

*International Civil Aviation Organization***TWELFTH MEETING OF THE SOUTH EAST ASIA  
AND BAY OF BENGAL SUB-REGIONAL ADS-B  
IMPLEMENTATION WORKING GROUP  
(SEA/BOB ADS-B WG/12)**

Guangzhou, China, 08 – 10 November 2016

**Agenda Item 3: Review implementation and co-ordination activities and sub-regional implementation plans****ADS-B COLLABORATION IN SOUTH CHINA SEA REGION**

(Presented by Singapore)

**SUMMARY**

This paper updates the Working Group on the developments of ADS-B collaborations in the South China Sea region.

**1. Introduction**

1.1 In the South China Sea region, procedural separation used to be applied onto several air routes where surveillance or direct controller pilot communications (DCPC) gaps are present. ADS-B collaboration, which involves the sharing of ADS-B data and the provision of access to VHF radio facilities, can help to cover these surveillance and DCPC gaps.

1.2 ICAO, through its Surveillance Implementation Coordination Group (Sur ICG) (previously known as “ADS-B Study and Implementation Task Force (ADS-B SITF)”) and its Southeast Asia / Bay of Bengal ADS-B Working Group (SEA/BOB ADS-B WG), together with Civil Air Navigation Services Organization (CANSO) and International Air Transport Association (IATA) encourage ADS-B collaboration among States.

**2. Current ADS-B Operations in South China Sea Region**

2.1 In the South China Sea region, the surveillance and DCPC gaps on some of the major trunk routes have been covered following the collaboration between Indonesia and Singapore and between Singapore and Viet Nam. These trunk routes include ATS routes M753, L642, M771 and N892. As a result, part of the Singapore FIR covering M753, L642, M771 and N892 was mandated as ADS-B airspace since 12 December 2013. With such mandate, instead of procedural separation, 40NM longitudinal separation was initially applied on M753, L642, M771 and N892. In June 2014, the separation was further reduced to 30NM. (See diagrams below)

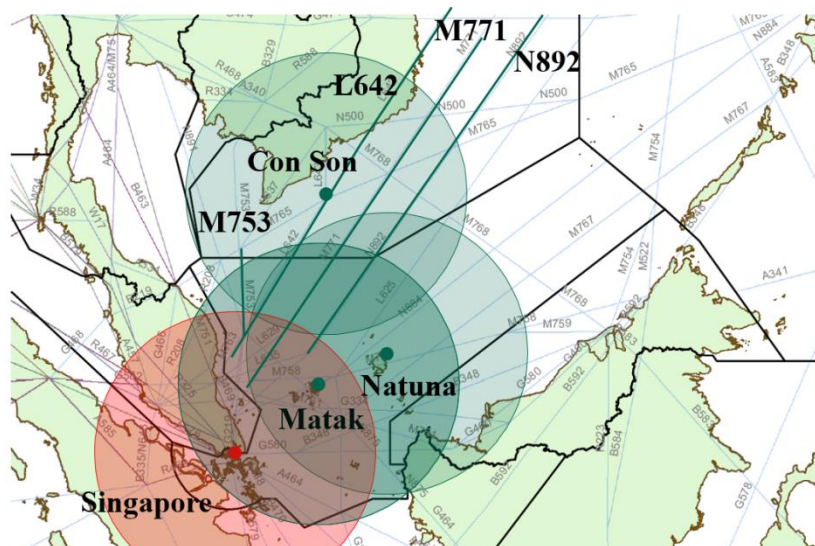


Figure 1: Theoretical coverage of ADS-B sensors

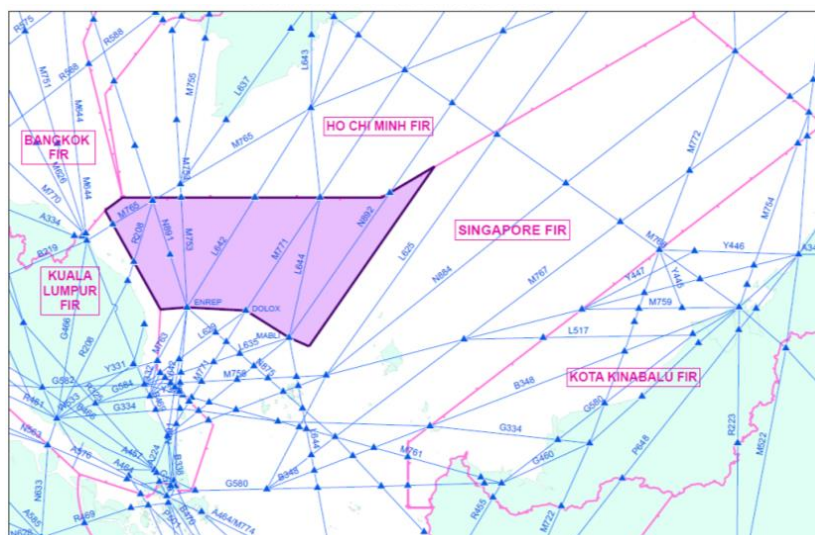


Figure 2: ADS-B mandated airspace in the Singapore FIR

### 3. Reduction of Separation

3.1 To further reduce the longitudinal separation to 20NM for L642, M771, M753 and N892, a joint operational trial with Viet Nam was conducted in September 2016 to assess the operational impact to Ho Chi Minh FIR, and beyond. The eventual implementation of the reduced separation is planned to take place on 10 November 2016.

