



International Civil Aviation Organization

**THE EIGHTH MEETING OF THE ASIA/PACIFIC GBAS/SBAS
IMPLEMENTATION TASK FORCE (GBAS/SBAS ITF/8)**

(Melbourne, Australia, 12-14 May 2026)

Agenda Item 4: Updates on GBAS/SBAS system and States' implementation status

GBAS Status Update in Japan

(Presented by Japan)

SUMMARY

This paper presents an update to GBAS development in Japan. Japan Civil Aviation Bureau (JCAB) has completed the trial operation of CAT-I GBAS at Tokyo International Airport (HND) from 2020 to 2024, and started the official CAT-I GBAS operation at HND from January 23, 2025.

The Electronic Navigation Research Institute (ENRI) has contributed to the improvement of GAST-D performance in low latitude regions. Currently, ENRI is engaged in research and development activities related to GBAS, including contribution to the DFMC GBAS standardization and advanced operations with GBAS.

1. INTRODUCTION

1.1 Japan has developed an ionospheric threat model which defines anomalous ionospheric conditions in the low magnetic latitude region and implemented an ionospheric field monitor (IFM) for GBAS at HND as an integrity monitor to address the ionospheric issues.

1.2 CAT-I GBAS trial operation has completed at Tokyo International Airport (HND) with limited domestic airlines from 2020 to 2024. Since the operational evaluation were successfully completed, official CAT-I GBAS operation was started from January 23, 2025.

1.3 Regarding GAST-D GBAS, Electronic Navigation Research Institute (ENRI) has conducted R&D with the GBAS prototype at Ishigaki airport (ISG) in Okinawa prefecture.

1.4 ENRI is also conducting R&D on Dual-Frequency and Multi-Constellation (DFMC) GBAS at ISG.

2. CAT-I GBAS

2.1 Result of Activities

2.1.1 In Japan, ENRI initiated R&D on GAST-C GBAS and installed the first prototype at Kansai International Airport (KIX) in 2011.

2.1.2 ENRI developed an ionospheric threat model in order to meet SARPs requirements for CAT-I operations in low magnetic latitude region.

2.1.3 ENRI also developed IFM to mitigate the navigation error due to the ionospheric abnormality.

2.2 CAT-I GBAS operation at HND

2.2.1 JCAB contracted NEC Corporation a contract to manufacture and install the GBAS-16 (GAST-C GBAS) at HND in 2016.

2.2.2 Operational trial of CAT-I GBAS approaches started at HND in July 2020, with Japanese airlines ANA and JAL to experience the GLS approach. Operational trials were limited to midnight, with a total of 329 flights by October 2024, but good reviews were received from many pilots such that approach using the signal of GBAS is more stable than the one with ILS.

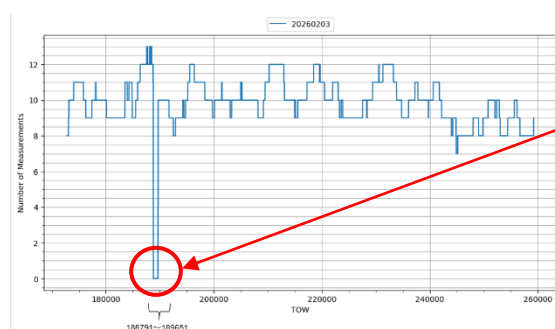
2.2.3 GBAS at HND also has gone through the certification process from the regulator and it successfully completed the certification process in October 2024.

2.2.4 The AIP for the official operation of GLS approach procedure was issued on the AIRAC dated on 28 November 2024, and the official operation was started on 23 January 2025, which was opened for all operators including foreign operators. CAT-I GBAS approach procedures was set for runways of 34R and 34L at HND. The route specified by the procedure is an overlay of the current ILS, and the applicable time for this procedure is from 14:00 to 21:00 UTC. (In Japan, this procedure is used from 23:00 to 06:00 JST.)

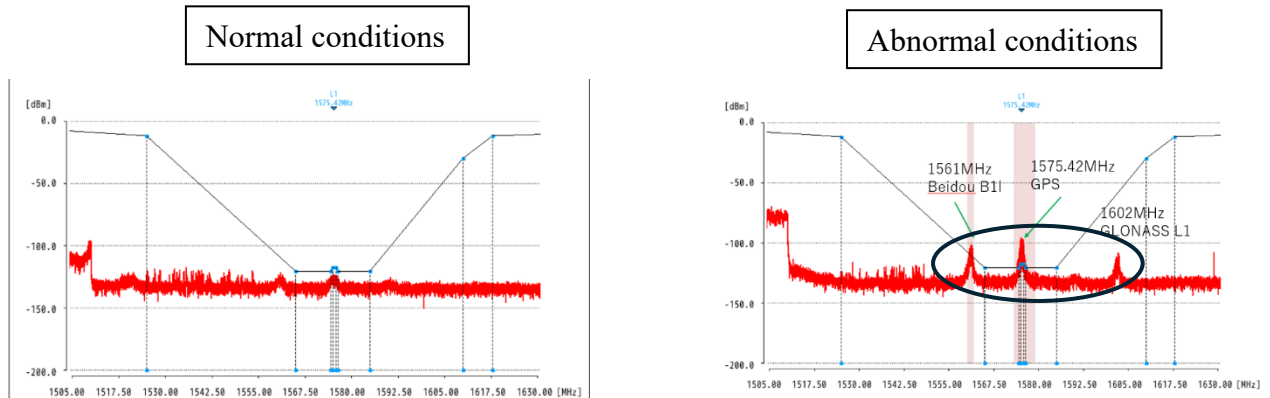
2.2.5 Following the commencement of full operational service, a total of 152 GLS approaches were conducted between January 23, 2025, and March 31, 2026. In February, the first GLS approach by a foreign airline was confirmed.

