eliminate

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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 be 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:

Organisation or person that receives a product or service

Note Customers may be internal or external to the organisation.

Conformity:

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

Correction:

Action taken to eliminate an identified non-conformity

Note 1.- A correction may be concurrent with a corrective action.

Note 2.- A correction may be, for example, a reprocess or a reclassification.

Efficacy:

Extent to which planned activities are carried out and planned results are achieved

Efficiency:

Relationship between the result achieved and the resources used

Management:

Coordinated activities for managing and controlling an organisation

Non-conformity:

Failure to comply with specified requirements or absence of the latter, which affects the effectiveness of the QMS to meet its goals or the established objectives.

Provider

Organisation or person that provides a product or service

Requirement:

Established need or expectation, generally implicit or mandatory

REVISION		DATE
00	This printed document is an uncontrolled document	XX/XX/XX

LOGOTYPE OF THE ORGANISATION	<p align="center">PROCEDURE FOR CONTROLLING QMS NON-CONFORMING SERVICES/PRODUCTS</p> <p align="center">Controlled Document</p>	<p>CODE: PR-8.3-AGC-1</p> <p>PAGE 8 OF 8</p>
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Records:

Records are established and maintained as evidence of compliance with the requirements, and of the effective operation of the quality management system. Records must be easily identifiable and retrievable.

R01 records indicate compliance with requirements, R02 records refer to efficacy, and R03 refer to continuous improvement.

Reprocess

Action taken on a non-conforming service/product so that it meets the requirements

Quality Management System (QMS)

A system for managing and controlling quality in an organisation.

9. ANNEXES

Not applicable

REVISION		DATE
00	This printed document is an uncontrolled document	XX/XX/XX

Agenda Item 4: NOTAM Contingency Plan**4.1 Revision of the status of application of letters of agreement for the use of a NOTAM Contingency Plan****Update of NOTAM Contingency Plan**

4.1 The GREPECAS/12 meeting adopted Conclusion 12/99 – Agreement on NOTAM contingency plans, requesting States to develop their NOTAM contingency plans for flight information regions (FIRs), and, to the extent possible, enter into bilateral and/or multilateral arrangements with those States/Territories and International Organisations responsible for neighbouring airspaces. In this manner, they are expected to be part of a regional NOTAM contingency plan, to be applied whenever necessary.

4.2 At the meeting there was presented a model of a regional catalogue of SAM NOTAM contingency plans, updated to October 2012, as shown in **Appendix A** to this part of the report.

4.3 Some SAM States already have their respective NOTAM contingency plan, while others are in the process of preparing it, as may be seen from the information contained in **Appendix B** to this part of the report, which shows the status of implementation to October 2012.

4.4 The NOTAM contingency plan is subject to periodic reviews and any modifications that are warranted will be made following coordination between the parties. It has been agreed that any modifications made will be effective after 30 days of the date of their approval.

APÉNDICE / APPENDIX A

Catálogo de los Planes de contingencia NOTAM de la Región SAM
Catalogue of NOTAM Contingency Plans in the SAM Region

Fecha: 19 Octubre 2012
Date: 19 October 2012

Estado/ State	Estado de respaldo/ Backup State	Situación / Status		Punto de Contacto/ Contact Point	Descripción general de facilidades y servicios que garantizan la continuidad / General description of facilities and services available which ensure continuity	Observaciones / Remarks
		Borrador Draft	Final			
1	2	3	4	5	6	7
Argentina	Uruguay		X	NOF Ezeiza Tel 5414480 2294 Fax 5414480 2260 Email notamezeiza@yahoo.com.ar NOF Montevideo Tel 59826040067 Email ais@adinet.com.uy	AFS, Tel/Fax, REDIG, Internet	
Bolivia				NOF La Paz Tel 59122316686 Email ais@aasana.gob.bo		Fecha estimativa de Implantación: año 2012/ Estimated implementation date: 2012.
Brazil				NOF Brasil Tel/Fax 556133648353 Email: nofbrazil@cindacta1.aer.mil.br		
Chile	Ecuador		X	NOF Chile Tel 5628404033 Email nofchile@dgac.cl NOF Guayaquil Tel 59342285661 – 59342282017 Email nof_ecuador@dgac.gob.ec	AFS, Tel/Fax, REDIG, Internet	

Estado/ State	Estado de respaldo/ Backup State	Situación / Status		Punto de Contacto/ Contact Point	Descripción general de facilidades y servicios que garantizan la continuidad / General description of facilities and services available which ensure continuity	Observaciones / Remarks
		Borrador Draft	Final			
1	2	3	4	5	6	7
Colombia				NOF Bogotá Tel 5712962991 Email ais@aerocivil.gov.co solicitudes.notam@aerocivil.gov.co		Fecha estimativa de Implantación: año 2012/ Estimated implementation date: 2012.
Ecuador	Chile		X	NOF Guayaquil Tel 59342285661 – 59342282017 Email nof_ecuador@dgac.gob.ec NOF Chile Tel 5628404033 Email nofchile@dgac.cl	AFS, Tel/Fax, REDIG, Internet	
Guyana	Suriname	X		NOF Guyana Telefax: (592) 261-2279 Tel: (592) 261-2269 AFS: SYCJYNYX Cable: TIMAIRPORT GUYANA Email: ais@gcaa-gy.org	AFS, Tel/Fax, REDIG, Internet	
Guyana Francesa/ French Guiana						Información no disponible/ Information not available.
Panamá	Honduras	X		NOF Panamá Tel 23826152616 Email nof@aeronautica.gob.pa	AFS, Tel/Fax, REDIG, Internet	Falta última prueba para la firma. Implantación Estimada Julio 2010/ Last trial is pending for signature, estimated July 2010.
Paraguay				NOF Asunción Tel 59521645952		

Estado/ State	Estado de respaldo/ Backup State	Situación / Status		Punto de Contacto/ Contact Point	Descripción general de facilidades y servicios que garantizan la continuidad / General description of facilities and services available which ensure continuity	Observaciones / Remarks
		Borrador Draft	Final			
1	2	3	4	5	6	7
Perú				NOF Lima Tel 5116301288 – 6301172 Email fvasquez@corpac.gob.pe mangeles@corpac.gob.pe jcarranza@corpac.gob.pe		Fecha estimativa de Implantación: año 2012/ Estimated implementation date: 2012.
Suriname	Guyana	X		NOF Suriname Tel 597 032-5103 Email: ais.sur@hotmail.com Email: ais@cadur.sr	AFS, Tel/Fax, REDIG, Internet	
Uruguay	Argentina		X	NOF Montevideo Tel 59826040067 Email ais@adinet.com.uy NOF Ezeiza Tel 5414480 2294 Fax 5414480 2260 Email notamezeiza@yahoo.com.ar	AFS, Tel/Fax, REDIG, Internet	
Venezuela						Información no disponible/ Information not available.

Nota/Note:

Columna 1: Indicar Estado, Territorio u Organismo Internacional / Indicate State, Territory or International Organization

Columna 2: Indicar Estado, Territorio u Organismo Internacional con quien debe coordinarse el Plan de Contingencia del Estado citado en la Columna 1/
Indicate State, Territory or International Organization with whom the contingency plan of the State mentioned in column 1 should be coordinated

Columna 3: Marcar con **X** en el caso que el Plan de contingencia se encuentre en proceso para su armonización con el Estado en cuestión / Mark with an X in case the contingency plan is in process for its harmonization with the referred State.

Columna 4: Marcar con **X** en el caso que el Plan de contingencia se encuentre armonizado con el Estado en cuestión / Mark with an X in case the contingency plan is in process for its harmonization with the referred State.

Columna 5: Indicar Cargo del Punto de Contacto y medio de comunicación a utilizar en caso de ser necesario / Indicate position of the point of contact and communications means to be used, if necessary.

