



International Civil Aviation Organization

**The Eighth Meeting of the Performance Based Navigation Task Force
(PBN/TF/8)**

New Delhi, India, 12 – 13 May 2011

Agenda Item 5: State/Industry Presentations

THE CURRENT STATUS OF THE MTSAT SERVICES

(Presented by Japan)

SUMMARY

This paper provides the current status of the MTSAT services, the MTSAT AMSS with two satellites and four GES configuration commenced in 2007, MSAS commissioned in 2007. And also provides short summary of the impact of the Great East of Japan Earthquake.

1. INTRODUCTION

1.1. The MTSAT AMSS, two satellites and four GESs configuration commenced in July 2007, provides data and voice communications services in the Asia Pacific Region under the interoperability with Inmarsat and partnership with SITA as DSP. It has been providing reliable services with customer airlines, since integrated dual redundant configuration guarantees that no interruption to the data link communications.

1.2. MSAS is a Satellite-based Augmentation System (SBAS) defined in the ICAO SARPs and has interoperability with other SBASs, e.g. WAAS, EGNOS, GAGAN and SDCM. MSAS is fully compliant with the ICAO standards, and provides significant performance improvement to aircraft in the flight phase of en-route through non-precision approach. Aircraft equipped with MSAS receiver can fly in Fukuoka FIR without using other ground-based navigation aids.

2. STATUS OF MTSAT SERVICES

2.1. MTSAT AMSS

2.1.1. Since the MTSAT AMSS commencement in 2007, it had been kept 100% availability until it experienced an unplanned service interruption for 1 hour 46 min in November 2010. Consequently, the MTSAT AMSS system availability dropped to 99.98%.

2.1.2. This interruption was due to JCAB-DSP line failure even MTSAT AMSS was working normally. MTSAT operations foresaw that the failure would linger and then intentionally halt transmission from the GES to make an immediate handover to the Inmarsat AMMS to resume discontinued aircrafts communications, because they can not be aware of service outage when it logged on to healthy GES.

- 2.1.3. This procedure is based on a MTSAT operational policy to put a priority on resuming discontinued user communications.
- 2.1.4. JCAB and SITA are jointly promoting to use MTSAT AMSS to improve service availability. Currently, the number of users is 261 from 3 Japanese airlines and 6 non-Japanese airlines.
- 2.1.5. As the growing number of customer aircraft of non-Japanese airlines, the area MTSAT is used has been expanding into the area such as the Oceania and South-East Asia region shown in Fig.1.

