

**61ST CONFERENCE OF
DIRECTORS GENERAL OF CIVIL AVIATION
ASIA AND PACIFIC REGIONS**

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AGENDA ITEM 4: AIR NAVIGATION

**STRENGTHENING REGIONAL IMPLEMENTATION OF GNSS
RESILIENCE MEASURES**

(Presented by India)

SUMMARY

Global Navigation Satellite System (GNSS) radio frequency interference (RFI) continues to pose significant challenges to aviation safety and operational continuity. While substantial progress has been made in developing global and regional policy, guidance and resilience measures, effective and harmonized implementation remains the next key challenge. This paper highlights the importance of strengthening regional implementation, operational preparedness and collaborative resilience measures to ensure safe and efficient air navigation services across the Asia-Pacific Region.

STRENGTHENING REGIONAL IMPLEMENTATION OF GNSS RESILIENCE MEASURES

1. INTRODUCTION

1.1 GNSS has become the principal enabler for modern air navigation supporting Performance-based Navigation (PBN), surveillance applications, airport operations and numerous Communication, Navigation and Surveillance (CNS) systems. Consequently, disruption of GNSS services has the potential to affect multiple operational domains simultaneously.

1.2 Over the past few years, aviation has witnessed a sustained increase in GNSS interference events extending beyond traditional conflict areas into several regions of the world. These events have demonstrated that GNSS interference is no longer an isolated technical issue but an operational resilience challenge requiring coordinated action by States, Air Navigation Service Providers (ANSPs), aircraft operators and international organizations. Recognizing these risks, ICAO has undertaken several initiatives, including development of guidance material, reporting mechanisms and resilience strategies. The challenge has now shifted towards effective and harmonized implementation across the region.

2. DISCUSSION

2.1 ICAO has recognized the growing importance of issues related to GNSS interference and discussions have been conducted at regional and global level to develop strategies to mitigate the issue. These include Assembly resolutions, ICAO panel work, draft regional guidance material for reporting and coordination mechanism. These developments collectively establish a comprehensive policy and technical framework for addressing GNSS interference. Accordingly, the priority should now shift from development of additional policy frameworks towards effective implementation of the comprehensive work already undertaken.

2.2 Various States have developed national procedures based on ICAO and regional guidance. However, certain implementation aspects requiring coordination among multiple States—such as establishment of regional Minimum Operational Networks (MONs), harmonized contingency arrangements and operational coordination—would benefit from broader regional guidance and collaborative planning among States.

2.3 Implementation also varies across States depending upon operational environments, technical capability, existing navigation infrastructure and available resources. Consequently, differing levels of preparedness may affect operational contingency planning, reporting consistency, regional coordination, resilience of navigation infrastructure, training of operational personnel and regional situational awareness.

2.4 The continued increase in GNSS interference demonstrates that resilience cannot be achieved solely through guidance material or reporting arrangements. Effective resilience requires coordinated implementation through:

- (a) national implementation strategies aligned with ICAO guidance;
- (b) strengthened operational preparedness;
- (c) periodic review of contingency arrangements;
- (d) exchange of implementation experience and lessons learnt; and

(e) continued investment in resilient navigation infrastructure.

2.5 The Asia-Pacific Region contains some of the world's busiest international air routes where aircraft routinely transit multiple FIRs during a single flight. Accordingly, harmonized implementation of GNSS resilience measures will enhance operational consistency, improve situational awareness and strengthen collective preparedness during widespread or prolonged interference events. Regional cooperation should therefore continue to focus on practical implementation, mutual assistance, capacity building and sharing of operational experience rather than development of additional policy frameworks.

2.6 Recognizing the significant progress already achieved by ICAO and the Region, the Conference may wish to encourage States to:

(a) implement ICAO and regional guidance on GNSS resilience consistent with national operational requirements;

(b) exchange implementation experience, lessons learnt and best practices through existing regional mechanisms;

(c) support capacity-building activities, training programmes and regional workshops aimed at strengthening operational preparedness;

(d) develop resilient navigation infrastructure; and

(e) periodically review regional implementation progress through existing ICAO regional planning and implementation mechanisms.

3. ACTION BY THE CONFERENCE

3.1 The Conference is invited to note the information contained in this Paper.

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