Columna 6: Indicar cuáles son, en general, las facilidades y los servicios disponibles mientras el Plan de Contingencia se encuentra activado / Indicate which are, in general, the facilities, available services while the contingency plan is activated.

Columna 7: Comentarios adicionales, si los hubiera / Additional comments, if any.

APÉNDICE / APPENDIX B

ESTADO DE IMPLANTACIÓN DE PLANES DE CONTINGENCIA NOTAM EN LA REGIÓN SAM STATUS OF IMPLEMENTATION OF CONTINGENCY NOTAM PLANS IN THE SAM REGION			
PLANES EN GESTIÓN ONGOING PLANS	PLANES VIGENTES VALID PLANS	ESTADOS NO INICIADOS STATES WHICH HAVE NOT INITIATED	BANCO NOTAM NOTAM BANK
	ARGENTINA/URUGUAY		AMHS
		BRAZIL	SISNOTAM
		PERU	AMHS
		COLOMBIA	ACTUAL BANCO WEB CURRENT WEB BANK AMHS Sep/2010
	CHILE/ECUADOR		IAT-WIN
	ECUADOR/CHILE		AMHS
		PARAGUAY	AMHS
PANAMÁ			AMHS
		BOLIVIA	AMHS.
	URUGUAY/ARGENTINA		SISNOTAM

Fecha de actualización: 19 de octubre 2012
Updating date: 19 October 2012

Agenda Item 5: Other business**Status of Implementation of AIS-to-AIM Transition**

5.1 During the SAM/AIM/2 meeting recognised the importance of making prompt progress towards the elimination of AIS deficiencies in the Region, with emphasis on those directly affecting compliance with the SARPs contained in Annexes 4 and 15.

5.2 In this sense, it stressed the importance of full implementation of the WGS84 and the quality management system, compliance with the AIRAC system, the provision of electronic terrain and obstacle data (e-TOD), and the need to have available the Integrated Aeronautical Information (IAIP) documentation and its various presentation formats.

5.3 The Region is focused on completing phase 1 of the AIS-to-AIM transition roadmap in order to start the next phase and be able to meet the requirements of the ATM Operational Concept through the provision of data/information in accordance with the current needs of users.

5.4 To achieve the above, it is necessary to measure the progress made in the resolution of deficiencies in the States of the Region in order to determine in what areas each State should focus its efforts so that the deficiencies will not have a negative impact on the application of performance-based navigation (PBN) in the Region.

5.5 States in the Region completed, updated, the data up to October 2012, and the same are shown as **Appendices A, B, C, D, and E** to this part of the report.

APÉNDICE / APPENDIX A

SEGUIMIENTO DE LA IMPLANTACIÓN WGS/84 EN LA REGIÓN SAM /
FOLLOW UP WGS/84 IMPLEMENTATION – SAM REGION

ESTADOS /STATES	ARG	BOL	BRA	CHI	COL	ECU	GUY	FGU	PAN	PAR	PER	SUR	URU	VEN
Parte I – Información General / Part I – General Information														
1. ¿Actualmente su administración dispone de una base de datos nacional que incluya información de coordenadas WGS-84? / Does your administration currently have a national database including information on WGS-84 coordinates?	N	N	Y*	*	Y	*	Y	S/R	*	Y	Y*	N	Y	N
2. ¿El método de levantamiento topográfico utilizado para calcular las coordenadas geográficas WGS-84 que garantice la precisión e integridad requerida se realizó con por lo menos tres estaciones de control para determinar los parámetros de referencia entre el marco de referencia local y el WGS-84? / Was the topographic method used to estimate WGS-84 coordinates to ensure accurateness and integrity required, made with at least three control stations to determine referential parameters in the local referential framework and the WGS-84?	Y	Y	*	Y*	Y	Y	Y	S/R	Y	Y*	Y*	Y	Y*	Y
Parte II – Coordenadas WGS84 de interés para la navegación aérea / Part II – WGS-84 coordinates of interest for air navigation														
Coordenadas de zonas/en ruta / Area coordinates/en-route														
1. Puntos en ruta ATS/RNAV / ATS/RNAV en-route fix	Y	Y	Y*	Y	Y	Y	Y	S/R	Y	Y	Y	Y	Y	Y
2. Puntos de referencia en ruta, /en-route reference fix	Y	Y	Y*	Y	Y	Y	Y	S/R	Y	Y	Y	Y	Y	Y
Punto de espera; y / Holding pattern Fixed; and	Y	Y	Y*	Y	Y	Y	Y	S/R	Y	N/A	Y	Y	Y	Y
puntos STAR/SID / STAR/SID fixed	Y	P	Y*	Y	Y	Y	Y	S/R	Y	P	Y	N/A	Y	
3. Radioayuda para la navegación en ruta/ en-route radio navigation aids	Y	Y	Y*	Y	Y	Y	Y	S/R	Y	Y	Y	Y	Y	*Y
4. Zonas restringidas/prohibidas/peligrosas Restricted/Prohibited/Dangerous areas	Y	N	Y*	Y	Y	Y	Y	S/R	Y	N	Y	Y	Y	Y

Apéndice A al Informe sobre la Cuestión 5 del Orden del Día
Appendix A to the Report on Agenda Item 5

5A-2

SAM/AIM/4

ESTADOS /STATES	ARG	BOL	BRA	CHI	COL	ECU	GUY	FGU	PAN	PAR	PER	SUR	URU	VEN
5. Obstáculos en ruta/En-route obstacles	Y	Y	Y*	Y	Y	Y	Y	S/R	Y	N/A	N	N	Y	Y
6. Límites de la FIR / FIR boundaries	Y	Y	Y*	Y	Y	Y	Y	S/R	Y	Y	Y	Y	Y	Y
7. Límites de CTR/CTA / CTR/CTA boundaries	Y	Y	Y*	Y	Y	Y	Y	S/R	Y	Y	Y	Y	Y	Y
8.Otros puntos significativos que tengan relación con zonas / en ruta / Other significant points having relationship with en-route areas	Y	N	Y*	Y	Y	Y	Y	S/R	Y	Y	Y	Y	N	Y
Coordenadas de aeródromos/heliporto / Aerodromes-heliport coordinates														
1. Puntos de referencia de aeródromo/ heliporto / Aerodrome-heliport reference point	Y	Y	Y*	Y	Y	Y	Y	S/R	**	Y **	Y	Y	Y	Y
2. Umbrales de pista / Runway thresholds	Y	Y	Y*	Y	Y	Y	Y	S/R	Y	Y	Y	Y	Y	Y
3. Extremo de pista (punto de alineación de la trayectoria de vuelo)/ Runway end (flight trajectory alignment fix	Y	Y	Y*	Y	Y	Y	Y	S/R	Y	Y	Y	Y	Y	Y
4. Área de aproximación final y de despegue (FATO) / Approach and departure final area (FATO)	Y	N	Y*	N/A	Y	Y##	Y	S/R	****	N	Y	Y	N/A	N/A
Umbrales de la FATO / FATO thresholds	Y	N	Y*	N/A	Y	Y##	Y	S/R	**** *	N	Y	N	N/A	N/A
5. Radioayuda para la navegación en el área terminal/ radio navigation aids in terminal areas	Y	Y	Y*	Y	Y	Y	Y	S/R	Y	Y	Y	Y	Y	Y
6. Radioayuda situada en el aeródromo/heliporto/ Radio navigation aids located in the aerodrome/heliport	Y	Y	Y*	Y	Y	Y	Y	S/R	Y	Y	Y	Y	Y	Y
7. Puntos FAF; /Fixed FAF	Y	Y	Y*	Y	Y	Y	Y	S/R	**	Y ***	Y	Y	Y	Y
FAP; y/FAP and	Y	Y	Y*	Y	Y	Y	Y	S/R	**	Y ***	Y	Y	Y	Y
otros IAP esenciales/Other Essential IAP	Y	Y	Y*	Y	Y	Y	Y	S/R	**	Y ***	Y	Y	Y	Y
8. Puntos en el eje de pista/ Runway centreline points	Y	N	Y*	Y	Y	Y	Y	S/R	N	N	Y	N	Y	Y
9. Puntos de eje de calle de rodaje/taxiway centreline points	N	N	Y*	Y	Y	N	Y	S/R	Y	N	Y	N	Y	N
10. Puntos de rodaje aéreo / air taxiing	N	N	Y*	N/A	Y	N	N/A	S/R	N	N	Y	N/A	N	N
11. Puntos de vías de tránsito/air traffic points	N	N	Y*	N/A	Y	N	Y	S/R	N	N/A	N	N/A	Y	Y
12. Puestos de estacionamiento de aeronaves/Aircraft parking position	Y	P	Y*	Y	Y	Y	Y	S/R	Y	Y ****	Y	N	Y	*Y
13. Punto de verificación INS /INS checking fix	Y	N	Y*	Y	Y	N	Y	S/R	N	N	N	Y	N	N