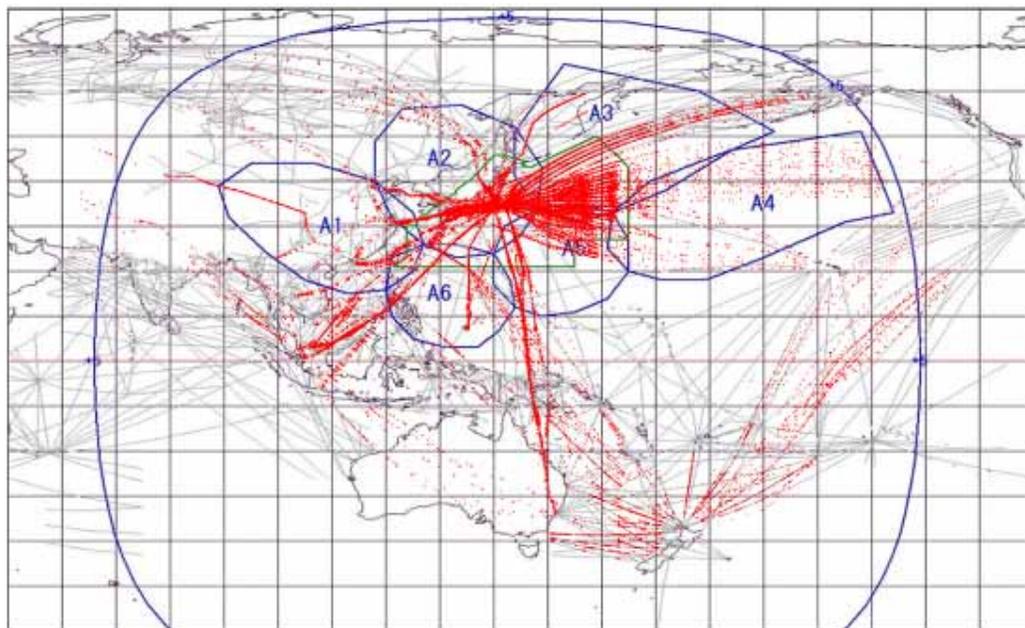


Fig.1 Growth of MTSAT traffic

2.2. MSAS

- 2.2.1. The service area of MSAS is within Fukuoka FIR and MSAS is not supported other than FIR of Japan. As MTSAT coverage is over APAC region, it can use MSAS technically outside of Fukuoka FIR if it develops appropriate ground facility at the region.

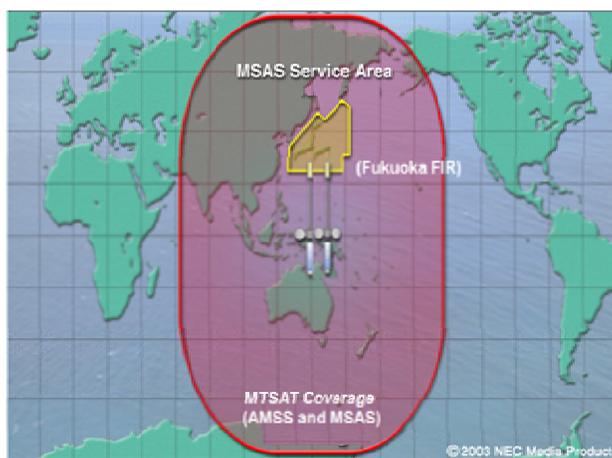


Fig.2 MSAS service area and MTSAT coverage

- 2.2.2. MSAS is possible to support PBN operation from En-route through NPA without ground based Nav aids. MSAS becomes possible to introduce RNAV procedure where there was not adequate ground based Nav aids for PBN. By introducing MSAS RNAV procedure in remote island airports, It becomes avoid cancelling and enhances service level. Although current MSAS doesn't support APV/LPV, LPV approach test flight was successfully conducted at Fukushima airport last year.
- 2.2.3. MSAS has been showing very stable performance since its commissioning. The horizontal accuracy is less than 1.5 meter at almost time in most parts of Japan except Naha located in southwest region (see Table 3). Also MSAS has been showing very high reliability(see Table 4)

Table 3 MSAS accuracy of MSAS (95% of the daily based time CY2010)

Site	Horizontal accuracy(m)		Vertical accuracy(m)	
	Best day	Worst day	Best day	Worst day
Sapporo	0.52	1.18	0.78	2.14
Hitachi-Ota	0.52	1.43	0.82	2.47
Tokyo	0.53	1.22	0.82	2.00
Kobe	0.47	1.49	0.77	2.22
Fukuoka	0.55	1.48	0.83	1.97
Naha	0.56	4.65	1.01	5.41

Table 4 MSAS reliability (CY2010)

SIS availability	Integrity failure
100%	0

- 2.3. Earthquake hit MTSAT system
 - 2.3.1. The severe earthquake hit north-eastern Japan on 11 March. Hitachi-Ota ASC (Aeronautical Satellite Center), located in East of Japan, was significant damaged, the ceiling of operation room was brought down, power supply outage.
 - 2.3.2. The JCAB has continued to operate without any interruption during and after the earthquake. This is a testimony not only to the design of the systems but also to the Operations team who managed to successfully switch all services from the damaged site to the other one when the earthquake began without service interruption.
 - 2.3.3. These services have now been restored and now JCAB providing normal services.

3. **ACTION BY THE MEETING**

- 3.1 The meeting is invited to note the information in this paper.

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