الهيئة العامة للطيران المدني
CIVIL AVIATION AUTHORITY
QATAR قطر

ICAO

MIDANPIRG/22 & RASG-MID/12

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GNSS Radio Frequency Interference

(RFI) Management in the MID Region

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01

GNSS RFI

01

GNSS RFI

A Global and Regional Concern raised during the ICAO ANC/14

- ***Serious concern over the escalation of GNSS jamming and spoofing, especially in conflict zones, posing a significant safety risk to civil aviation.***
- ***The meeting may wish to recall States obligations under the ITU Constitution and Radio Regulations, particularly in notifying aviation stakeholders about intentional interference.***

02

Recommendations to States

1) Mitigation Measures & Backup Systems

- *Implement effective GNSS RFI mitigation strategies.*
- *Maintain a sufficient network of conventional navigation aids (VOR, DME, ILS) as a backup to ensure operational continuity and airspace capacity.*

02

Recommendations to States

2) Regional Coordination

- *Through Planning and Implementation Regional Groups (PIRGs), States should develop regional GNSS RFI reporting mechanisms.*

- *Leverage ICAO's GNSS Manual (Doc 9849) to raise awareness and support contingency planning.*

02

Recommendations to States

3) Aircraft Resilience & Industry Engagement

- ***Collaborate with aircraft and avionics manufacturers to:***

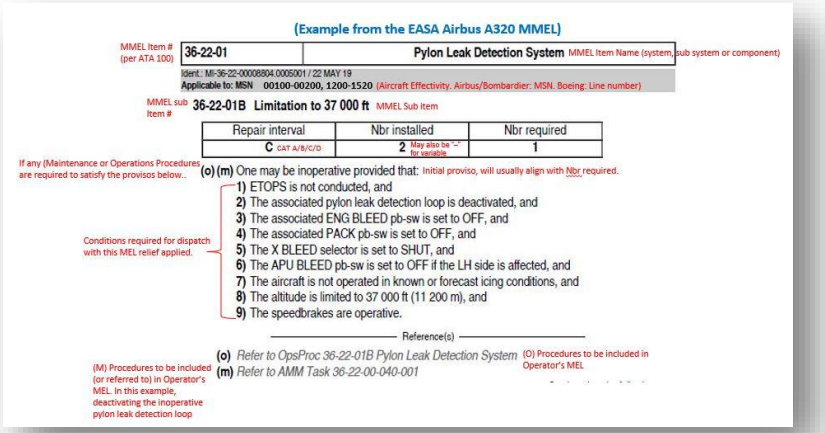
  - ✓ ***Improve aircraft resilience to GNSS RFI.***
  - ✓ ***Provide guidance for safe operations during GNSS outages.***
  - ✓ ***Support onboard detection and status downlink functions.***

02

Recommendations to States

4) Equipage Review

- *States should review aircraft minimum equipage lists to align with the retained Minimum Operational Networks for navigation.*



(Example from the EASA Airbus A320 MMEL)

MMEL Item # (per ATA 100): 36-22-01 — Pylon Leak Detection System (MMEL Item Name (system, sub system or component))

Ident.: MI-36-22-00008804.0005001 / 22 MAY 19

Applicable to: MSN 00100-00200, 1200-1520 (Aircraft Effectivity. Airbus/Bombardier: MSN. Boeing: Line number)

MMEL sub Item #: 36-22-01B Limitation to 37 000 ft (MMEL Sub Item)

Repair interval	Nbr installed	Nbr required
C (CAT A/B/C/D)	2 (May also be "-" for variable)	1

If any (Maintenance or Operations Procedures are required to satisfy the provisos below..

(o) (m) One may be inoperative provided that: (Initial proviso, will usually align with Nbr required.)

Conditions required for dispatch with this MEL relief applied.

1) ETOPS is not conducted, and
2) The associated pylon leak detection loop is deactivated, and
3) The associated ENG BLEED pb-sw is set to OFF, and
4) The associated PACK pb-sw is set to OFF, and
5) The X BLEED selector is set to SHUT, and
6) The APU BLEED pb-sw is set to OFF if the LH side is affected, and
7) The aircraft is not operated in known or forecast icing conditions, and
8) The altitude is limited to 37 000 ft (11 200 m), and
9) The speedbrakes are operative.

Reference(s)

(o) *Refer to OpsProc 36-22-01B Pylon Leak Detection System* (O) Procedures to be included in Operator's MEL

(m) *Refer to AMM Task 36-22-00-040-001*

(M) Procedures to be included (or referred to) in Operator's MEL. In this example, deactivating the inoperative pylon leak detection loop

03

ICAO Responsibilities and Commitments

- ***Continue evaluating the impact of GNSS interference on aviation safety and continuity.***
- ***Develop a standardized implementation package (iPack) to support State implementation of RFI mitigation.***
- ***Develop recommendations for a globally harmonized aircraft equipage list.***

03

ICAO Responsibilities and Commitments

- ***Establish guidance on GNSS RFI information exchange, including:***
  - ✓ ***Civil-military coordination mechanisms,***
  - ✓ ***A centralized repository for GNSS RFI data,***
  - ✓ ***Notification protocols from military to civil aviation,***
  - ✓ ***Introduction of additional NOTAM codes related to GNSS interference.***

04

Strategic Implications

Global prioritization of CNS resilience

GNSS integrity and redundancy planning are critical for:

- ***Operational safety and service continuity, especially in geopolitically volatile areas.***
- ***Regional contingency planning and cross-sector collaboration, particularly with defense and telecom stakeholders.***
- ***Enhancing the Global Air Navigation Plan (GANP) through strengthened Aviation System Block Upgrade (ASBU) threads on navigation systems.***

05

Action by the meeting

In support of ICAO ANC/14 Recommendations 2.2/1 and 2.2/2 and recognizing the increasing safety risks associated with GNSS radio frequency interference (RFI), the CNS SG/13 invited the ICAO MID Office to develop and present a proposal to the MIDANPIRG/22–RASG-MID/12 Meeting, outlining a consolidated regional approach for the management of GNSS RFI. Accordingly, the meeting may wish to review and endorse the following Conclusion to replace and supersede the Previous Conclusions related to GNSS RFI :

05

Action by the meeting

DRAFT MIDANPIRG-RASG CONCLUSION 12/XX: CONSOLIDATED REGIONAL APPROACH TO GNSS RFI MANAGEMENT

That, a consolidated regional approach for the management of GNSS radio frequency interference (RFI) is established with the following actions:

a) States be urged to:

i. establish regional GNSS RFI monitoring and reporting mechanism through the appropriate MID regional frameworks;

ii. maintain an adequate network of conventional navigation aids to ensure continuity of air navigation services in case of GNSS signal degradation;

iii. review aircraft minimum equipage lists and implement measures to enhance aircraft system resilience to GNSS RFI;

iv. strengthen civil-military coordination and ensure timely sharing of information related to intentional GNSS interference; and

v. define reversion scenarios and associated contingency procedures to maintain safe and efficient operations in the event of GNSS unavailability.

b) ICAO MID Office be requested to:

i. coordinate the development of the regional GNSS RFI management framework and potential reporting templates;

ii. support States through regional Capacity Building and awareness activities on GNSS interference detection and mitigation; and

iii. liaise with ICAO Headquarters to contribute to the development of global guidance material, including the GNSS RFI mitigation iPack and available information exchange mechanisms.

Thank You