ESTADOS /STATES	ARG	BOL	BRA	CHI	COL	ECU	GUY	FGU	PAN	PAR	PER	SUR	URU	VEN
14. Obstáculos en el área de circuito y en el aeródromo/heliporto/ Obstacles in the circuit area and in the aerodrome-heliport	Y	P	Y*	Y	Y	Y	Y	S/R	***	Y*	Y	Y	Y	Y
15. Puntos de referencia y otros puntos esenciales para la aproximación final comprendido el procedimiento de aproximación por instrumentos/ Reference points and other Essentials fixes for final approach including instrument approach procedure	Y	Y	Y*	Y	Y	Y	Y	S/R	**	Y	Y	Y	Y	Y

Y = Yes/SI
 * = Ver comentarios / See comments
 N = No
 P = Parcialmente / Partially
 N/A = Not applicable / No aplicable
 S/R = without answer / sin respuesta

COMENTARIOS DE LOS ESTADOS / COMMENTS BY STATES

ESTADOS / STATES	COMENTARIOS / COMMENTS
ARGENTINA	<p>*La información de coordenadas WGS-84 si bien se encuentra en formato digital, no está disponible en una base de datos nacional. 9, 10 y 11: Estos datos no están aun incorporados a las publicaciones. The information of WGS-84 coordinates, while being in digital format; it is not available in a national data base. 9, 10 and 11: This data are not incorporated yet into the publications.</p>
BOLIVIA	<p>La información está en WGS-84; aún no existe una base de datos consolidada y está en proceso./ The information is in WGS-84; but it doesn't exist a consolidated data base yet and it is in process.</p>
BRAZIL	<p>* Parte I Número 2/Part I Number 2 – El sector responsable de la encuesta de operaciones topográficas utiliza una estación única de control para determinar los criterios de referencia entre ARP y WGS-84. Encuesta sobre geodésica topográfica con rastreador (doble frecuencia), sobre la cuenta N° 5 IBGE resolución de 1993.03.31. Esta resolución asegura la precisión de las coordenadas, de acuerdo con los SARPS de OACI. / The sector responsible for the topographic survey operations uses a single control station to determine the reference standards between the ARP and WGS-84. Topographic geodetic survey with tracker (Double frequency), on account N° 5 IBGE resolution of 1993.03.31. This resolution assures the accuracy of the coordinates, in accordance with ICAO SARPS.</p> <p>*Parte II Número 1 al 15/Part II Number 1 to 15 – La resolución es más protectora de lo recomendado. Nosotros ponemos atención a la precisión requerida en todos los puntos que hayan sido aplicados o en la gran mayoría de puntos que nosotros presentamos con precisión mayor a la prescrita por OACI en el Anexo 4 (Apn.6, tablas 1 al 5). / The resolution is more protective than recommended. We attend the required accuracy in all applied items or on the great majority of the items we present accuracy greater than the prescribed by ICAO Annex 4 (Appendix 6, tables 1 to 5).</p>
CHILE	<p>1. La información se encuentra en WGS-84, pero aún no existe una base de datos nacional consolidada/Information is in WGS-84 but there is not a consolidated national database yet. 2. Los levantamientos se han realizado en base a puntos pertenecientes a la red geodésica nacional del Instituto Geográfico Militar de Chile/Collection of information has been made based on points belonging to geodetically network from the Military Geographical Institute of Chile. 4, 10, 11 No se aplica, pero de ser necesario se pueden obtener en WGS-84 / 4, 10, 11, Not applicable but if necessary, they may be obtained in WGS-84.</p>
COLOMBIA	<p>Sin comentarios / No comment</p>
ECUADOR	<p>*Tenemos la información del levantamiento topográfico en WGS-84 de aeródromos, radio-ayudas, obstáculos, rutas, etc. Los mismos que se encuentran almacenados en un archivo digital e impreso/We have the information of the topographical rising in WGS-84de aerodromes, radio-navaids, obstacles, routes, etc. The same ones that is stored in a digital file and form. *Los helipuertos nacionales la información que se publica en el AIP, no ha sido verificada su levantamiento en WGS-84/ The national heliports, the information that is published in the AIP, their rising has not been verified in WGS-84</p>
GUYANA	<p>WGS-84 Survey was completed in 2005 for SYGC FIR and SYCJ Inte'l airport. Control points established at the SYCJ airport under the guidance of ICAO specialist. All new points/fixes are surveyed in accordance with WGS-84 method. La encuesta sobre WGS-8 se completó en el 200 para las FIRs SYGC y SYCJ Aerop. Intl. Los puntos de control establecidos en el aeropuerto SYCJ bajo la asistencia de un experto de la OACI. Todos los puntos/fijos nuevos están siendo supervisados de acuerdo con el método WGS-84.</p>
FRENCH GUYANA	<p>S/R</p>

ESTADOS / STATES	COMENTARIOS / COMMENTS
PANAMA	<ol style="list-style-type: none"> 1. Tenemos la información de los levantamientos, no tenemos base de datos electrónica con la información. de los aeródromos./ We have the information on the collection, we do not have electronic database with the information on aerodromes 2. puntos transformados en mesa, Programa GEOTRANS v2.2.5./points converted in GEOTRANS v2.2.5 programme 3. son objeto de levantamiento los obstáculos dentro del aeropuerto/obstacles in the airport are subject to collection. 4. los helipuertos nacionales el usuario proporciona las coordenadas WGS-84 y no podemos asegurar la integridad y precisión/national heliports. the user provides wgs-84 coordinates and we may not ensure integrity and accurateness.
PARAGUAY	<ol style="list-style-type: none"> 1. Levantamiento topográfico realizado por la DISERGEMIL./Topographic study made by DISERGEMIL 2. las coordenadas se obtuvieron con GPS diferencial./Coordinates were obtained with differential GPS <ol style="list-style-type: none"> 1. DISERGEMIL: DIRECCION DEL SERVICIO GEOGRAFICO MILITAR 2. PUNTOS OBTENIDOS MEDIANTE PROGRAMA IOPA 83 / OBTAINED WITH IOPA 83 PROGRAMME 3. ESTACIONAMIENTO EN MANGA SOLAMENTE / PARKING ON FINGER ONLY
PERU	<ol style="list-style-type: none"> 1. No se dispone de una base de datos estructurada a nivel nacional que incluya coordenadas en WGS-84, sin embargo se cuenta con información topográfica de las áreas correspondientes a los principales aeródromos / There is no structured data base at a national level which includes coordinates in WGS-84; however, there is topographical information in the areas corresponding to the main aerodromes. 2. El levantamiento se hace en función a una red geodésica nacional de Orden 0 en WGS-84 /Survey made in function of national geodetic in “zero” basis WGS-84
SURINAME	We do not have national database yet. Aún no hay una base de datos nacional.
URUGUAY	<p>Por los ajustes en la red Sudamericana SIRGAS se entiende conveniente actualizar los datos para la verificación In view of adjustments in SIRGAS South American network it is pertinent to update data for verification.</p>
VENEZUELA	<p>Radioayudas para la navegación en rutas: las radioayudas dentro de los aeródromos han sido levantadas a excepción de las que están fuera de los mismos. Puestos de estacionamiento de aeronaves: de los diez aeropuertos INTL de la Republica Bolivariana de Venezuela solo se han publicado dos de estos.(Maiquetía – SVMI y Valencia Arturo Michelena – SVVA)</p> <p>En-route Radio navigation aids within aerodromes have been removed with exception of those which are outside. Aircraft parking positions of 10 airports in República Bolivariana de Venezuela have been published in only two of these (Maiquetía – SVMI and Valencia Arturo Michelena – SVVA).</p>
Updated/ Fecha de Actualización:	19/10/2012

