ICAO

Sixth Meeting of the Aerodromes Operations and Planning Sub-Group (AOP/SG/6)

Video Teleconference, 27 to 30 June 2022

Agenda Item 8: Any other business

WGS-84 AND DATA ACCURACY – AAITF/17 OUTCOMES

(Presented by the Secretariat)

SUMMARY

This paper presents the outcomes from the Seventeenth Meeting of the Aeronautical Information Services (AIS) – Aeronautical Information Management (AIM) Task Force (AAITF/17) following an in-meeting workshop activity on the subject of World-Geodetic System – 1984 (WGS-84) and Aeronautical Data Accuracy.

1. INTRODUCTION

1.1 AAITF/17 was held by Video Teleconference from 20 to 23 June 2024. The Agenda of the meeting included a workshop activity: WGS-84 and Data Accuracy.

1.2 Workshop presentation materials, meeting papers and the draft report are available on the AAIFT/17 meeting web-page at: https://www.icao.int/APAC/Meetings/Pages/2022-AAITF17.aspx

2. DISCUSSION

AAITF/17 Workshop – WGS-84 and Data Accuracy

2.1 The AAITF/17 workshop activity on WGS-84 and Data Accuracy included discussion of the following topics, as summarized in the AAITF/17 Draft Report:

ICAO Global and Regional Provisions (SP/1)

2.2 ICAO provided a briefing on ICAO global and regional provisions for World Geodetic System – 1984 (WGS-84). Information included Annexes to the Convention on International Civil Aviation, Procedures for Air Navigation Services (PANS), data accuracy standards and requirements, global guidance in the WGS-84 Manual, regional planning, related APANPIRG ATM and Airspace Safety Deficiencies, and a proposes regional WGS-84 sampling program.

WGS-84 – What is it – Maintaining Data and the Impacts Related (SP/2)

2.3 USA provided a detailed presentation on WGS-84 describing the WGS-84 Reference frame, Earth Gravitational Models 1996 and 2008 (EGM96 and EGM08) and their differences, and the World Magnetic Model.

2.4 The meeting was informed of the reasons for re-collection of WGS-84 data, the recommendation that data be revalidated each 5 years or after a major natural event or construction of critical airport elements, and the impact of non-maintained WGS-84 data on terminal procedures and aircraft Terrain Awareness Warning Systems (TAWS).

2.5 The information provided included discussion of the pros and cons of various methods of maintaining and revalidating data, and considerations to be taken into account when collecting, validating and publishing data.

Aeronautical Data Quality (SP/3)

2.6 ASBU For Future provided an extensive briefing on Data Quality Requirements (DQR) for aeronautical information, including motivators for DQR, components of DQR, the aeronautical data process, aeronautical information management process, formal arrangements between data originators and the AIS, the aeronautical data catalogue, data sets and their role in maintaining accuracy, data exchange, and planning steps for the next 1 to 5 years.

Draft Conclusion on WGS-84 Data Revalidation

2.7 The AAITF/17 meeting discussed a Draft Conclusion arising from discussion in the Workshop on WGS-84 and Data Accuracy. The workshop presentation *WGS-84 – What is it – Maintaining Data and the Impacts Related* discussed the reasons that data revalidation was necessary, and recommended that data be revalidated every five years, after a major natural event, or following construction of critical airport elements.

2.8 In response to a query on what criteria should be used to determine whether a major natural event had occurred, the meeting was informed that this was a matter for State-specific evaluation.

2.9 The meeting noted that ICAO Doc 9674 *WGS-84 Manual*, which had not been updated since 2002, did not provide guidance in this regard. However, it was also noted that Annex *11 Air Traffic Services* Appendix 7 required the State to ensure that maintenance and periodic review of instrument flight procedures for aerodromes and airspace under the authority of the State were conducted, and that State must establish an interval for periodic review of instrument flight procedures not exceeding five years.

2.10 The meeting agreed to the following Draft Conclusion for consideration by the Tenth Meeting of the Air Traffic Management Sub-Group of APANPIRG (ATM/SG/10, scheduled for October 2022):

Draft Conclusion AAITF/17-3: Revalidation of Coordinate Data

That, noting the factors that cause WGS-84 coordinate data to change over time, States are urged to ensure that all surveyed and calculated coordinate data published in AIP or used in Instrument Flight Procedure design is revalidated:

1. each five years; or
2. after a major natural event such as an earthquake or volcanic eruption; or
3. following construction of critical airport elements,

whichever is the sooner, by ground survey, Light Detection and Ranging (LIDAR) survey, or imagery collection.

2.11 The meeting noted that the cooperation of other entities such as aerodrome operators and flight procedure design agencies would be necessary. The Draft Conclusion would be coordinated with other ICAO APAC technical groups, including the Aerodromes Operations and Planning Sub-Group (AOP/SG) and Communications, Navigation and Surveillance Sub Group (CNS SG).

2.12 AOP/SG/6 is invited to note that aerodrome data forms a critical part of instrument flight procedure design. **Table 1** illustrates the accuracy, integrity and origination type for selected runway data.

Property	Description	Accuracy	Integrity	Origination Type
Runway Centreline Points	The geographical location of runway centre line at each end of the runway, at the stopway and at the origin of each take-off flight path area, and at each significant change in slope of runway and stopway	1 m	critical	surveyed
Source: ICAO Doc 10066 Procedures for Air Navigation Services – Aeronautical Information Management – PANS-AIM – Appendix 1 – Aeronatical Data Catalogue				

Table 1: Accuracy and Integrity of Runway Centreline Points

2.13 The meeting is invited to discuss and endorse the **Draft Conclusion AAITF/17-3: Revalidation of Coordinate Data**.

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

a) note the information contained in this paper;

b) Discuss and agree to Draft Conclusion AAITF/17-3: Revalidation of Coordinate Data; and

c) discuss any relevant matters as appropriate.

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