



International Civil Aviation Organization

THE FIFTH MEETING OF THE ASIA/PACIFIC GBAS/SBAS IMPLEMENTATION TASK FORCE (APAC GBAS/SBAS ITF/5)

(Tokyo, Japan, 21- 23 June 2023)

Agenda Item 3: Updates from States/Administrations about GBAS/SBAS Implementation

MSAS program update
(Presented by JCAB)

SUMMARY

This paper provides a status of MSAS program in Japan.

1. INTRODUCTION

1.1 The Civil Aviation Bureau of Japan (JCAB) MSAS program summary in regard with PBN implementation Status, LPV250 trial operations, R&D for LPV200, and GNSS monitoring activities are described as follows.

2. DISCUSSION

2.1 PBN implementation Status

JCAB provides Performance Based Navigation (PBN) services in align with the Collaborative Actions for Renovation of Air Traffic Systems (CARATS) program established in 2010 in Japan.

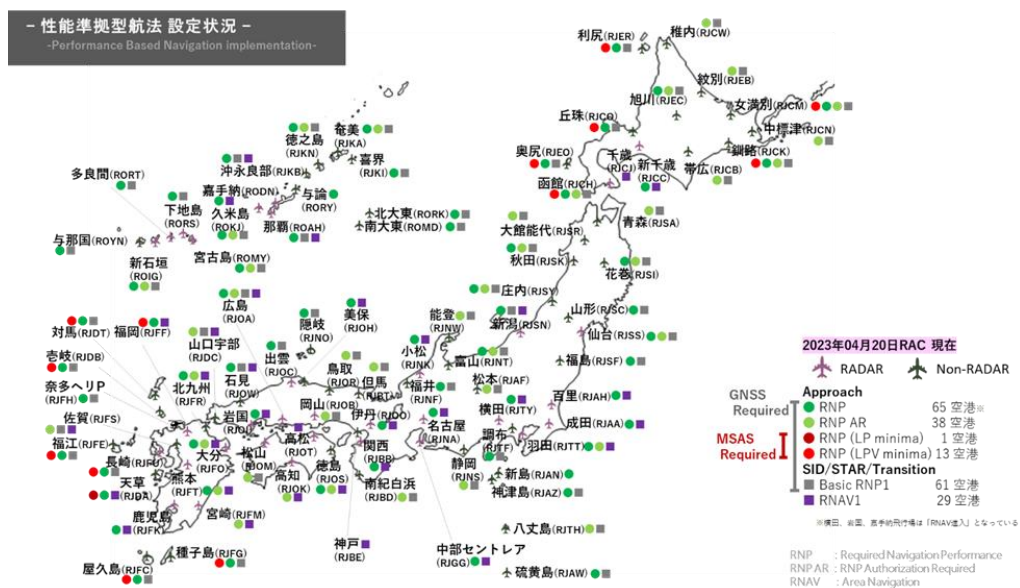


Figure 1. PBN implementation and LPV minima

2.2 LPV250 trial operations

The Michibiki satellite-based Augmentation Service (MSAS) was declared operational in 2007 limited for phase of flight from En route to non-precision approach (ER/NPA) due to ionospheric effect. Under current Aeronautical Information Circular (AIC) of Japan, Commercial flight based trial operations regarding Required navigation Performance (RNP) approach procedures with Localizer Performance with Vertical Guidance 250 (LPV250) minima is ongoing with limited time through Notice to Airmen (NOTAM) at fourteen airports in Japan. The trial operations contribute increase opportunities for landing at local airport and reduce CO2 emission. The feedback from the operators identify the need improve areas of system performance.

In addition to local airports, the one of the congested airport is also used for LPV250 trial. Wide body aircraft such as A350 operated by Japan Airlines (JAL) have been joined to the trial since April 2023.

2.3 R&D for LPV200

During a LPV250 trial, The Network Performance Assessment Centre (NPAC) has assessed the performance of MSAS messages with concerning time-limiting NOTAM for the procedure that is uncomfortable from an airline operational standpoint. The preliminary assessment has helped JCAB review of current trial. Recognizing operational comfortability, JCAB and Technical Management Centre (TMC) are studying acceptable “Step-by-step” based deployment instead of “Ship together” basis regarding planned additional two satellites, thirteen reference station dedicated for ionosphere pierce point (IPP) using multi Global Navigation Satellite System (GNSS) including Quasi-Zenith Satellite System (QZSS), system/software upgrade in the foreseeable future.

The Research and development activities on Dual Frequency Multi constellation MSAS (DFMC MSAS) including message authentication using L5 QPSK signals are undergoing at the Electronic Navigation Research Institute (ENRI).

2.4 GNSS monitoring activities

MSAS Master Control Station ability, GPS RAIM /MSAS Prediction ability, GNSS core system monitoring ability, System/Procedure performance Assessment ability, addressing GNSS out reporting from aircraft (RFI, Jamming and spoofing related), and information/NOTAM outreach are established in NPAC since 2020. Those synergized abilities based on GNSS manual (Doc9849) are beneficial for aviation safety.

3. ACTION REQUIRED BY THE MEETING

3.1 The meeting is invited to:

- a) note the information contained in this papers.

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