APÉNDICE / APPENDIX B

ESTADO DE IMPLANTACIÓN DEL QMS EN LA REGIÓN SAM / STATUS OF QMS IMPLEMENTATION IN THE SAM REGION

ESTADO STATE	EN PROCESO IN PROCESS	IMPLANTADO IMPLEMENTED	AUDITADO AUDITED	CERTIFICADO CERTIFIED	% DE EJECUCIÓN % OF EXECUTION	FECHA FINAL FINAL DATE	OBSERVACIONES REMARKS
Argentina	X				30	JUL 2013	Se están identificando y describiendo procesos. / Processes are being identified and described. ARO/AIS Julio/july 2014
Bolivia	X				30	2013	
Brasil/ Brazil	X	X	X	X	85	-----	NOTAM, AIP Y MAP certificado/certified y ARO en proceso in process 66% completado/completed. 2014
Colombia	X	X			90	JUL 2013	Actualmente se efectúan auditorías internas de control de la implantación y se ajustan los procedimientos y registros inherentes al proceso AIM/ Currently internal control audits are carried out to control implementation and registrations inherent to AIM are adjusted.
Chile		X	X	X	100	-----	ISO 9001:2008
Ecuador		X	X	X	100		ISO 9001:2008
Guyana	X				25	DEC 2013	Received some training/ algo de entrenamiento recibido.
Guayana Francesa French Guyana							Sin información No information
Paraguay		X	X	X	100	-----	ISO 9001:2008

ESTADO STATE	EN PROCESO IN PROCESS	IMPLANTADO IMPLEMENTED	AUDITADO AUDITED	CERTIFICADO CERTIFIED	% DE EJECUCIÓN % OF EXECUTION	FECHA FINAL FINAL DATE	OBSERVACIONES REMARKS
Panamá	X				70	JUN 2012	
Perú	X				50	DIC/DEC 2013	
Suriname	X				35	DIC/DEC 2013	
Uruguay	X				90	Jul/2013	
Venezuela	X				50	DIC/DEC 2012	Información por correo electrónico/ Information through e-mail
Fecha de actualización / Date updated:			19/10/2012				

APÉNDICE / APPENDIX C

Estado de cumplimiento de la Reglamentación y Control de la Información Aeronáutica (AIRAC) en la Región SAM
Status of compliance of Standards and Control of Aeronautical Information (AIRAC) in the SAM Region

Requisito / Requirement	Argentina	Bolivia	Brazil	Chile	Colombia	Ecuador	F. Guyana	Guyana	Panamá	Paraguay	Perú	Suriname	Uruguay	Venezuela	COMENTARIOS COMMENTS
1. Dispone de un programa de publicaciones / Do you have a publication programme	SÍ	SÍ	SÍ	SÍ	SI	SÍ	Y	Y	SÍ	SI	SÍ	SI	SÍ	SÍ	
2. Publica una vez al año una AIC que incluya las fechas AIRAC de entrada en vigor del paquete de documentación integrada de información aeronáutica, las fechas de publicación y las fechas límite que los textos han de llegar al AIS/ Publishes an AIC once a year with the AIRAC dates of effectiveness of the integrated aeronautical information package, the dates of publication and the deadline in which the texts must reach the AIS	SI	SÍ	SÍ	SI	SI	SÍ	Y	Y	SÍ	SÍ	SÍ	SI	SÍ	SÍ	BOL: La AIC se publica en noviembre. / AIC is published in November CHI: Se publican las fechas/ Dates are provided
3. La información AIRAC, ¿se distribuye por lo menos con 42 días de antelación respecto a la fecha de entrada en vigor?/ Is the AIRAC information distributed at least 42 days before the effective date?	SÍ	SÍ	SÍ	SI	SI	SÍ	Y	Y	SÍ	SÍ	SÍ	SI	SÍ	SÍ	VEN: se publica con 56 días de antelación. / Published 56 days in advance.
4. Las fechas de entrada en vigor AIRAC se basan en un intervalo de 28 días? / Are AIRAC effective dates based on a 28-day interval?	SÍ	SÍ	SÍ	SI	SI	SÍ	Y	Y	SÍ	SÍ	SÍ	SI	SÍ	SÍ	

Requisito / Requirement	Argentina	Bolivia	Brazil	Chile	Colombia	Ecuador	F. Guyana	Guyana	Panamá	Paraguay	Perú	Suriname	Uruguay	Venezuela	COMENTARIOS COMMENTS
5. ¿Está establecido que no debe haber modificación de la información AIRAC por lo menos hasta 28 días después de la fecha indicada de entrada en vigor, a no ser que las circunstancias notificadas sean de carácter temporal y no subsistan por todo el período?/ Has it been established that AIRAC information shall not be modified within the 28 days following the indicated effective date, unless the circumstances reported are temporary and do not persist for the whole period?	SÍ	SÍ	SÍ	SÍ	SI	SÍ	Y	Y	SÍ	SÍ	SÍ	SI	SÍ	SÍ	
6. ¿Se cumple con no utilizar fechas de aplicación distintas a la fecha de entrada en vigor AIRAC, respecto a modificaciones planeadas, importantes para las operaciones que exijan trabajos cartográficos, o para actualizar las bases de datos de navegación?/ Do they comply with using only the AIRAC effective dates for planned modifications that are of significance for operations that require mapping jobs, or for updating navigation databases?	SÍ	SÍ	SI	SÍ	SI	SÍ	Y	Y	SÍ	SÍ	SÍ	SI	SÍ	SÍ	
7. ¿Se utiliza el Tiempo Universal Coordinado (UTC) para indicar la hora que entrará en vigor la información AIRAC?/ Is the Coordinated Universal Time (UTC) used for indicating the effective time of AIRAC information?	SÍ	SÍ	SI	SÍ	SI	SÍ	Y	Y	NO	SÍ	SÍ	SI	SÍ	SÍ	

Requisito / Requirement	Argentina	Bolivia	Brazil	Chile	Colombia	Ecuador	F. Guyana	Guyana	Panamá	Paraguay	Perú	Suriname	Uruguay	Venezuela	COMENTARIOS COMMENTS
8. ¿Se utiliza el Calendario de fechas de entrada en vigor AIRAC?/ Is the calendar of AIRAC effective dates used?	SÍ	SÍ	SI	SÍ	SI	SÍ	Y	Y	SÍ	SÍ	SÍ	SI	SÍ	SÍ	
9. ¿Se ha coordinado con las distintas fuentes originadoras de la información las fechas límites para la información que originen?/ Have deadlines for information originating at the various information sources been coordinated with them?	SÍ	SÍ	SI	SÍ	SI	SÍ	Y	Y	SÍ	SÍ	SÍ	SI	SÍ	SÍ	
¿Se utiliza el formato de aviso de promulgación de información aeronáutica tal como se propone en el Manual para los servicios de información aeronáutica (Doc.8126) o similar?/ Is the aeronautical information publication notice form used as proposed in the Aeronautical Information Services Manual (Doc 8126) or similar?	SÍ	SÍ	SI	SÍ	SI	SÍ	Y	Y	SÍ	SÍ	SÍ	SI	SÍ	SÍ	
10. ¿Se contempla que las fechas del ciclo AIRAC, que ocurran dentro del periodo de 28 días desde el 21 de diciembre al 17 de enero inclusive no se utilicen para la entrada en vigor de cambios operacionales de importancia?/ Has it been contemplated that AIRAC dates that fall within the 28-day period between 21 December and 17 January inclusive shall not be used for the entry into effect of significant operational changes?	SÍ	SÍ	SI	SÍ	SI	SÍ	Y	Y	SÍ	SÍ	SÍ	SI	SÍ	SÍ	

