International Civil Aviation Organization

Twenty-Ninth Meeting of the Regional Airspace Safety Monitoring Advisory Group (RASMAG/29)

Bangkok, Thailand, 19 – 22 August 2024

Agenda Item 5: Airspace Safety Monitoring Activities/Requirements in the Asia/Pacific Region

PROJECT OF UPDATED ABOUT HEIGHT MONITORING SYSTEM IN FUKUOKA FIR

(Presented by JASMA)

SUMMARY

This paper provides the project of updated about Height Monitoring System in Fukuoka FIR.

1. INTRODUCTION

1.1 The Japan Airspace Safety Monitoring Agency (JASMA) has the Regional Monitoring Agency (RMA) responsibilities for the Pacific Ocean airspace of Fukuoka Flight Information Region (FIR). The Height Monitoring Unit (HMU) is an essential device for measuring the altitude of the aircraft in Reduced Vertical Separation Minima (RVSM) airspace and monitoring altitude error.

1.2 The new HMU will start operation at 2026(Fiscal Year) because current HMUs have been used for more than 10 years. As the ADS-B Height Monitoring System (AHMS) is equipped to new devices, Japan will consider expanding of monitoring services.

2. DISCUSSION

2.1 In Fukuoka FIR, there are three HMUs (SENDAI, NIIGATA, SETOUCHI) that located to be the most congested area. The HMUs have dedicated ground stations for Multilateration* (MLAT) that capabilities to measure aircraft altitude and monitor barometric altimeter errors. *Multilateration: a device that positioning of aircraft in flight is performed in three dimensions by setting receiving stations and comparing the time differences received at five.

2.2 Since the current devices have been in operation for more than 10 years, JCAB studied whether ground stations used for En-route Wide Area MLAT (WAM) could be used to monitoring. The studying showed that the using WAM stations are satisfied to coverage and accuracy equivalent to or better than the current HMU could be ensured. (**Figure 1**)

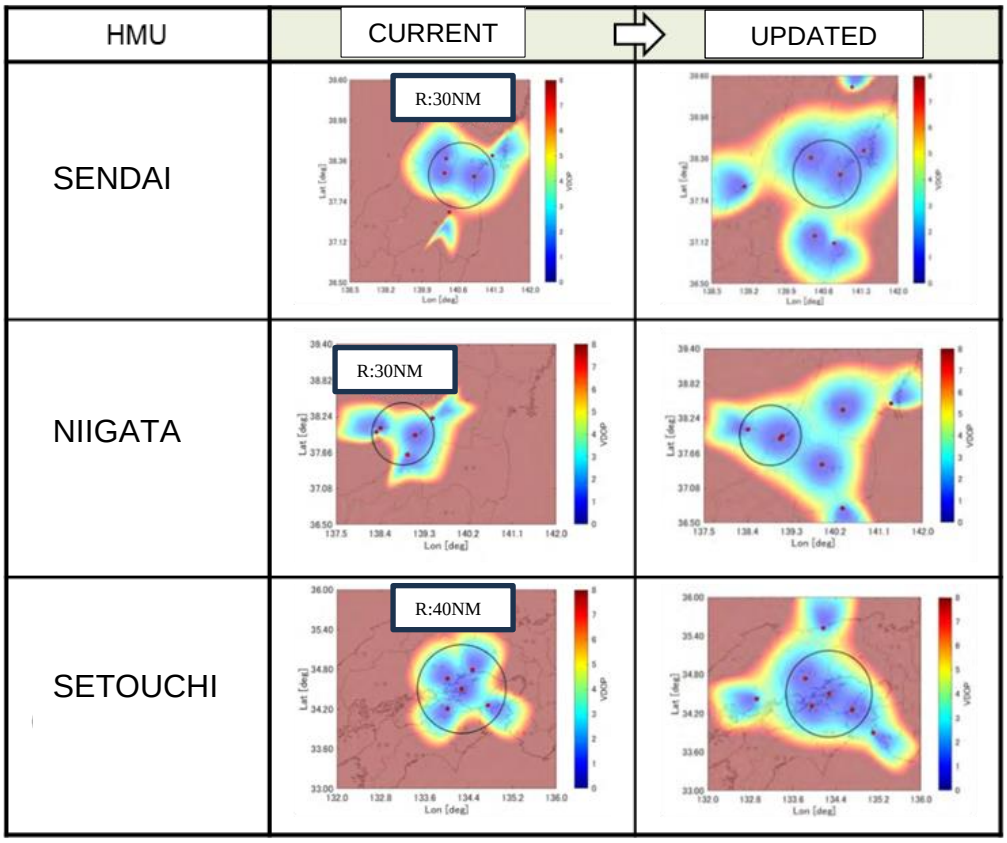

Figure 1: Simulation of coverage and accuracy by using WAM.

2.3 AHMS will be implemented is expected to have benefits. One is that data from the AHMS has a smaller error than that from the HMU method, which allows for more accurate measurements to be performed.

2.4 The HMU procedure is subject to geographical restrictions because it depends on the location of the measurement antenna. However, by using the AHMS, a coverage area can be extended to 200NM, which reduces the restrictions on the measurement location and is expected to contribute to reducing the burden on operators.

2.5 But AHMS will be used together with HMU measuring since an aircraft does not have the mandatory equipment of ADS-B in Japan. In the future, when the ADS-B equipping rate increases, the monitoring service will be shifted to AHMS from MLAT method.

2.6 **Figure 2** shows the update schedule. Japan will be able to report the evaluation and accuracy after installation at next meeting.

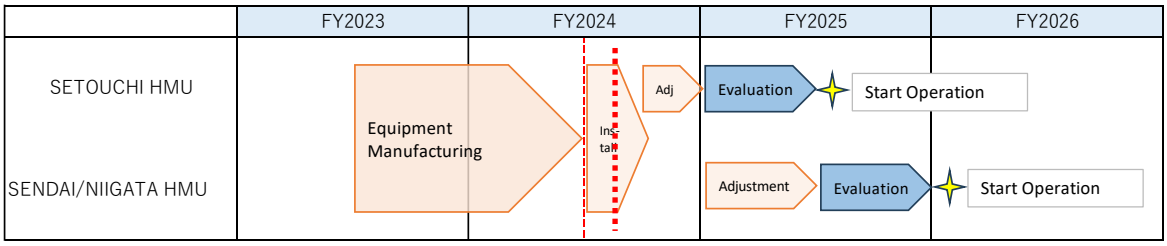

Figure 2: Working process of HMU updated.

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

a) note the information contained in this paper.

…….