



SPECIAL AFRICA-INDIAN OCEAN (AFI) REGIONAL AIR NAVIGATION (RAN) MEETING

Durban, South Africa, 24 to 29 November 2008

Agenda Item 6: Development of a set of comprehensive work programmes in the air navigation field, aimed at improving efficiency of the air navigation system (Efficiency Committee)

IMPLEMENTATION OF ELECTRONIC TERRAIN AND OBSTACLE DATA

(Presented by the Secretariat)

SUMMARY

This information paper provides a brief Executive Summary of the Report of the AFI Region Seminar on Electronic Terrain and Obstacle Data held in Casablanca, Morocco from 1-3 April 2008.

1. INTRODUCTION

1.1 Pursuant to Conclusion 9/13 of the AFI Planning and Implementation Regional Group (APIRG) ATS/AIS/SAR 84/9 Meeting held in Dakar, Senegal from 25-27 April 2007 and Conclusion 16/43 of the 16th APIRG Meeting held in Kigali, Rwanda, from 19 to 23 November 2007, the ICAO Regional Offices in Dakar and Nairobi, in collaboration with the national Civil Aviation Administration of Morocco, conducted the AFI Region Seminar on Electronic Terrain and Obstacle Data (eTOD) in Casablanca, Morocco, from 1 to 3 April 2008.

2. DISCUSSION

2.1 The Seminar was oriented to analyze the issues related to eTOD as specified in the technical requirements contained in Chapter 10 of ICAO Annex 15 — *Aeronautical Information Services*, so as to facilitate future implementation of these requirements by the AFI States, over the period 2008 to 2010.

2.2 Significant safety benefits for international civil aviation can be provided by in-flight and ground-based applications that rely on quality eTOD.

2.3 Amendment 33 to Annex 15 introduced new provisions related to eTOD. To satisfy identified user requirements for eTOD, while taking into account cost-effectiveness, acquisition methods and data availability, it is requested that eTOD be provided according to four basic coverage areas, as indicated in standards 10.2.1 to 10.2.5 of Annex 15. Area 1 has coverage over the whole territory of a State, including aerodromes/heliports. Area 2 covers the established terminal control areas, not exceeding a 45 km radius from the aerodrome reference point (ARP). At instrument flight rules (IFR) aerodromes/heliports, Area 3 covers the area that extends from the edge(s) of the runway(s) to 90 m from the runway centreline(s) and, for all other parts of aerodrome/heliport

movement area(s), 50 m from the edges of a defined area(s). Area 4 shall be restricted only to those runways where precision approach Category II or III operations have been established. The width of the area shall be 60 m on either side of the extended runway centreline while the length shall be 900 m from the runway threshold.

2.4 For each of the four areas, numerical requirements for terrain and obstacle data have been defined and are presented in Annex 15, Appendix 8, Tables A8-1 and A8-2.

2.5 The electronic terrain data tasks include, among other elements, development of the provisions that would allow and support interchange of datasets between different users. In this regard, it is requested that ISO 19100 series of standards for geographic information shall be used as a general data-modelling framework, as indicated in Annex 15, paragraph 10.5.1.

2.6 The applicability dates of Annex 15 provisions pertaining to eTOD are as follows:

- a) **20 November 2008** for those parts of the amendment related to the availability of terrain and obstacle data in accordance with Area 1 specifications and for the availability of terrain data in accordance with Area 4 specifications; and
- b) **18 November 2010** for those parts of the amendment related to the availability of terrain and obstacle data in accordance with Areas 2 and 3 specifications.

2.7 Some difficulties related to the implementation of Annex 15 provisions pertaining to eTOD requirements within the specified time-schedule have been raised by some States. With a view to expediting the process of implementation of eTOD requirements, the identification of recommended data formats, review of cross-boarder issues, clarification of terrain and obstacle data integrity requirements, initial assessment of liability and cost recovery issues, etc, are required. In addition, harmonization and coordination of the implementation activities on a regional basis are also required.

2.8 Considering the above, and in view of the significant changes that have been introduced by Amendment 33 to Annex 15, the need for a seminar in the form of a sensitization training was recognized by the Moroccan Administration. The Kingdom of Morocco then made the decision to sponsor the seminar in order to provide States in the AFI Region with a better understanding of planning and implementation issues related to eTOD. In this regard, this seminar convened in Casablanca to address technical issues linked to the provision of eTOD and any other related issues of major concern.

2.9 The main objective of the seminar was to assist AFI States in the implementation phase of the requirements related to the provisions of eTOD with a view to meeting the specifications in Amendment 33 to Annex 15.

2.10 The APIRG/17 Meeting will consider the outcome and findings of the AFI-Region eTOD seminar held in Casablanca, Morocco (1-3 April 2008). States will be informed accordingly.

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APPENDIX

AFI REGION E-TOD IMPLEMENTATION STRATEGY

Considering:

- a) the new provisions introduced by Amendment 33 to Annex 15 related to E-TOD; and
- b) the guidance material contained in Doc 9881 (Guidelines for electronic Terrain, Obstacle and Aerodrome Mapping Information); and

Recognizing that:

- i. significant safety benefits to international civil aviation will be provided by in-flight and ground-based applications that rely on quality electronic Terrain and Obstacle Data; and
- ii. the implementation of E-TOD requirements is a challenging, costly, and cumbersome task of cross-domain nature;

The Seminar proposed an AFI Region implementation strategy based on the following adopted criteria as detailed below:

1. E-TOD implementation should be in compliance with ICAO provisions contained in Annex 15 and Doc 9881;
2. E-TOD implementation should be based on national plans/roadmaps;
3. E-TOD implementation should be managed by each State as a national E-TOD programme supported by necessary resources, a high level framework and a detailed national plan including priorities and timelines for the implementation of the programme;
4. States should adopt/follow a collaborative approach involving all concerned parties in the implementation of E-TOD provisions and establish a multi-disciplinary team defining clearly the responsibilities and roles of the different Administrations within and outside the Civil Aviation Administration in the implementation process (AIS, Aerodromes, Military, National Geographic and Topographic Administrations/Agencies, etc);
5. E-TOD requirements should be analyzed and a common understanding for the implementation of these requirements developed;
6. States should make an inventory of and evaluate the quality of existing terrain and obstacle data sources and in the case of data collection, consider carefully the required level of details of collected terrain and obstacle data with particular emphasis on obstacle data and associated cost;
7. States should carry out theoretical studies of candidate techniques for data acquisition (photogrammetry, LIDAR, IFSAR, etc) based on a Cost-Benefit Analysis and supported by case study for a representative aerodrome;
8. in the development of their E-TOD programme, States should take into consideration the requirements for update/maintenance of data, especially the obstacle data;

9. States, while maintaining the responsibility for data quality and availability, should consider the extent to which the provision of electronic terrain and obstacle data could be delegated to national geodetic Institutes/Agencies, based on Service Level Agreement reflecting such delegation. Collaboration between States and data providers/integrators should also be considered;
10. ICAO and States should undertake awareness and training programmes to promote and expedite E-TOD implementation;
11. implementation of E-TOD provisions should be considered a global matter, which necessitates coordination and exchange of experience between States, ICAO and other national/international organizations and industry partners involved;
12. to the extent possible, States should work co-operatively especially with regard to the cross-border issue, for the sake of harmonization and more efficient implementation of E-TOD; and
13. States encountering difficulties in the implementation of E-TOD may seek assistance (individually or collectively) from ICAO, through a TCB project, and/or from other States.

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