



International Civil Aviation Organization

**Seventh Meeting of Performance Based Navigation Sub-Group
(PBN SG/7)**

(Virtual Meeting, 5 - 6 December 2022)

Agenda Item 3.1: ICAO Regional developments

Regional Activities related to PBN/GNSS

(Presented by the Secretariat)

<p style="text-align: center;">SUMMARY</p> <p>This paper presents update on the regional activities related to PBN/GNSS.</p> <p>Action by the meeting is at paragraph 3.</p>
<p style="text-align: center;">REFERENCES</p> <ul style="list-style-type: none">- <i>MIDANPIRG/19 Report (Saudi Arabia, 14-17 February 2022)</i>- <i>MIDANPIRG/18 Report (Virtual meeting , 15-22 February 2021)</i>

1. Introduction

1.1 The Eighteenth meeting of Middle East Air Navigation Implementation and Planning Group and the Eighth meeting of the Regional Aviation Safety Group (MIDANPIRG/18 & RASG-MID/8) was held successfully virtually, 15-22 February 2021. The meeting agreed to include GNSS outage into the emerging risks.

1.2 The Nineteenth meeting of Middle East Air Navigation Implementation and Planning Group (MIDANPIRG/19) was held successfully in Saudi Arabia, 14-17 February 2022. The meeting agreed on the necessity to increase awareness on the impact of the GNSS interference on Air Navigation Safety and that civil-military coordination can play a key role in this area. Consequently, the meeting agreed that the issue of GNSS interferences would be addressed during the Civil-Military Webinar/Workshop planned in 2022.

2. Discussions

Radio Navigation Aids Symposium

2.1 The meeting may wish to recall that MIDANPIRG/18, through Conclusion 18/39, agreed to conduct Flight Inspection and procedure Validation Symposium in 2021 in order to support States in improving their capacity to conduct the flight inspection and procedure validation activities in a more effective, efficient, safe and economical manner.

2.2 ICAO MID Office will organize a Radio Navigation Aids symposium (RNAS) jointly with EUR/NAT and ACAO in the 2nd half of 2023. The Symposium will address several issues, inter-alia, emerging Radio Navigation aids, GNSS/GBAS, GNSS RFI monitoring, Flight inspection using drones,...etc. and will replace the Flight inspection and validation symposium.

Guidance on GNSS Implementation

2.3 The meeting may wish to recall that the first edition of the Guidance on GNSS Implementation in the MID Region (MID Doc 011) was endorsed by the MSG/6 meeting in December 2018. The MIDANPIRG/18, through Conclusion 18/41, endorsed a revised version “edition February 2021”.

2.4 Furthermore, MIDANPIRG/18 agreed that the plan should be updated considering the latest global developments and to be in line with the NAV Thread/Elements in the GANP. Consequently, an Ad-Hoc Action Group was established to review and prepare a revised version of the Guidance on GNSS Implementation in the MID Region (MIDANPIRG Decision 18/40). The revised version will be presented to the CNS SG/11 and MIDANPIRG/20.

Navigation Minimal Operating Networks (NAV MON)

2.5 The new element “Navigation Minimal Operating Networks” (NAVS B0/4) has been classified as priority 1 in the revised MID Region Air Navigation Strategy (MID Doc 002). This element aims to rationalize the conventional Navigational aids network through the increased deployment of the satellite based navigation system. The average Regional implementation level of ASBU NAV B0/4 Element is 38%

NAVS					
Element	Title	Applicability	Performance Indicators/	Performance Indicators/	Performance Indicators/
NAVS B0/3	Aircraft Based Augmentation Systems (ABAS)	All States	Indicator: % of States requiring Aircraft Based Augmentation System (ABAS) equipage for aircraft with a max certificated take-off mass greater than 5,700 Kg to enable PBN Operations Supporting metric: Number of States requiring Aircraft Based Augmentation System (ABAS) equipage for aircraft with a max certificated take-off mass greater than 5,700 Kg to enable PBN Operations	70%	Dec 2021
NAVS B0/4	Navigation Minimal Operating Networks (Nav. MON)	All States	Indicator: % of States that have developed a plan of rationalized conventional NAVAIDS network to ensure the necessary levels of resilience for navigation Supporting metric: Number of States that have developed a plan of rationalized conventional NAVAIDS network to ensure the necessary levels of resilience for navigation	70%	Dec 2022

	Bahrain	Egypt	Iran	Iraq	Jordan	Kuwait	Lebanon	Libya	Oman	Qatar	Saudi Arabia	Sudan	Syria	UAE	Yemen
B0/3	Green	Red	Grey	Grey	Red	Red	Grey	Grey	Red	Green	Green	Grey	Grey	Green	Grey
B0/4	Green	Green	Grey	Grey	Red	Green	Grey	Grey	Red	Green	Green	Grey	Grey	Green	Grey
Average COMI	Green	Green	Grey	Grey	Red	Green	Grey	Grey	Red	Green	Green	Grey	Grey	Green	Grey

Average Regional Implementation: 32%

2.6 The meeting may wish to recall that MIDANPIRG/18 agreed, through Decision 18/42, to establish NAV MON ad-hoc action group to develop a template for Navigation Minimal Operating Networks (Nav. MON) plan in line with ICAO SARPs and Regional requirements.

GNSS Interference

2.7 GNSS interference has been identified as a major safety issue as GNSS is embedded in numerous critical infrastructures. The intentional interference presents a substantial safety threat to aircraft and passengers.

2.8 A substantial number of GNSS interferences were reported across international borders, reaching boundaries out of the MID Region. IATA MENA has been providing regular update on incidents

reported by Airspace users. The majority of GNSS interference incidents were reported in the Ankara FIR (LTAA), Baghdad FIR (ORBB) and their respective borders, which equates to 83.8% of total reports received, followed by Nicosia (LCCC), Beirut (OLBB), Cairo (HECC) and Tehran (OIIX) FIRs.

2.9 The meeting may wish to recall that MIDANPIRG/19 tasked the AIM SG in coordination with IATA to develop a standard NOTAM text to be used for GNSS Interference, to facilitate filtering and searching through the NOTAMs, and the standard NOTAM text be attached to the RSA-14.

2.10 MIDANPIRG/19 reiterated that States should locate the source of interference and coordinate with relevant parties to resolve the issue of GNSS interferences. Furthermore, MIDANPIRG/19, through Conclusion 19/4, invited States to report infringements of the ITU radio regulations, describing GNSS RFI effect either in their State or reported by their registered aircraft.

MIDANPIRG CONCLUSION 19/4: REPORTING OF GNSS RFI TO ITU

That, States are invited to report frequent GNSS radio frequency interferences to ITU Radio-communication Bureau (ITU-BR), describing GNSS RFI impact either in their State or reported by their registered aircraft.

3. ACTION BY THE MEETING

3.1. The meeting is invited to:

- a) urge States to actively participate in the ICAO Radio Navigation Aids Symposium planned 2023;
- b) urge States, that have not done so, to foster the implementation of ASBU NAV Thread;
- c) support the work of the MON NAV Action Group;
- d) invite States to implement GNSS RFI preventive and reactive mitigation strategies as outlined in RSA14; and
- e) invite States to implement MIDANPIRG Conclusion 19/4 as appropriate.

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