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THE THIRTIETH MEETING OF THE COMMUNICATIONS / NAVIGATION AND SURVEILLANCE SUB-GROUP (CNS SG/30) OF APANPIRG

Bangkok, Thailand, 06 - 10 July 2026

Agenda Item 6: Aeronautical Mobile Communications Service and Aeronautical Electromagnetic Spectrum Utilization

6.2. GNSS Interference and Mitigating Measures

GLOBAL NAVIGATION SATELLITE SYSTEM (GNSS) RELATED EVENTS IN AUSTRALIA

(Presented by Australia)

SUMMARY

This paper provides information on three recent Global Navigation Satellite System (GNSS) related events observed in Australia. This paper is being provided in line with States commitment to share GNSS related information with the international community.

1. INTRODUCTION

1.1 In today's aviation ecosystem, Global Navigation Satellite System (GNSS) is a key enabler that supports the delivery of Communications, Navigation, Surveillance and Air Traffic Management (CNS/ATM) capability across the aviation industry. Interruption to GNSS operations or related events can affect the delivery of this capability.

1.2 This paper provides information on three recent GNSS related events observed in Australia.

2. DISCUSSION

2.1 Event #1

2.1.1 In the first event, a small number of aircraft that used particular aircraft parking bays at a major Australian airport, reported experiencing a loss of GNSS. Aircraft were reporting "ADS-B out Fail" and "GNSS not available". The loss of GNSS occurred throughout different times of the day and on multiple aircraft types. There was no direct effect on Service Delivery as the aircraft was on the ground when these events occurred.

2.1.2 The Australian spectrum management authority was engaged to further investigate these reports. The investigation identified that a defective GNSS tracking device within a vehicle used on the airport was interfering with the reception of signals in the Global Positioning System (GPS) L1 band. The defective GNSS tracking device was subsequently removed from the vehicle. After the removal of the device, no further aircraft reported any loss of GNSS.

2.2 Event #2

2.2.1 In the second event, aircraft on their way to Australia experienced GNSS interference in another area of the world. On arrival into Australian airspace, all automated reports from the aircraft showed a five-minute timing error. This was observed in the Controller Pilot Data Link Communications (CPDLC) and Automatic Dependent Surveillance Contract (ADS-C) messages, with some messages appearing to originate in the future. This specific event did not result in coordination or separation issues. However, it is important to note that these types of events have the potential to effect separation and coordination, particularly in Oceanic Airspace, where most separation standards are based on time.

2.2.2 In response to this event, the Air Navigation Service Provider requested operators of aircraft transiting through areas of known GNSS interference to advise Air Traffic Control (ATC) on first contact of any issues being experienced on the aircraft and to be aware that any issues being experienced may have the potential to effect requested levels.

2.3 Event #3

2.3.1 In the final event, on 8 and 9 January 2026, both Ground Based Augmentation System (GBAS) installations in Australia (located at Sydney and Melbourne airports) raised a series of Constellation Alerts. Constellation Alerts are raised when the GBAS ground station detects that the current constellation geometry cannot support a precision approach service. An analysis of the Data Recorder files identified that GBAS installations did not broadcast pseudo-range corrections for several satellites that were in view at the time. This resulted in significant inflation to the Vertical Protection Level (VPL) above the Vertical Alert Limit (VAL), over multiple time periods causing the Constellation Alerts.

2.3.2 As Continuity of Service could not be assured, the GBAS at both sites were removed from service. Both GBAS sites re-commenced broadcasting pseudo-range corrections for all satellites in view from 10 January with no Constellation Alerts. After a 24-hour period of no Constellation Alerts, both GBAS installations were returned to service, which occurred on 11 January 2026.

2.3.3 The reason the system ceased to broadcast pseudo-range corrections for several satellites is still under investigation with the manufacturer. There was a negligible effect on Service Delivery as alternative conventional instrument approach procedures continued to remain available.

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

- a) note the information contained in this paper;
- b) encourage other states to share information related to any GNSS events that may have an effect on Air Traffic Management;
- c) discuss any other matters as relevant.
