



International Civil Aviation Organization

North American, Central American and Caribbean Office (NACC)

**Seventh Central American Air Navigation Experts Working Group Meeting  
(CA/ANE/WG/7)**

**Ninth Central Caribbean Working Group Meeting (C/CAR/WG/9)**

ICAO NACC Regional Office, Mexico City, Mexico, 5 to 9 March 2012

**Agenda Item 3:            3.3    Specific Developments in Air Navigation**  
                                  •            AIM

**GUIDE FOR AN ACTION PLAN FOR THE E-TOD IMPLEMENTATION**

(Presented by the Secretariat)

<b>SUMMARY</b>	
This paper focuses its attention on the requirement to States for the provision of electronic terrain and obstacle data, in different Areas [1, 2 (a, b, c and d), 3 and 4] and, taking into account the GREPECAS e-TOD AIM Project, proposes a guide for the preparation of an e-TOD Action Plan for the CAR Region.	
<b>References:</b>	
<ul style="list-style-type: none"><li>• ICAO Annex 15</li><li>• ICAO Doc 9881</li><li>• Report of the AIMS/SG/13, Mexico, 19-21 July 2011</li><li>• ICAO Roadmap for the transition from AIS to AIM</li></ul>	
<b>Strategic Objectives</b>	<i>This working paper is related to Strategic Objectives A and C.</i>

**1.                    Introduction**

1.1                Chapter 10 of Annex 15 refers to the determination and implementation of electronic terrain and obstacle data which has a background in the work carried out by ICAO with RTCA SC 193 and EUROCAE WG44 industry groups, as well as in comments received from the FAA of the United States during the process of amendment to Annex 15.

1.2                The mentioned Chapter presents the requirement of the determination of electronic terrain and obstacle data, coverage per each Areas: 1, 2 (a, b, c and d), 3 and 4 (see **Appendix A**), the requirements of data numerical precision, the content and structure of terrain and obstacle databases (defined as two relational databases), as well as the specifications and availability for users of products for terrain and obstacle data.

1.3                Likewise, Annex 15, in support of the new ATM operational concept, indicates on the use and exchange of electronic terrain and obstacle data sets between providers and users, specifying that the ISO 19110 series of geographical information standards shall be used as a general framework for models.

## 2. Discussion

2.1 In our Region, several States still need to finish the first consolidation stage of the ICAO roadmap from AIS transition to AIM, which requires the compliance of the Action Plan by States for deficiencies and differences solution regarding Annexes 4 and 15, AIRAC system, complete WGS-84 implementation, quality management system and aeronautical charts, among others.

2.2 Important technologies of Ground Proximity Warning System (GPWS) with predictive capacities provides the flight crew with information on terrain and obstacle data and imminent hazards, in proximity areas or terminal flight instruments procedures (IFR) published in aeronautical charts of the Aeronautical Information Publication (AIP). The importance of the availability of these data is based on the provision of earlier provision of warnings and its implications, giving pilots and air traffic controllers more time for taking appropriate corrective action.

2.3 In addition, it is important to mention that due that States are missing to provide e-TOD data collection, several ground and terrain warning systems are not able to use the electronic terrain data and they are only considered as a secondary reference, since they do not have strict quality and integrity requirements and they are used for advising purposes. These data sets are not available and/or officially certified for its use in air navigation and for the air traffic control. Consequently, the Aeronautical Authorities of the States should consider the priority for the development of data sets on terrain and obstacle data that will give significant benefits en terms of safety.

2.4 A Guide for an Action Plan for the e-TOD implementation was recently designed during the first Multilateral Meeting SAM/AIM/1 (**Appendix B** of this working paper), which took into account the activities and tasks in a harmonized manner with the GIS use and the determination of Metadata to design the e-TOD AIM Project according to the proposal of AIM Subgroup in its last Thirteenth Meeting of the last year. In this regard, the Secretariat decided to take up again the work presented by that Group and to take it into consideration of the Meeting in support of the Action Plan elaboration for the e-TOD implementation by the CAR States.

## 3. Suggested action

3.1 Taking into account the above, the Meeting is invited to:

- 1) use the Guide for the e-TOD Action Plan elaboration, attached as Appendix B of this working paper; and integrate the e-TOD activities with those related as the use of an aeronautical information exchange model, the use of Geographical Information System (GIS) and the Metadata definition,
- 2) participate in the respective GREPECAS e-TOD AIM Project, send a letter to the ICAO NACC Office indicating the name of the specialist that will participate; and;
- 3) send to ICAO NACC Office the action plans for the e-TOD implementation no later than 31 July 2012.



<b>e-TOD Action Plan Guide</b>				
<b>1</b>	<b>Implementation plan</b>	<b>Start</b>	<b>End</b>	<b>Remarks</b>
1.1	Establish and prioritize the objectives of the e-TOD implementation project (tasks, costs, implementation target dates, project risks)			
1.2	Develop the guiding document with project objectives			
<b>2</b>	<b>Procurement</b>			
2.1	Prepare an inventory of requirements			
2.2	Prepare the documentation on requirements			
<b>3</b>	<b>Training</b>			
3.1	Develop a training programme and the documentation for e-TOD operators			
3.2	Conduct training programmes			
3.3	Conduct seminars for e-TOD specialists, setting forth the plans and the operational and economic benefits expected.			
<b>4</b>	<b>Operational concepts</b>			
4.1	Define the operational concepts			
4.2	Compile the necessary operational concepts in one document			
<b>5</b>	<b>Technical and logistic specifications</b>			
5.1	Define the technical and logistic specifications of the project			
5.2	Prepare the document with the technical and logistic specifications			
<b>6</b>	<b>Financial analysis</b>			
6.1	Estimate the general cost of the project			
6.2	Prepare the financial documentation			
6.3	Submit the final document to top management for approval			

<b>e-TOD Action Plan Guide</b>			
<b>7</b>	<b>Purchase of technological tools</b>		
7.1	Purchase state-of-the-art software, hardware and applications		
7.2	Install and use the technological tools purchased		
7.3	Train the specialized personnel in the use of the tools		
<b>8</b>	<b>Implementation</b>		
8.1	Have available the mapping material contained in the database		
8.2	Collect, certify and enter mapping data in the database for areas 1, 2 (a, b, c and d), 3, and 4.		
8.3	Sign letters of agreement, sharing electronic data on terrain and obstacles in common areas at the boundaries between States.		
8.4	Sign a service level agreement (SLA) between providers and the AIM Authorities.		
8.5	Define contract clauses on the use of information (protection, storage, distribution, etc.).		

- Dates should be estimated and could be different according each State.

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