

**59th CONFERENCE OF
DIRECTORS GENERAL OF CIVIL AVIATION
ASIA AND PACIFIC REGIONS**

*Cebu, Philippines
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AGENDA ITEM 4: AIR NAVIGATION

GNSS INTERFERENCE AND RESPONSE OF ATC & PILOTS

(PRESENTED BY ISLAMIC REPUBLIC OF PAKISTAN)

SUMMARY

In recent past, significant escalation has been observed in incidents of GNSS interference, Jamming and spoofing. The incidents are generally being reported by Pilot to air traffic controllers. The scope of communication between ATC & Pilot from Standard RT perspective is limited to reporting only, leading to various response in follow-up communication. This discussion paper is developed to highlight the need for improvement in the standardized RT phraseology, invite the States to share their best practices and to harmonize ATC & Pilot contingency procedures, to the extent possible.

GNSS INTERFERENCE AND RESPONSE OF ATC & PILOTS

1. INTRODUCTION

1.1 In modern air navigation the GNSS, is one of the key enablers for Performance-Based Navigation (PBN), which provides navigation guidance for all phases of flight, such as Enroute, Approach, Departure and / or holding etc. GNSS has resulted in substantial safety, efficiency and capacity benefits and is a necessary cornerstone of daily flight and ATM operations. The application of PBN procedure significantly reduced the stress & workload for ATC & pilots; however, increase in the ***incidents of GNSS Interferences has raised the*** safety concerns. The harmonization in reporting and follow-up communication between ATC & pilots in the forms of improved Standard RT phraseology along with development and implementation of detailed contingency procedures can contribute towards safety enhancement.

2. DISCUSSION

2.1 In recent past significant escalation has been observed in incidents of GNSS interference, Jamming and spoofing. These incidents are being generally reported by Pilots to Air Traffic Controllers. The scope of communication between ATC & Pilot i.e. Standard RT phraseology at Chapter-12 of ICAO Doc 4444 (PANS-ATM) is described below:

Para No./ Circumstances	Phraseologies	Remarks
12.3.1.14 GNSS SERVICE STATUS	a) GNSS REPORTED UNRELIABLE (or GNSS MAY NOT BEAVAILABLE [DUE TO INTERFERENCE]); 1) IN THE VICINITY OF (<i>location</i>) (<i>radius</i>) [BETWEEN (<i>levels</i>)]; or 2) IN THE AREA OF (<i>description</i>) (or IN (<i>name</i>) FIR) [BETWEEN (<i>levels</i>)]; b) BASIC GNSS (or SBAS, or GBAS) UNAVAILABLE FOR (<i>specify operation</i>) [FROM (<i>time</i>) TO (<i>time</i>) (or UNTIL FURTHER NOTICE)];	The ATC is communicating the Known GNSS service Status / The Pilot acknowledgement with description of its tentative planned action RT Phraseology is missing.
	*c) BASIC GNSS UNAVAILABLE [DUE TO (<i>reason, e.g. LOSS OF RAIM or RAIM ALERT</i>)]; *d) GBAS (or SBAS) UNAVAILABLE. *e) CONFIRM GNSS NAVIGATION; and *f) AFFIRM GNSS NAVIGATION. * Denotes pilot transmission.	The Pilot is communicating Non availability GNSS/GBAS/SBAS services / The ATC response(RT Phraseology) with alternative instructions is missing
12.3.1.15 DEGRADATION OF AIRCRAFT NAVIGATION PERFORMANCE	UNABLE RNP (<i>specify type</i>) (or RNAV) [DUE TO (<i>reason, e.g. LOSS OF RAIM or RAIM ALERT</i>)].	The Pilot is communicating degradation of aircraft Navigations performance due certain reasons / The ATC response (RT Phraseology) with alternative instructions is missing

2.2 The incident of GNSS interference are taking place during various profiles of flight from,

enroute, Terminal approach, departure, holding and/or Intermediate /Final approach landing phase. The nature of these incidents includes interference, jamming and spoofing, therefore, provision of Standardized RT Phraseology for few possible scenarios (complete or partial GPS loss, EGPWS warnings, Uncertainty of aircraft position) may prove helpful for both pilots and ATC.

2.3 The ICAO EUR/MID Radio Navigation Symposium Antalya, Turkey (6 to 8 February 2024) also recommends ANSPs to develop contingency procedures (technical and operational) for GNSS radio frequency interference (RFI) events, to minimize any operational impact and ensure continuous safe operation of air traffic.

2.4 The ICAO State letter T 8/5.10 – AP052/24(CNS) dated 24th April 2024 on “GNSS Interference reporting Form for APAC” also encourages States to share lesson learned in corresponding aviation forums. Therefore, it is important that contingency procedures (operational and technical) for ATC and flight crew are developed and implemented, and joint effort is made to harmonize such procedures, to the extent possible by sharing experience and best practices among the regional States.

2.5 The Discussion Paper is developed for highlighting the need of improvement in currently applicable RT phraseology and to encourage the States and relevant stakeholders for sharing their experience in handling such contingency situations.

3. ACTION BY THE CONFERENCE

3.1 The Conference is invited to:

- a) note the information contained in this paper;
- b) share the best practices and lesson learned on subject;
- c) consider proposal for improvement in RT phraseology to relevant ICAO APAC or concerned ICAO forum
- d) request APAC to arrange a workshop/webinar for awareness and invite States, IATA and International Organizations to share best practices and lesson learned

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