



*International Civil Aviation Organization*

**THE NINTH MEETING OF THE SOUTHEAST ASIA AND BAY OF BENGAL  
SUB-REGIONAL ADS-B IMPLEMENTATION WORKING GROUP  
(SEA/BOB ADS-B WG/9)**

Beijing, China, 30 October - 1 November 2013

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**Agenda Item 3: Updating implementation and co-ordination activities**

**READINESS OF IMPLEMENTATION - SINGAPORE**

(Presented by Singapore)

**SUMMARY**

This paper updates the Working Group on the readiness of Singapore to implement ADS-B services on the air routes L642 and M771.

**1. INTRODUCTION**

1.1 As part of the effort to enhance the efficiency and safety of the air traffic services, Singapore is working with neighboring States to enhance the surveillance and communication coverage, and implement ADS-B services along the air routes L642 and M771.

1.2 This paper updates the meeting on the readiness of Singapore to implement ADS-B services on L642 and M771.

**2. DISCUSSION**

Surveillance coverage over L642 and M771

2.1 The portion of the L642 and M771 that is within 250NM from Singapore is covered by the Singapore radar and ADS-B station. The portion beyond 250NM is covered by ADS-B stations from Matak, Natuna and Con Son (See **Annex A**). All these ADS-B stations have been commissioned.

2.2 Con Son ADS-B station is equipped with DO-260B capability whereas the Matak and Natuna ADS-B stations are not equipped with DO-260B capability yet. L642 and M771 are sufficiently covered by the Con Son ADS-B station, Matak and Natuna ADS-B stations.

2.3 The Matak and Natuna stations will provide enhanced coverage for the DO-260 and DO-260A aircraft.

VHF coverage over L642 and M771

2.4 The portion of the L642 and M771 that is within 250NM from Singapore is covered by the VHF radio stations at Singapore. The VHF radio stations at Con Son and Matak will provide coverage beyond 250NM from Singapore. Two frequencies are available at each of the Con Son and Matak VHF stations. While the Con Son VHF radio station has been commissioned, we are resolving some technical limitation at Matak VHF site. The technical limitation does not impede us from implementation ADS-B operations from 12 December 2013.

2.5 In a few months' time, when the Natuna VHF station is ready, Singapore will be able to expand the ADS-B operations over the other air routes. .

Safety Case for ADS-B implementation

2.6 The safety case is on-going. Once completed, it will be submitted to the regulators for acceptance.

Familiarization of Controllers

2.7 The ADS-B tracks are now being displayed to the air traffic controllers to allow familiarisation with ADS-B.

Fleet Equipage

2.8 About more than 74% of the aircraft currently operating on L642 and M771 are equipped with ADS-B and about 97% of the equipped aircraft broadcasts valid ADS-B data. Some airlines have informed us that they will only be equipped with ADS-B by end 2014.

2.9 The Singapore registered airline operators, with the exception of Tiger Airways, have already obtained operational approval for ADS-B operations in Singapore. The operation approval for Tiger Airways process is in the final stages.

Overall Readiness

2.10 Overall, the ground infrastructure is ready for ADS-B operations on L642 and M771. The outstanding items are the safety case and the fleet equipage. We expect the safety case to be accepted by the mandate date, while the issue on equipage is likely to take some time.

2.11 Nevertheless, we plan to commence ADS-B operations from 12 December 2013 onwards as stated in our AIC issued on 28<sup>th</sup> December 2010 and an AIP Supplement will be issued in early November 2013. The timeline for implementation is shown at **Annex B**.

