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FOURTEENTH AIR NAVIGATION CONFERENCE

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Agenda Item 3: Air Navigation System Performance Improvement

3.1: Proposals to improve the efficiency of air navigation services contributing to LTAG

IMPROVE THE EFFICIENCY AND SUSTAINABILITY OF AIR NAVIGATION SERVICES BY DIGITALIZATION OF AERONAUTICAL CHARTING

(Presented by the United Arab Emirates)

EXECUTIVE SUMMARY

This Information Paper discusses the progress made by the United Arab Emirates in the implementation of data-driven charting system and paperless quality assurance and control. It highlights the benefits of improved efficiency, quality and sustainability by digitalization of aeronautical charting and implementing paperless systems process and procedures.

1. INTRODUCTION

1.1 The International Civil Aviation organization (ICAO) endorsed the *Global Air Traffic Management Operational Concept* (Doc 9854) and recognized that in the global air traffic management (ATM) system environment envisioned by the operational concept, aeronautical information service (AIS) would become one of the most valuable and important enabling service. As the global ATM system foreseen in the operational concept was based on a collaborative decision-making environment, the timely availability of high-quality and reliable electronic aeronautical, meteorological, airspace, and flow management information would be necessary.

1.2 ICAO published in 2009 the “Roadmap for the transition from AIS to AIM”. It identifies the major milestones recommended for a uniform evolution across all regions of the world and specific steps that need to be achieved.

1.3 ICAO introduced the Aviation System Block Upgrades (ASBU) methodology in the fourth edition of *Global Air Navigation Plan* (GANP, Doc 9750), endorsed by the 38th Session of the ICAO Assembly in 2013, as a systemic manner to achieve a harmonized implementation of the air navigation services. It designates a set of improvements that can be implemented globally from a defined point in time to enhance the performance of the ATM system.

1.4 The GANP represents a rolling, 15-year strategic methodology, which leverages existing technologies and anticipates future developments based on state/industry agreed operational objectives. The

Block Upgrades are organized in six-year time increments starting in 2013 and continuing through 2031 and beyond.

1.5 MID Doc 008 “*Guidance for AIM Planning and Implementation in the MID Region*” has been developed to harmonize the transition from AIS to aeronautical information management (AIM) in the MID Region and to address global and regional issues related to planning and implementation of AIM. For planning, MID Doc 008 mentions 2031+ as the timeframe for states to implement electronic aeronautical charts.

2. DISCUSSION

2.1 In support of ICAO ASBU and MID Region Implementation Plan, the United Arab Emirates developed a Database-Driven Charting Implementation Plan (intermediate and long-term) to migrate legacy charts progressively. The United Arab Emirates has completed the successful migration of two en-route charts, ten standard instrument departure (SID) charts and eight standard instrument arrival (STAR) charts.

2.2 To support interoperability due to implementation of various Aeronautical Information Exchange Model (AIXM) database systems and business rules by stakeholders a coding standardization document was also prepared.

2.3 Challenges faced during migration of SID and STAR chart were discussed in working paper “Data-Driven Charting” and presented in MIDANPIRG/20 and RASG-MID/10-WP/47. As an outcome of the meeting; the meeting tasked the Digital Dataset implementation ad hoc working group to include Database-Driven Chart production encoding guidelines in the Regional Implementation Plan for digital datasets to ensure regional harmonization and interoperability.

2.4 The United Arab Emirates also carried out the required feasibility study for migration of Required Navigation Performance (RNP) Approach Charts. The challenges to migration of RNP approach charts were discussed in working paper “Data-Driven IAP Charts” and presented in MIDANPIRG/21 and RASG-MID/11 - WP/67. As an outcome of the meeting; the meeting acknowledged the existing challenges and assigned the DDI ad hoc working group the responsibility of tackling these issues. The DDI ad hoc working group should formulate cohesive and regionally applicable solutions to overcome the identified challenges.

2.5 The United Arab Emirates is currently studying the migration of air traffic controller (ATC) Surveillance Minimum Altitude Chart — ICAO to Database Driven Charting System.

2.6 The United Arab Emirates fosters innovation and sustainability at the core of its air navigation services. Fostering the innovation and sustainability culture, the United Arab Emirates has successfully implemented paperless system to quality assurance and control of aeronautical charts. The United Arab Emirates took the lead in removing the traditional approach of printing hard copies of aeronautical Charts for manual quality assurance and control. The United Arab Emirates implemented software applications, process and procedures to successfully transform AIM into paperless environment.

2.7 the United Arab Emirates experienced the potential of implementing database-driven aeronautical charts. Some of the experiences are improved efficiency, quality and compliance in production and maintenance of aeronautical charts. These improvements are due to automatic detection of changes by Aeronautical Data Exchange Model (AIXM). Also experienced reduction in risk of errors by manual intervention due to digital data exchange.

2.8 The United Arab Emirates benefitted from paperless approach due replacement of paper with electronic charts for quality assurance and control. It created environment friendly atmosphere with sustainable operations.

3. CONCLUSION

3.1 The meeting is invited to note the benefits of digitalization of aeronautical charting and implementing a paperless system.

3.2 The meeting is encouraged to promote the acceleration of this transition for improved efficiency, quality, and sustainability.

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