Requisito / Requirement	Argentina	Bolivia	Brazil	Chile	Colombia	Ecuador	F. Guyana	Guyana	Panamá	Paraguay	Perú	Suriname	Uruguay	Venezuela	COMENTARIOS COMMENTS
11. Se suministra a los usuarios la información AIRAC en forma electrónica?/ Is the AIRAC information provided to users <i>via</i> electronic means?	SI	NO	SI	SI	SI	SI	Y	Y	NO	SI	SI	Y	SI	SI	
12. ¿Se continúa proporcionando la información AIRAC en forma impresa también?/ The AIRAC information is still provided in hard copy too?	SI	SI	SI	SI	SI	SI	Y	Y	SI	SI	SI	SI	SI	SI	PAN: Se mantiene la información en forma impresa./ printed information is available. VEN: A quien la solicita. / Upon request.
13. Si las respuestas a las preguntas 2 a 5 anteriores son NO . ¿Existen planes para cumplirlo?/ If the answer to questions 2 to 5 is NO , are there any plans to comply?	N/A	N/A	NA	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
FECHA DE ACTUALIZACION: UPDATED:	19/10/2012														

APÉNDICE D / APPENDIX D

SEGUIMIENTO NIVEL DE IMPLANTACIÓN DE LA NORMA PARA LA PROVISIÓN DE
DATOS ELECTRÓNICOS SOBRE EL TERRENO (E-TOD) PARA EL ÁREA 1 (Ref.: Anexo 15, 10.1.3)*FOLLOW UP LEVEL OF IMPLEMENTATION OF THE STANDARD FOR THE PROVISION OF
ELECTRONIC TERRAIN OBSTACLE DATA (E-TOD) FOR THE AREA 1 (REF.: ANNEX 15, 10.1.3)*

ESTADOS /STATES	ARG	BOL	BRA	CHI	COL	ECU	GUY	FGU	PAN	PAR	PER	SUR	URU	VEN
Modelo digital – DIGITAL MODEL														
¿Dispone la Oficina de un Modelo Digital del terreno (MDT) o de un Modelo digital de elevación (MDE) u otro? (Especifique) Does the Office have a model digital terrain (MDT) or a Model for Digital Elevation (MDT) or other? (Specify)	N	N ¹	Y ¹	N	Y ¹	N	N	Y ¹		N	N ¹	N	N	Y
¿De dónde los obtuvo? (De la propia organización, de organización externa –cuál?) Where did you obtain it (from your organisation, an external organization – which?)	-	Y ²	Y ²	N	Y ²	N	N/A	Y ²		N	N	N	N	*1
¿Qué precisión tiene dicho modelo? Which accurateness does this model have?	-	Y ³	Y ³	N	Y ³	N	N/A	Y ³		N	N	N	N	*2
¿Cumple con Tabla A8-1. Requisitos numéricos de los datos sobre el terreno para el Área 1 del Anexo 15? Does it comply with Table A8-1? data numeric requirements for Annex 15 Area 1?	-	N/A	N ⁴	N	N	N	N/A	Y ⁴		N	N	N	N	Y
¿Dicho modelo cumple con la serie de Normas ISO 19110? (Sí, No) Does such model comply with the series of ISO Standard 19110? (yes, no)	-	N ⁴	N ⁵	N	Y ⁴	N	N/A	Y ⁵		N	N	-	N	Y
¿Qué precisión tiene dicho modelo? Which is the accurateness of such model?	-						N/A			-	N	-		*3

ESTADOS /STATES	ARG	BOL	BRA	CHI	COL	ECU	GUY	FGU	PAN	PAR	PER	SUR	URU	VEN
Obstáculos – OBSTACLES														
¿Dispone de una base de datos de obstáculos que abarque todo el territorio de su país? (Sí, No) Is there an obstacle data base covering all territory in your country? (yes, no)	Y ¹	N	Y ⁶	N	Y ⁵	N	N	Y ⁶		N	N ²	N	N ¹	N ⁴
¿Cómo los obtuvo? (De la propia organización, de organización externa –¿cuál?) How did you get them (from your organization? From an external organization? – which?	Y ²	N	Y ⁷	N	Y ⁶	N	N/A	Y ⁷		N	Y ³	-	N ²	* ⁵
¿Dichos datos cumplen con la serie de Normas ISO 19110? (Sí, No) Does the data comply with the series of ISO Standard 19110? (yes, no)	Y ³	N	N ⁸	N	N	N	N/A	N ⁸		N	N	-	N ³	N
¿Cumple con Tabla A8-2. Requisitos numéricos de los datos sobre obstáculos para el Área 1 del Anexo 15? Does it comply with Table A8-1 data numerical requirements on terrain for Annex 15 Area 1?	-	N	N ⁹	N	N	N	N/A	N ⁹		N	N	N	Y	Y
Planificación – PLANNING														
¿Ha establecido la Oficina un plan detallado con las tareas, plazos, análisis de riesgos, aspectos económicos y demás para la ejecución del proyecto de implantación del e-TOD para el Área 1? (Si, No) (Si la respuesta es Si, indicar plan y fechas de cumplimiento) Has your office established a detailed plan with tasks, risk analysis, economical aspects, etc, for the execution of the e-TOD implementation project for Area 1 (yes, no) (if answer is yes, indicate plan and dates of compliance).	Y ⁴	N	N ¹⁰	Y ¹	N	Y ¹	N	Y ¹⁰		N	N	N	Y ⁴	N

ESTADOS /STATES	ARG	BOL	BRA	CHI	COL	ECU	GUY	FGU	PAN	PAR	PER	SUR	URU	VEN
<p>¿Ha definido la Oficina un manual de especificaciones técnicas para dicha implantación? (Sí, No) (Consultar si se puede acceder al mismo)</p> <p>Has the office defined a manual with technical specifications for such implementation? (yes, no). (ask if there is easy access to the same)</p>	Y ⁵	N	N	Y	Y	N	N	Y ¹¹		N	N	N	Y ⁵	N
<p>¿Ha definido y firmado Acuerdos de Nivel de Servicio (SLA) con los proveedores de datos? (Sí, No) (Consultar si se puede obtener una copia modelo de los mismos)</p> <p>Has your office defined and signed service level agreements (SLA) with data providers? (yes, no) (ask if there is an available copy of the same)</p>	Y ⁶	N	N	N	N	N	N	N ¹²		N	N	N	Y ⁶	N
<p>¿Dispone de un programa de capacitación para aquellas personas que tengan que operar con los datos del e-TOD en la dependencia AIS? (Sí, No) (Consultar si se puede acceder al mismo)</p> <p>Is there a training programme for those persons that have to operate with E-TOD data in AIS unit? (yes, no) (ask if the same may be accessed)</p>	N	N	N ¹¹	N	Y	Y ²	N	Y ¹³		N	N	N	N	N
<p>¿Se han tenido en cuenta los conceptos operacionales en este proyecto? (Sí, No) (Comentar el plan)</p> <p>Have operational concepts been taken into account? (yes, no) (comments on the plan)</p>	N	N	N	N	Y	Y ³	N	N ¹⁴		N	N	N	N	-
<p>¿La Oficina dispone de equipamiento y programas para la gestión de la información referida a e-TOD? (Sí, No) (En caso de respuesta Sí, indicar característica de los equipos y programas)</p> <p>Does the office have equipment and programmes for information management referred to e-TOD (yes, no) (In case answer is YES, indicate the characteristic of equipment and programmes).</p>	N	N	Y ¹²	N	Y ⁷	Y ⁴	N	N ¹⁵		N	Y ⁴	N	Y ⁷	N