**3. ACTION BY THE MEETING**

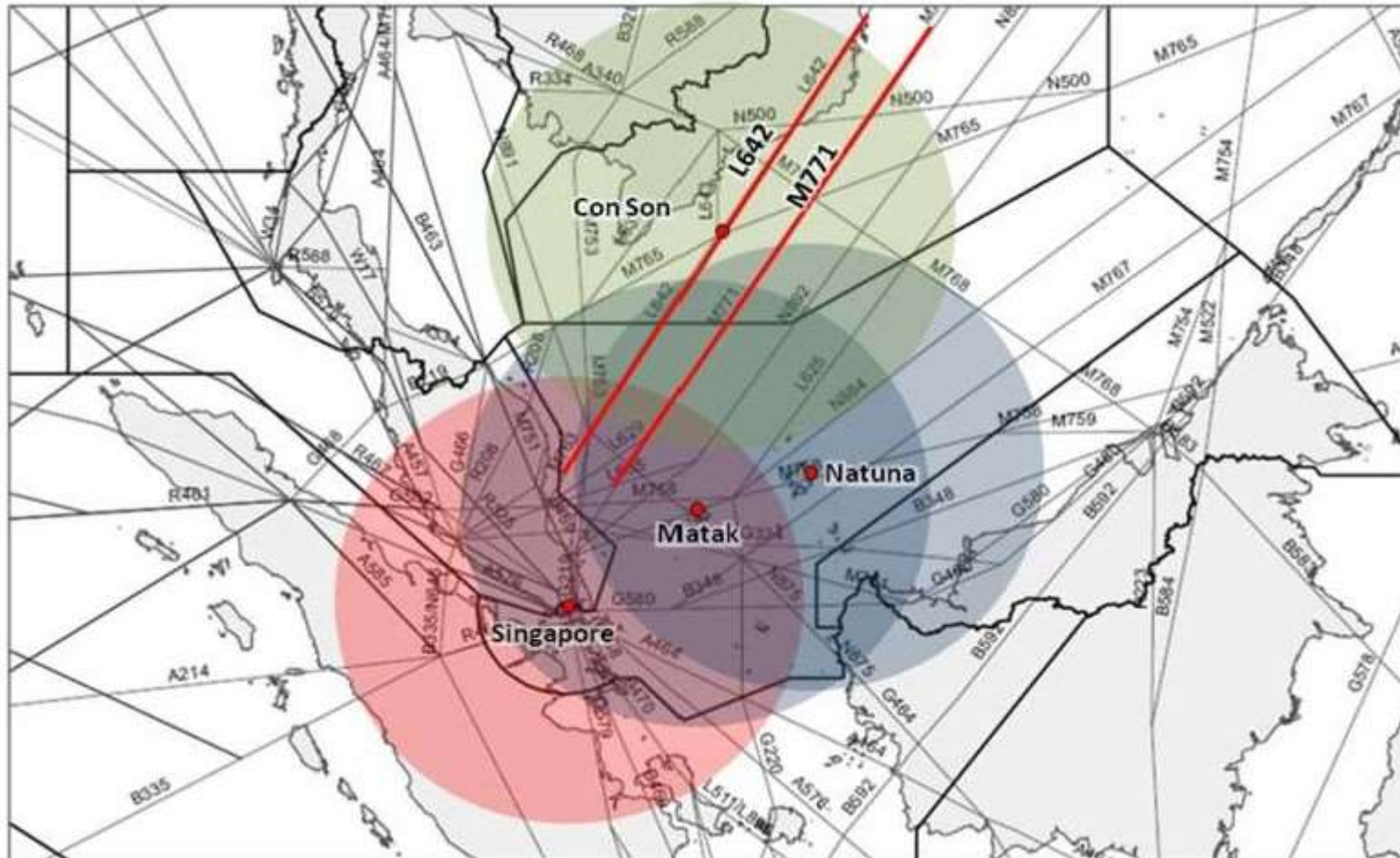
3.1 The meeting is invited to:

- a) note the readiness of Singapore for the ADS-B operations; and
- b) discuss any potential issues

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Annex A

ADS-B Collaboration Project over the South China Sea Area



**Annex B**

<b>Implementation Timeline</b>	
28 December 2010	Publication of AIC on Introduction of ADS-B services within parts of Singapore FIR pursuant to APANPIRG Conclusion 19/37 and 21/39
Early November 2013	Issuance of AIP Supplement
End November 2013	Completion of Safety Assessment for Implementation of ADS-B Operations in Singapore FIR.
12 December 2013	Implementation of ADS-B operations for suitably equipped aircraft in parts of Singapore FIR at FL290 and above