



*International Civil Aviation Organization*

**MIDANPIRG/21 and RASG-MID/11 Meetings**

*(Abu Dhabi, UAE, 4-8 March 2024)*

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**Agenda Item 5.3: ANS (AIM, PBN, AGA-AOP, ATM-SAR, CNS and MET**

**AFTN RESILIENCE OF INTER-REGIONAL MESSAGE EXCHANGE**

*(Presented by the United Arab Emirates)*

**SUMMARY**

The Aeronautical Fixed Telecommunication Network (AFTN) has long been the backbone of global aviation communication, being crucial conduit for the sharing of key operational data. Recent events have shown worrying indications of service deterioration in the AFTN when it comes to data exchange between different regions. In order to increase the network's operational efficiency and dependability, comprehensive improvements to elevate the network's operational reliability are urgently needed.

**REFERENCES**

- ICAO Annex 10 - Aeronautical Telecommunications
- ICAO Annex 15 - Aeronautical Information Services
- MID Air Navigation Plan – Volume II
- MIDANPIRG Report if the 12<sup>th</sup> Meeting of the CNS Sub-Group

**1. INTRODUCTION**

1.1 The Aeronautical Fixed Telecommunication Network (AFTN) stands as a cornerstone in the realm of aviation communication, facilitating the swift and secure exchange of critical operational data between various aviation stakeholders. Over the years, AFTN has played an indispensable role in ensuring the safety, efficiency, and regularity of air navigation services worldwide.

1.2 However, recent events brought to light a disconcerting trend: a noticeable decline in the service level offered by the AFTN. Instances of service degradation with data transmission losses have emerged, posing significant challenges to the network's reliability and operational effectiveness.

1.3 This working paper is dedicated to illuminating the prevailing issues concerning the deteriorating quality of service of inter-regional AFTN message exchange in the period from 24<sup>th</sup> November 2023 to 24<sup>th</sup> December 2023. It underscores the critical need for attention and strategic interventions to improve the network infrastructure, enhance its resilience, and ensure uninterrupted, high-quality communication for the global aviation community.

1.4 The paper aims to outline the gravity of the situation, highlighting the urgency and importance of bolstering the AFTN to meet the evolving demands and expectations of modern aviation operations. It seeks to ignite discourse, prompt action, and pave the way for a concerted effort toward uplifting the AFTN, to be a robust, reliable, and indispensable communication platform for the global aviation community.

## **2. DISCUSSION**

2.1 In a recent development the General Civil Aviation Authority (GCAA) received notifications in early December highlighting a substantial discrepancy: a significant volume of NOTAM messages originating from the UAE had failed to reach various European Air Traffic Services Units (ATSUs), notably affecting the European AIS Database (EAD). This discrepancy was particularly concerning given that the affected NOTAMs were accessible in alternative databases utilized by several airlines, including Lufthansa Systems' LIDO, a critical provider of Flight Management services to major carriers.

2.2 Upon investigation by the GCAA COM office, it was confirmed that the NOTAM messages in question were indeed transmitted and routed by GCAA message switching in accordance with the most recent planning outlined by the Air Traffic Services Messaging Management Centre (AMC).

2.3 Requests to downstream COM centres for confirmation of message transmission were met with assurances that the NOTAM messages were successfully traced and transmitted. Still EAD confirmed that a significant number of NOTAM messages were not received.

2.4 Further assessments revealed a troubling trend: operational reply messages (ORM) sent by the GCAA to recipients in Europe ceased to be delivered entirely following the 24<sup>th</sup> November. This abrupt disruption in communication added another layer of gravity to the situation.

2.5 Moreover, subsequent investigations unveiled an alarming pattern: numerous flight plans filed in Europe failed to reach ATSUs in the UAE, despite attempts of re-transmission by the respective airlines. Only when alternative filing methods (e.g., via SITA networks) were employed could the issuance of the flight plans be supported, underscoring a critical breakdown in communication protocols.

2.6 The loss of flight plan messages filed in Europe revealed that there are wider problems with the bi-directional inter-regional message exchange protocols not limited to messages originating in the UAE.

2.7 The GCAA together with European stakeholders continued monitoring the end-to-end transmission of messages and tried to isolate the cause for the problems in coordination by engaging with the intermediate AFTN COM-Centres. Despite the efforts, the cause of the message loss could not be identified.

2.8 Eventually and without notice EAD and LIDO confirmed that messages from the UAE again were received after 24<sup>th</sup> December 2023. The cause for the problems remaining hidden, but an intermittent loss of flight plan messages filed in Europe still persists as of the date of this working paper.

2.9 The overall situation with loss of critical messages not reaching their intended destinations highlights a critical issue with the reliability of inter-regional message exchange. This occurrence signifies a systemic shortcoming that transcends local communication failures, indicating deficiencies in the inter-regional exchange.

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2.10 The inability to effectively transmit flight plans, NOTAMs and operational messages across regions poses significant operational and safety risks, jeopardizing the efficient coordination of air traffic between different global aviation hubs.

2.11 Despite concerted efforts by the affected stakeholders and intermediate communication centres, the situation and experience necessitate recognition as hazardous. The cascading communication failures with disruptions in the exchange of operational messages and flight plans, pose a grave concern for operational integrity and safety.

2.12 The inability to ensure the timely and accurate transmission of vital operational data, including NOTAMs and flight plans, raises substantial challenges for airlines, air traffic management, and the safety of air navigation services. This underscores the urgent for a thorough reassessment and enhancement of inter-regional message exchange mechanisms.

2.13 Guaranteeing resilient and reliable communication channels across diverse aviation regions is imperative. Rectifying the vulnerability stands as a critical priority in strengthening the AFTN aviation network's resilience. It is vital for ensuring the secure and uninterrupted flow of crucial operational information, safeguarding the integrity of aviation operations.

### **3. ACTION BY THE MEETING**

3.1 The meeting is invited to

- a) take note of the information contained in this paper;
- b) recognize the importance of a robust, resilient and reliable AFTN;
- c) recognize the gravity of potential message loss in the inter-regional exchange with AFTN; and
- d) discuss the options to uplifting capacity and resilience of the inter-regional AFTN.

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