ESTADOS /STATES	ARG	BOL	BRA	CHI	COL	ECU	GUY	FGU	PAN	PAR	PER	SUR	URU	VEN
<p>¿Se han definido cronogramas y especificaciones para la carga y verificación de los datos referidos al e-TOD? (Sí, No) (En caso de respuesta Sí, indicar tiempos y formas de la verificación)</p> <p>Have schedules and specifications been defined for the load and data verification referred to e-TOD? (yes, no) (in case answer is YES, indicate times and ways to check)</p>	N ⁷	N	Y ¹³	N	N	Y ⁵	N	N ¹⁶		N	N	N	Y ⁸	N

Y = Yes/SI
^{1, 2, ...} = Ver comentarios / See comments
 N = No
 P = Parcialmente / Partially
 N/A = Not applicable / No aplicable
 S/R = without answer / sin respuesta

COMENTARIOS DE LOS ESTADOS / COMMENTS BY STATES

ESTADOS/ STATES	COMENTARIOS / COMMENTS
ARG	<p>¹ Se dispone de datos de obstáculos que se están incorporando a una base de datos./ Obstacle data available, data incorporated in a data base.</p> <p>² El proveedor es el departamento de aeródromos. / Aerodrome Department is the provider</p> <p>³ Se está evaluando /Under assessment.</p> <p>⁴ Está en proceso de elaboración / In process of preparation.</p> <p>⁵ Está en proceso de elaboración. / In process of preparation.</p> <p>⁶ Está en proceso de elaboración. / In process of preparation.</p> <p>⁷ En proceso de realización con el proveedor. / under process of implementation by the provider.</p>
BOL	<p>¹ Las elevaciones de los obstáculos están en base a las elevaciones proporcionadas por Estado Plurinacional de Bolivia. / Obstacles are in base to elevations provided by Bolivia.</p> <p>² Del Instituto Geográfico Militar/IGM / From the IGM</p> <p>³ Las elevaciones del IGM tiene una precisión de 1×10^{-4} / IGM elevations have a precision of 1×10^{-4}</p> <p>⁴ No se tiene implantado el Sistema de Gestión de la Calidad/ Quality assurance system is not implemented.</p>
BRA	<p>¹ Brasil tiene un modelo digital para terreno para el área e-TOD 1 (todo el territorio nacional)/ Brazil as a model digital terrain for the e-TOD area 1 (all national territory).</p> <p>² El modelo digital de terreno para el área 1 e-TOD comprende líneas de contorno y puntos ploteados en 3D obtenidos de las cartas aeronáuticas con una escala de 1:250,000 y cartas topográficas con escalas de 1:100,000 and 1:50,000. / The model digital terrain for the e-TOD area 1 comprises contour lines and points plotted in 3D obtained from the aeronautical charts with a scale of 1:250,000 and topographical charts with scales of 1:100,000 and 1:50,000.</p> <p>Las Cartas Aeronáuticas se producen por el ICA y las cartas topográficas se producen por agencias Aeronautical charts are produced in the Air Force Institute of Cartography (ICA) and topographical charts are produced by federal agencies that have the allocation of mapping the national territory. For areas of national territory where the mentioned products do not exist, it is used the model digital terrain derived from the shuttle radar topography mission (SRTM) and available free of charge by the U.S. Government.</p> <p>³ La precisión del modelo digital de terreno para un área particular geográfica dependerá de la información utilizada, de acuerdo a los valores mencionados abajo: / The accurateness of the model digital terrain for a particular geographic area will depend on the input used, according to the values below:</p> <p>aeronautical charts at scale of 1:250,000 = altimetry (± 50 m to 70 m) and planimetry (± 125m to 250 m)</p> <p>topographical charts at scale of 1:100,000 = altimetry (± 25 m to 37.5 m) and planimetry (± 50m to 100 m)</p> <p>topographical charts at scale of 1:50.000 = altimetry (± 10 m to 15 m) and planimetry (± 25m to 50 m);</p> <p>SRTM =± 20m in altimetry, but there are discrepancies in areas that present altitude values.</p> <p>⁴ La Tabla A-81 tiene los siguientes requisitos: espacio para puestos, precisión vertical, resolución vertical, precisión horizontal, precisión horizontal, nivel de confianza, nivel de integridad y período de mantenimiento / Table A8-1 has the following requirements: post spacing, vertical accuracy, vertical resolution, horizontal accuracy, confidence level, level integrity and maintenance period.</p> <p>Todos los items cumplen con los requerimientos, con la excepción de la precisión vertical y precisión horizontal, cuando el modelo digital de terreno se</p>

ESTADOS/ STATES	COMENTARIOS / COMMENTS
	<p>obtiene por la carta a escala 1:250,000, carta a escala 1:100,000 y por SRTM debido a que dichos datos comprenden valores menos exactos que aquellos definidos en la Tabla A8-1. / All items comply with the requirements with the exception of vertical accuracy and horizontal accuracy, when the model digital terrain is obtained by aeronautical chart at scale of 1:250,000, topographical chart at scale of 1:100,000 and by SRTM because such data comprises values less accurate than those defined in Table A8-1.</p> <p>⁵ Las series de la norma ISO 19110 todavía serán estudiadas e implantadas. / The series of ISO Standard 19110 will still be studied and implemented.</p> <p>⁶ Hay una base de datos nacional, no se asegura que el 100% de obstáculos de más de 1200 metros sean registrados en la base de datos, tal como se requiere en el Anexo 15 para el área 1 e-TOD, debido a regulaciones recientes que son efectivas desde el 2011 (Orden No.256/GM5 / There is a national database, it is not assured that 100% of obstacles of more than 100 meters are registered in the database, as required by annex 15 for the e-TOD area 1, due to the recent regulations that are effective as of 2011 (order N.256/GM5).</p> <p>⁷ Los obstáculos se obtienen a través de estudios topográficos llevado a cabo por el ICA. También se obtienen datos disponibles de las siguientes organizaciones: Obstacles are obtained through topographic survey conducted by the air force institute of cartography (ICA). data available from the following external organizations is also used: Agencia Nacional de Aviación Civil (ANAC), Comando Aéreo Regional (COMAR); Servicio de Protección al Vuelo, Regional Sao Paulo (SRPV-SP) y Centro Integrado para la Defensa del Control de Tránsito Aéreo (CINDACTA). National Civil Aviation Agency (ANAC), Regional Air Command (COMAR), São Paulo, Regional Flight Protection Service (SRPV-SP) and integrated center for air defense and air traffic control (CINDACTA).</p> <p>⁸ Las series ISO 19110 aún serán estudiadas e implantadas. / The series of ISO standard 19110 will still be studied and implemented.</p> <p>⁹ Los datos obtenidos por el ICA cumplen con la Tabla A8-2 pero no se assume que los datos de Fuentes externas está de acuerdo con los requerimientos de la tabla. / Data obtained by the air force institute of cartography (ICA) complies with table A8-2 but it is not assured that external sources data is in compliance with the requirements of the table.</p> <p>¹⁰ La Oficina no ha establecido un plan. / The office as not established a plan.</p> <p>¹¹ Este entrenamiento sera parte de la implantación de DECEA AIM-BR / This training will be part of the DECEA AIM-BR implementation.</p> <p>¹² Los programas y equipamiento se utilizarán en el proyecto AIM-BR / Equipment and programmes will be used in the project AIM-BR.</p> <p>¹³ Hay una planificación que se espera se inicie en 2013 que forma parte del proyecto AIM-BR. / There is a planning expected to begin in 2013 that makes part of the project AIM-BR.</p>
CHI	<p>¹ Hay establecido un grupo de trabajo que ha definido un Proyecto de Plan con tareas, plazos, análisis de riesgos y aspectos económicos para la implantación de la áreas 1, 2, 3 y 4. El citado Proyecto de Plan está en una etapa de evaluación, por lo cual aún no se ha definido un calendario de ejecución. / There is a work group which has defined a Plan Project with tasks, deadlines, risk analysis and economical aspects for the implementation of áreas 1, 2, 3 and 4. The mentioned Plan Project is under assessment, and for this reason an implementation clalendar has not been defined yet.</p>
COL	<p>¹ Se dispone de un DTM / There is a DTM</p> <p>² Instituto Geográfico Agustín Codazzi. IGAC.</p> <p>³ 30 metros / 30 mts.</p> <p>⁴ Es producido con estándares IPGH / Produced with IPGH standards</p> <p>⁵ Base de datos Programa FEAMAN, GFEAMAN, ARGIS, MICROESTATION / Data Base Programme FEAMAN, GFEAMAN, ARGIS,</p>

