



**AFI PLANNING AND IMPLEMENTATION REGIONAL GROUP
TWENTY FIRST MEETING (APIRG/21)
Nairobi, Kenya (9 to 11 October 2017)**

Agenda Item 3: Performance Framework for Regional Air Navigation Planning and Implementation

3.4 Status of ASBU Implementation and evolution of the Global Air Navigation Plan

ELECTRONIC TERRAIN AND OBSTACLE DATA (e-TOD)

(Presented by South Africa)

SUMMARY
This paper provides information on the requirements to implement Electronic Terrain and Obstacle Data (e-TOD) within each state based on the ICAO requirements relating to data integrity and accuracy, source data collection methods, data management and maintenance as well as quality standards consideration.
REFERENCE(S): Annex 15 — Aeronautical Information Services Doc 9881 — Guidelines for Electronic Terrain, Obstacle and Aerodrome Mapping Information
Related ICAO Strategic Objective(s): Safety (A) and Air Navigation Capacity and Efficiency (B)

1. INTRODUCTION

1.1 On 23 February 2004, the ICAO Council adopted Amendment 33 to Annex 15, Aeronautical Information Services which included the addition of a new chapter 10 – Electronic Terrain and Obstacle Data requirements, and several amendments to Appendix 1 – contents of Aeronautical Information Publications (AIP) and Appendix 7 – Aeronautical Data Quality requirements.

1.2 All ICAO participating States were to ensure the availability of terrain and obstacle data in accordance with Area 1 (entire territory of a State), Area 2 (extending up to 45KM or TMA boundary), Area 3 and Area 4 (Category II or III operations area) between 20 November 2008 and 12 November 2015.

1.3 During APIRG 20, working paper twenty (WP20) was tabled containing AIM projects identified by APIRG Sub-groups as a follow up to the APIRG Extraordinary Meeting (10-11 July 2015), for consideration by the APIRG 20 meeting.

1.4 The Projects identified by the Group was derived from the ICAO Aviation System Block Upgrade (ASBU) Modules and the regional performance objectives adopted by APIRG. e-TOD was identified as an AIM project under the APIRG Information and Infrastructure Subgroup (IIM/SG).

1.5 Revised dates with supporting implementation plans for e-TOD within the AFI-Region would need to be defined by the IIM/SG for approval by the APIRG Project Coordination Committee (APCC).

2. DISCUSSION

2.1 The implementation of e-TOD provisions as defined in ICAO Annex 15 is possibly a challenge for all States concerned; not only due to the costs involved in collecting the data, but also for ensuring the correct regulatory framework is in place which defines the roles and responsibilities of all parties involved in the data processing chain.

2.2 e-TOD was identified as a key enabler of the ICAO Aviation System Block Upgrade (ASBU) Modules as it has a direct impact on the design of Instrument Flight Procedures in support of Performance Based Navigation as well as the use of this data on charts, within Air Traffic Management and Flight Management Systems.

2.3 Implementation of e-TOD requirements requires each State to:

- i. Implement adequate regulations to support the collection and management of e-TOD data with regards to the responsible authority - State/Government Authorities, Air Navigation Service Providers (ANSPs), Aerodrome Operators, etc.
- ii. Define the method in which the data will be collected, either through surveying (WGS-84) or through other means (photographic/stereo graphic/lidar information processing).
- iii. Define the format in which the data will be stored/distributed.
- iv. Implement the required infrastructure (a database) capable of managing/hosting the e-TOD data. (The database must be capable of loading the required terrain data in either Digital Surface Model (DSM) or Digital Terrain Model (DTM) format with associated meta data1 traceability)
- v. Ensure the State has the required resources to manage/maintain the e-TOD database.
- vi. Ensure the resources of the State are adequately trained in managing terrain and obstacle data (i.e., understanding the complexities of terrain data file formats and packaging of these terrain data files).
- vii. Ensure the State has implemented a Quality Management System (QMS) with associated processes and procedures to ensure quality in the processing of data from originator to publication (Controlled Harmonised Aeronautical Information Network – CHAIN) in the AIP AD 2.10 section (or other related IAIP documents).

2.4 The implementation of e-TOD requirements within a State's Civil Aviation Regulations would allow for the creation of instrument flight procedures based on accurate, verified, quality assured information, which in turn could bring about significant changes in approach and missed approach gradients and allowing the user a more optimised instrument flight procedure.

2.5 Significant safety- and efficiency benefits for civil aviation could be provided by in-flight- and ground-based applications that rely on quality e-TOD. Performance of these applications, which often make use of multiple data sources, could be severely affected by inconsistent or erroneous e-TOD.

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

- a) Note the information contained in this working paper;
- b) Support the adoption of items listed under point 2.3 above, as project deliverables under the IIM/SG Project for e-TOD; and
- c) States are urged to comply with the proposed action plans, including revised dates, as provided by the APCC for e-TOD implementation.

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