3.2 Singapore is also discussing with Viet Nam and Malaysia to reduce the separation on other routes in the South China Seas area, such as L625 and M758, that have ADS-B and DCPC coverage following the collaboration.

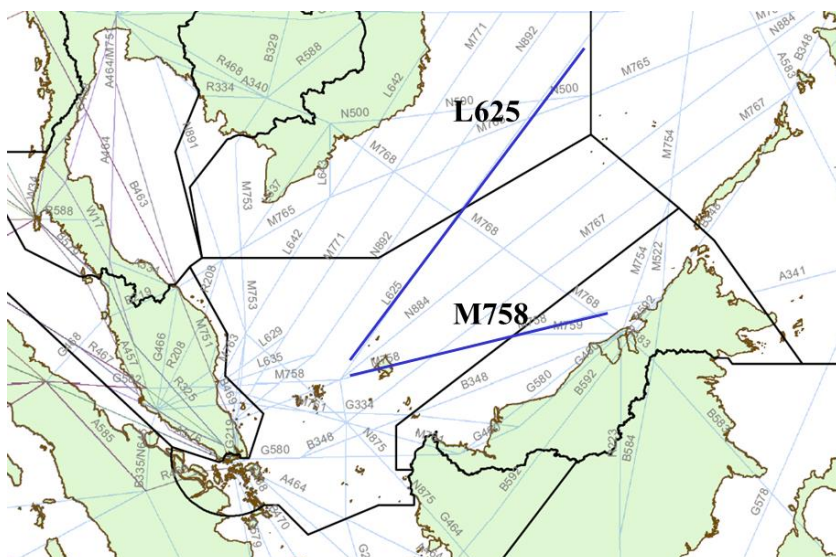


Diagram 3: Planned ADS-B routes

#### 4. Further Enhancement

4.1 Recognizing the benefits of ADS-B collaboration and riding on the momentum of successful implementations, the Philippines and Singapore signed an ADS-B collaboration agreement in October 2015. The Philippines will provide ADS-B data and VHF radio facilities at Bataraza. This collaboration will help to cover part of the surveillance and DCPC gaps on the north eastern portion of the Singapore FIR comprising ATS routes N884 and M767. The implementation is expected to be completed in 2017.

4.2 Discussions are also on-going between Brunei and Singapore on ADS-B collaborations to cover the remaining surveillance and DCPC gaps on ATS routes N884 and M767 in the Singapore FIR.

4.3 Viet Nam and Singapore are working on further collaboration to enhance the existing ADS-B coverage. An ADS-B collaboration agreement was signed in July 2016 where Viet Nam will provide Singapore with ADS-B data and VHF radio facilities from Ca Mau. The implementation is expected to be completed in 2018.

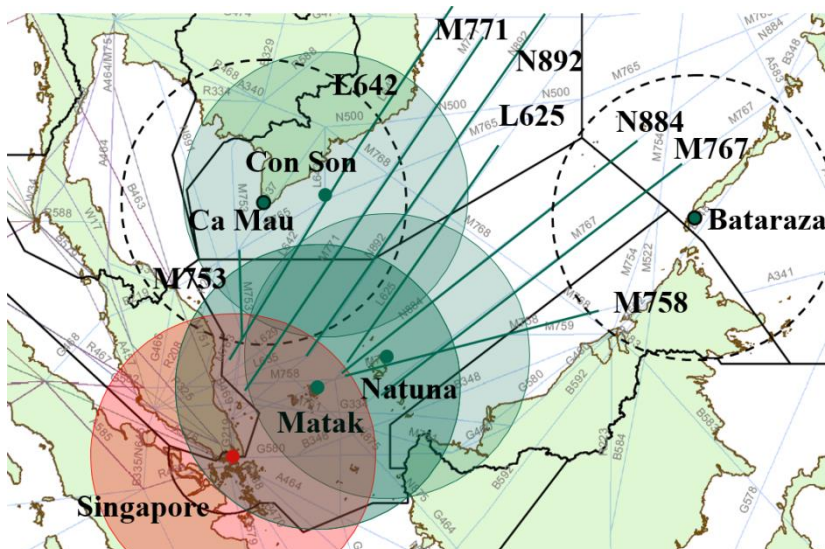


Diagram 4: Coverage with additional sites.

## **5. Conclusion**

5.1 The meeting is invited to:

- a) note the progress of the ADS-B collaborations among States in the South China Sea region with the aim of enhancing safety, capacity and efficiency of air traffic services in the region.
- b) urge States for ADS-B collaborations to further enhance existing surveillance and DCPC coverage.

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