



Twenty-Eighth Pan America — Regional Aviation Safety Team Meeting (PA-RAST/28)
Santa Cruz, Bolivia, 23 – 25 May 2017

Agenda Item 11: Other business

ELECTRONIC TERRAIN AND OBSTACLE DATA (E-TOD) IMPLEMENTATION IN THE SAM REGION

(Presented by the Secretariat)

EXECUTIVE SUMMARY	
This IP contains information on the current Status of the e-TOD implementation in the SAM Region.	
<i>Strategic Objectives:</i>	<ul style="list-style-type: none"> • Safety • Capacity and Efficiency • Environment Protection
<i>References:</i>	<ul style="list-style-type: none"> • ICAO Annex 4 - Aeronautical Charts • ICAO Annex 15 – Aeronautical Information Services. • Roadmap for the transition from AIS to AIM. • ICAO Doc 9881 - Guidelines for Electronic Terrain, Obstacle and Aerodrome Mapping Information

1. Introduction

1.1 According to Chapter 5 of Annex 4, paragraph 5.2.1, as from 12 November 2015, Aerodrome Terrain and Obstacle Charts — ICAO (Electronic) shall be made available in whichever of the following ways is appropriate for a particular chart or single sheet of a chart series for aerodromes regularly used by international civil aviation.

1.2 Chapter 10 of ICAO Annex 15 specifies the areas for which terrain and obstacles chart shall be available in electronic format.

1.3 The Roadmap for the transition from AIS to AIM stipulates, in the step 13 and step 14, inside of phase 2, the compilation and provision of terrain and obstacle data set.

1.4 ICAO Doc 9881 provides a guideline regarding the requirements that should be applied along the data chain in order to obtain a database commensurate with the criticality of the final application of the terrain and obstacle data sets.

2. Discussion

2.1 Any terrain, obstacle and aerodrome mapping data to be used to support aeronautical applications must meet the requirements defined in Annex 15 and detailed in the Doc 9881 - Guidelines for Electronic Terrain, Obstacle and Aerodrome Mapping Information.

2.2 The Roadmap for the transition from AIS to AIM specifies that the compilation and provision of terrain and obstacles data set are an integral part of the transition to AIM.

2.3 After Annex 15, amendment 37, the ICAO SAM Regional Offices included e-tod implementation in its work agenda through of GREPECAS Project G2, under the AIS area responsibility.

2.4 In view of the lack of technical documentation regarding the collection of data on terrain and obstacles in Spanish language, the SAM Regional Office has prepared, with the support of RLA/06/901 Project, a document to support States in e-TOD implementation. This document is available since 2014.

2.5 This document has taken into account all the parties involved in the data chain, from the originator to the end user. It is important to note the role of each party involved in obtaining and using the data and the responsibilities of the same in this chain. The descriptions of the different parties involved in the data chain are:

- a) **Data originators**, collect the terrain, obstacle or aerodrome mapping data using aerial photography, laser scanning, satellite information, topographical surveys, etc. Certain existing data may have to be modified (e.g. resurveyed) to satisfy stringent accuracy and integrity requirements. The data from different data originators are *supplied* to data integrators.
- b) **Data integrators**, use the data sets supplied by the originators, manipulate to integrate the data sets to ensure full data (terrain, obstacle, aerodrome mapping) coverage in accordance with the required accuracy and integrity. The data sets are *supplied* to the system designers.
- c) **System designers**, (e.g. avionics manufacturers) use and if necessary merge specific data sets provided by multiple data integrators to meet the requirements of a specific application. Some of these requirements are also defined in this document. The data sets are then *supplied* to end users.
- d) **End users**, which consist of Aircraft Operators, Civil Aviation Authorities, aerodromes, air navigation services providers.

2.5 The most critical area for which, it is mandatory to States, to provide terrain and obstacle data in electronic format in order to support air navigation is Area 2, mainly for the approach, arrival, take-off and initial climb procedures. The area descriptions of the different areas are available in Appendix 8 of ICAO Annex 15.

2.6 Due to the cost and the difficulty to obtain terrain and obstacle data in the airport and its environment, the compliance with this implementation in SAM Region States has been postponed. In fact, currently, the implementations in the different States for Area 2 are:

- a) Obstacle surveying for Area 2, Argentina obstacle surveying has been completed in four airports, Chile in two airports, Panama was in a bidding process for two airports, Peru has awarded the work for the Cuzco airport, and Uruguay expects to complete the survey by the end of 2017.
- b) Regarding e-TOD implementation, Suriname informed the Meeting that they were in the planning stage, and could not give any dates yet nor define an Action Plan for either terrain or obstacles.
- c) Guyana informed that it would take some time for the project to be implemented. Regarding Area 2, it was informed that the main runway was currently being extended and, if obstacle surveying started now, efforts would be duplicated. The runway was foreseen to be completed in 2017 and, after that, they would prepare the obstacle survey plan for Area 2.
- d) Brazil has an electronic terrain and obstacle data implementation plan from e-TOD project, in accordance with the requirements set out in ICAO Annex 15 for Area 2. This plan provides for full implementation of the data, as indicated in the Final Report of the Eighth AIM Multilateral Meeting of the SAM Region for the Transition from AIS to AIM. Such plan encompasses forty-five aerodromes up to the end of 2019. In 2016, four aerodromes were executed: SBRJ; SBGL; SBCF; and SBBR. The implementation in the remaining aerodromes shall be as indicated below:

e)

Year	Number of aerodrome
2017	13
2018	14
2019	14

- f) Regarding Action Plans for obtaining electronic terrain data in Area 2a, **Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador, Panama, Paraguay, Peru, and Uruguay** accounted for 56% compliance.
- g) Regarding compliance with the provision of terrain data for the take-off path, States that reported the development of an Action Plan were **Argentina, Brazil, Chile, Ecuador, Panama, Paraguay, Peru, and Uruguay**, reaching 57% compliance in the Region.

- h) Regarding the provision of electronic terrain data corresponding to the area defined by the lateral extension of the aerodrome obstacle limitation surfaces, **Argentina, Brazil, Chile, Ecuador, Panama, Paraguay, and Peru** accounted for 50% implementation.

2.7 Considering that the implementation of the e-TOD is considered a Standard Procedure since 12 November 2015, an Action Plan for the its implementation has been requested to all States, which is being followed-up by the Secretariat, through Meetings and State Letters.

3. Suggested action

3.1 The Meeting is invited to:

- a) take note regarding the current status of e-TOD implementation in the Sam Region; and
- b) consider other actions that may deem appropriate.