ESTADOS/ STATES	COMENTARIOS / COMMENTS
	<p>MICROESTATION. ⁶ Diversas fuentes externas / Different external sources ⁷ Programas FEAMAN, GFEAMAN, ARGIS, MICROESTATION / Programmes FEAMAN, GFEAMAN, ARGIS, MICROESTATION.</p>
ECU	<p>¹ El Plan de implementación ETOD – SIG se lo realizará desde el segundo semestre del 2012. / e-TOD – SIG plan implementation plan will be carried out starting the second half of 2012. ² Dentro del proyecto de implantación del SIG y ETOD, se contempla la capacitación del personal AIM responsable del mismo. / Training of AIM personnel responsible for the SIG and e-TOD Project is contemplated within its implementation. ³ El plan contempla los nuevos requisitos que emanan del concepto operacional de ATM mundial, los servicios de información aeronáutica deben integrarse en un concepto más amplio de gestión de la Información aeronáutica centrada en los datos y también se tiene en cuenta lo establecido en la hoja de ruta de transición del AIS al AIM de Ecuador. / The plan contemplates new requirements which emanate from the global ATM operational concept, the aeronautical information services must be integrated within an ample concept of aeronautical information management centered in data and also what is established in the roadmap for transition from AIS to AIM of Ecuador. ⁴ Personal AIS/MAP con experiencia y conocimientos básicos de GIS. / AIS/MAP personnel with experience and basic knowledge of GIS. Equipos Intel Core 2 Duo 3 GHZ, Memoria RAM 4 GB. / Intel Core 2 Duo 3 GHZ, Equipment RAM 4 GB Memory. Software Microstation 95, ArcGIS 9 (En proceso de compra de licencias) / Microstation 95, ArcGIS 9 software (under process of licenses acquisition). ⁵ El cronograma estará basado en tiempo establecido para el desarrollo del proyecto, seguimiento a través de Indicadores de cumplimiento de cada etapa. / The Schedule is based in time established for the development of the project, follow-up through indicators of compliance in each stage.</p>
GUY	<p>We are in the process of obtaining a GIS software and train personnel to establish a MAP unit for the AIS. / Estamos en el proceso de obtener un software de GIS y entrenar al personal para establecer una dependencia MAP para el AIS.</p>
FGU	<p>¹ Digital Terrain Model (DTM) / Modelo Terreno Digital (DTM). ² External organization: Institut Geographique National (the French National Geodetic and Mapping Agency) – see AIC A 2008_31 (https://www.sia.aviation---civile.gouv.fr/dossier%5Caicfrancea%5CAIC_A_2008_31_EN.pdf) / Organización externa: Institut Geographique National (the French National Geodetic and Mapping Agency) – see AIC A 2008_31 (https://www.sia.aviation---civile.gouv.fr/dossier%5Caicfrancea%5CAIC_A_2008_31_EN.pdf). The conditions relating to acquisition of these datasets (licensing) are provided in the IGN catalogue ³ IGN BD ALTI® product is a terrain reference description of French territory. DTM (Digital Terrain Models) and contours describing the terrain at different scales (from 1:50 000 to 1:1 000 000) are derived from the BD ALTI®. The BD ALTI® consists of structured vector files from scanning all the contours of French terrain. The contour interval can range from 5 to 40 m. Data is entered on IGN maps at 1:25 000 at 1:50 000 and from additional aerial photographs at 1:20 000; 1:30.000 and 1:60 000. El product IGN BD ALTI® es una descripción de referencia terrestre del territorio Francés. Los Modelos DTM (Modelos Terrestres Digital) y contornos describiendo el terreno a diferentes escalas (de 1:50 000 a 1:1 000 000) se derivan del BD ALTI®. El BD ALTI® consiste en archivos de vector estructurados de el escaneo de contronos del terreno francés. El intervalo de contorno puede variar de 5 a 40 m. Los datos se ingresan en mapas IGN a 1:25 000 a 1:50 000 y de fotografías adicionales a 1:20 000; 1:30.000 y 1:60 000. ⁴ Except in very steep areas where IGN-F is collecting additional data to improve accuracy.</p>

ESTADOS/ STATES	COMENTARIOS / COMMENTS
	<p>Excepto en áreas escarpadas donde el IGN-F recolecta datos adicionales para mejorar la precisión. ⁵ Metadata is provided free on IGN-F website, in French. / Los metadatos se pueden obtener gratuitamente en el website de IGN-F, en francés. ⁶ But gathering and assessments of existing data are on going. New surveys are scheduled every year (e.g. in French Guiana in 2011 and the Caribbean in 2012). / La recolección y evaluación de los datos existentes está en proceso. Nuevos estudios se realizan cada año (por ejemplo en Guyana Francesa en 2011 y en el Caribe en 2012). ARTIFICIAL ISOLATED OBSTRUCTIONS are listed in French AIP / Obstrucciones aisladas artificiales aparecen en el AIP francés. (see/ver: https://www.sia.aviation-civile.gouv.fr/aip/enligne/uk/..%5CPDF_AIPparSSection%5CAIP%20FRANCE%5CENR%5C5%5C1201_ENR---5.4.pdf) ⁷ From our organization with IGN-F support. / De nuestra organización con apoyo de IGN-F. ⁸ On going with IGN-F support. / En proceso, con apoyo de IGN-F. ⁹ Assessments of existing data are on going with IGN-F support. New data will be compliant according to service level agreements (SLA) with data providers. / La evaluación de datos existentes está en proceso, con apoyo de IGN-F. Los datos nuevos serán compatibles de conformidad con los acuerdos de nivel servicios (SLA) con los proveedores de datos. ¹⁰ On going with IGN-F support. / En proceso, con apoyo de IGN-F. ¹¹ EUROCONTROL (European organisation for the safety of air navigation) is writing a “Terrain and Obstacle Data Manual”, a guidance material on the provision of Terrain and Obstacle Data (TOD) in accordance with ICAO Annex 15. / Eurocontrol está escribiendo un Manual de Datos de Obstáculos del Terreno, un material de guía de datos de obstáculo en terreno First release of “Terrain and Obstacle Data Manual” has been evaluated through a Swiss-French Pilot Study in view of putting eTOD into practice. / La primera edición del Manual de Datos de Obstáculos de Terreno ha sido evaluado por un Estudio de Pilotos Suizo-Francés para poner el e-TOD en práctica. ¹² On going / En proceso. ¹³ The training is global on all the geodetic and charting issues / El entrenamiento en todas las ediciones geodéticas y de cartas. ¹⁴ On going / En proceso. ¹⁵ Various Geographic Information Systems (GIS) such as ESRI ArcGIS. /Varios Sistemas de Información Geográfica (GIS) como ESRI ArcGIS. ¹⁶ On going / En proceso</p>
PAN	
PAR	
PER	<p>¹ Solo se cuenta con hojas topográficas a escala 1:100 000 en formato analógico (papel) que fue adquirido al Instituto Geográfico Nacional. Only available topographic sheets scale 1:100 000 in analogic format (paper) acquired to the IGN. ² Sólo se dispone de información gráfica aislada de obstáculos de algunos aeródromos y que aparecen en algunas cartas aeronáuticas, no se encuentra en una base de datos. / Only isolated obstacle graphical information available of some aerodromes and shown in some aeronautical charts, not found in a data base. ³ de levantamientos topográficos realizados por la propia organización. / Topographical surveying. ⁴ se cuenta con equipos de medición GPS R8 diferencial y estación total TOPOCON 7500, 02 workstations HP Z800, software de diseño CAD. / GPS</p>