2.2.6 An alert was triggered by a reduction in the number of received satellites between 04:26 and 04:38 (UTC) on February 3, 2026. Although GNSS RFI is suspected, the root cause remains unidentified. An inspection of GNSS receivers in the vicinity of Haneda Airport indicated the presence of strong signal inputs within GNSS frequency bands. In addition, a review of WAM and ADS-B tracks during the same time period revealed positional discrepancies, suggesting the possibility of external interference. No pilot reports were submitted, and there was no impact on flight operations. This incident was reported to the Ministry of Internal Affairs and Communications, which has jurisdiction over illegal radio interference, and information gathering is ongoing.

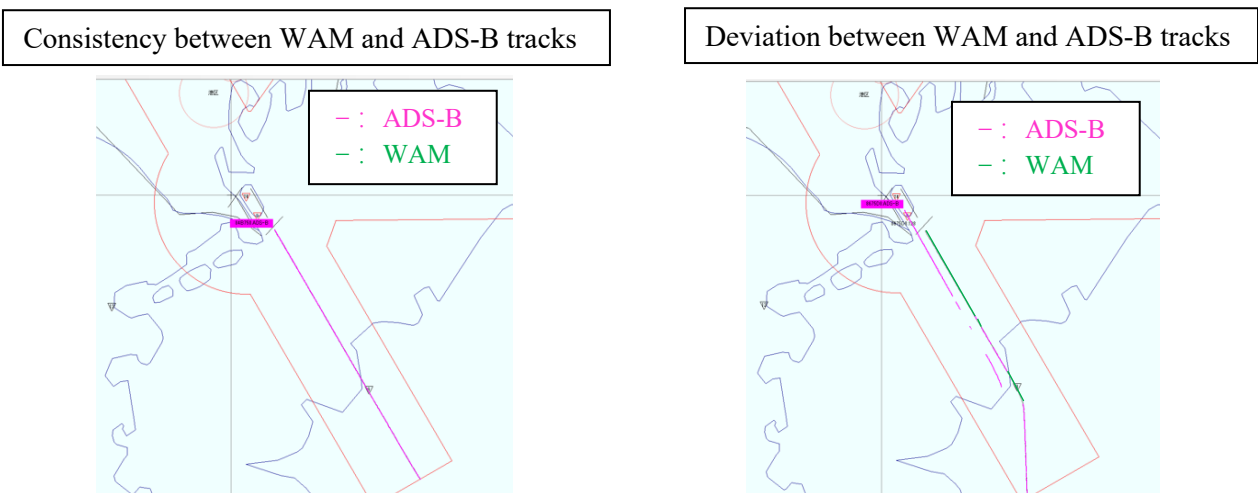
Haneda GBAS Analysis Data



A decrease in satellite reception



Analysis Data from the GPM Spectrum Analyzer



WAM and ADS-B track comparison

2.2.7 Future expansion of operation to daytime and extension of the GLS approach procedure to other runways will be considered taking into account the increasing GLS equipment loading rate and the load on air traffic control operations.

3. CAT-III GBAS

3.1 In Japan, ENRI developed a GAST D GBAS experimental prototype for operational validation of GAST D SARPs in 2014. The experimental prototype included an ground experimental prototype subsystem and airborne experimental subsystem. The ground subsystem was installed at New Ishigaki Airport and used for GAST D flight experiments with the airborne subsystem

3.2 Japan contributed to ICAO activities on GAST D GBAS.

4. DFMC GBAS

4.1 ENRI has conducted R&D on DFMC GBAS since 2015.

4.2 DFMC GBAS will improve availability based on multi-constellation, and will mitigate threats of ionosphere based on dual frequencies.

4.3 The testbed of DFMC GBAS was developed and deployed at Ishigaki airport in 2019. Japan will contribute to ICAO activities on the development of DFMC GBAS SARPs.

5. ADVANCED OPERATIONS UTILIZING GBAS

5.1 ENRI conducts research and develop program on advanced operations enabled by GBAS from April 2022 to March 2027. The objectives include improved airport surface operations in the low visibility condition, effective runway operations and reduced environmental load by using GBAS-specific function, and GBAS collision risk model (CRM) development for future procedure design.

6. ACTION REQUIRED BY THE MEETING

6.1 The meeting is invited to:

- a) note the information contained in this paper; and
- b) discuss any relevant matters as appropriate.

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