ESTADOS/ STATES	COMENTARIOS / COMMENTS
	R8 differential measuring equipment available and total station TOPOCON 7500, 02 estaciones de trabajo HP Z800, software de diseño CAD.
SUR	
URU	¹ En proceso / Ongoing ² En proceso. De la propia Organización y externa. IGM – Instituto Geográfico Militar. / Ongoing. From the organisation and outised source. IGM ³ En proceso / Ongoing ⁴ 2011 - 2015 ⁵ En proceso / Ongoing ⁶ En proceso / Ongoing ⁷ Sistema de Información Geográfica ARC-GIS ESRI /Geographical Information System ARC-GIS ESRI. ⁸ 2011 – 2015
VEN	^{*1} de organización externa / outside sources Souttle radar topography mission-national geospatial intelligence agency (NGA) y national aeronautics and space administration (NASA) ^{*2} 90 metros / 90 mts. ^{*3} 90 metros / 90 mts ^{*4} Se tiene archivos de trabajos geodésicos para los Ap Intl de VEN, donde hay OBST en el alrededor y aprox del Ap. / There are geodetic work files for International Airports in Venezuela, where there are obstctacles around and approx to the airport. ^{*5} los archivos mencionados anteriormente se obtuvieron por trabajos de la propia organización. The files previously mentioned were obtained by Works of the same organisation.

APÉNDICE E/ APPENDIX E

SUMINISTRO DE LA DOCUMENTACIÓN INTEGRADA DE INFORMACIÓN AERONÁUTICA (IAIP) EN LA REGION SAM INTEGRATED AERONAUTICAL INFORMATION PROVISION DOCUMENTATION IN THE SAM REGION								
Estado / State	Documentos disponibles / Available documents	Medios electrónicos / Electronic Means		Idiomas / Languages				Observaciones / Remarks
		Internet	CD/DV D	Español / Spanish	Inglés / English	Portugués	Francés	
Argentina	AIP & AIP AMDT	Y	N	Y	Y(1)			(1) eAIP en implementación, uso de carácter experimental/e-AIP in experimental implementation process,
	SUPP	Y	N	Y	Y			
	AIC	Y	N	Y	Y			
	NOTAM/PIB	Y	-	Y	Y			
Bolivia	AIP & AIP AMDT	N	N	Y	N			Se utiliza producción en papel Sólo NOTAM de distribución internacional en inglés/ Paper production. Only international NOTAM dissemination in English language.
	SUPP	N	N	Y	N			
	AIC	N	N	Y	N			
	NOTAM/PIB	Y	-	Y	Y			
Brasil / Brazil	AIP & AIP AMDT	Y	N	N	Y	Y		Se utiliza producción en papel/printed production La disponibilidad de CD/DVD a los clientes está en proceso de implementación. / Availability of CD/DVD to customers in implementation process.
	SUPP	Y	N	N	Y	Y		
	AIC	Y	N	N	Y	Y		
	NOTAM/PIB	Y	N	N	Y	Y		
Chile	AIP & AIP AMDT	Y	N	Y	Y(1)			(1) Algunas partes en inglés Solo NOTAM de distribución internacional en inglés Some parts available in English. Only international NOTAM dissemination in English language
	SUPP	Y	N	Y	Y			
	AIC	Y	N	Y	Y			
	NOTAM/PIB	Y	-	Y	Y			
Colombia	AIP & AIP AMDT	Y	Y	Y	N			Inconvenientes temporarios para suministrar la iAIP en medio impreso / Temporary inconveniences to provide i-AIP in printed format.
	SUPP	Y	Y	Y	Y			
	AIC	Y	Y	Y	Y			
	NOTAM/PIB	Y	-	Y	Y			
Ecuador	AIP & AIP AMDT	Y	N	Y	N(1)			(1) AIP en inglés estimado para fines 2013/English AIP estimated by the end of 2013
	SUPP	Y	N	Y	N			
	AIC	Y	N	Y	N			
	NOTAM/PIB		-	Y	Y			
Guyana	AIP & AIP AMDT	Y			Y			The complete AIP NOT available at this time in E-copy. ALL other publications available in E-copy. / El AIP complete NO está disponible al momento en copia electrónica. Todas las demás publicaciones están disponibles en copia electrónica.
	SUPP	Y			Y			
	AIC	Y			Y			
	NOTAM/PIB	Y			Y			
Guyana Francesa / French	AIP & AIP AMDT		Y		Y		Y	
	SUPP		Y		Y		Y	
	AIC		Y		Y		Y	

SUMINISTRO DE LA DOCUMENTACIÓN INTEGRADA DE INFORMACIÓN AERONÁUTICA (IAIP) EN LA REGION SAM INTEGRATED AERONAUTICAL INFORMATION PROVISION DOCUMENTATION IN THE SAM REGION								
Estado / State	Documentos disponibles / Available documents	Medios electrónicos / Electronic Means		Idiomas / Languages				Observaciones / Remarks
		Internet	CD/DVD	Español / Spanish	Inglés / English	Portugués	Francés	
Guyana	NOTAM/PIB		-		Y		Y	
Panamá	AIP & AIP AMDT	N	N	Y	Y			Se utiliza producción en papel/Printed production
	SUPP	N	N	Y	Y			
	AIC	N	N	Y	Y			
	NOTAM/PIB	N	-	Y	Y			
Paraguay	AIP & AIP AMDT	Y	Y	Y	N			
	SUPP	Y	Y	Y	N			
	AIC	N	Y	Y	N			
	NOTAM/PIB	N	-	Y	Y			
Perú	AIP & AIP AMDT	N(1)	N	Y	N(3)			(1)En internet en 2012/In internet 2012 (2) Para usuarios registrados/for users only (3) Parte en inglés en 2012/partially in English (4) En inglés en 2012/English 2012
	SUPP	N(1)	N	Y	Y			
	AIC	N(1)	N	Y	N(4)			
	NOTAM/PIB	Y(2)	-	Y	Y			
Suriname	AIP & AIP AMDT	N(1)	N	N	Y			(1) En internet en 1Q del 2013/Internet 1Q of 2013 Producción en papel/Printed production.
	SUPP	N(1)	N	N	Y			
	AIC	N(1)	N	N	Y			
	NOTAM/PIB	N(1)	-	N	Y			
Uruguay	AIP & AIP AMDT	N(1)	Y(1)	Y	Y(2)			(1) En Internet/CD en 2012/internet/CD in 2012 (2) En inglés en 2012/English language 2012
	SUPP	N(1)	Y(1)	Y	Y(2)			
	AIC	N(1)	Y(1)	Y	Y(2)			
	NOTAM/PIB	N(1)	-	Y	Y(2)			
Venezuela	AIP & AIP AMDT	N(1)	N(1)	Y	Y			(1)INTERNET/CD 2012 Actualmente los suplementos, AIC y resumen NOTAM son enviados a usuarios vía e-mail / Currently AIC and NOTAM Summary are currently sent via e-mail.
	SUPP	N(1)	N	Y	Y			
	AIC	N(1)	N	Y	Y			
	NOTAM/PIB	N(1)	N	Y	Y			
FECHA DE ACTUALIZACIÓN/ UPDATED:		19/10/2012						