



*International Civil Aviation Organization*

**SIXTH MEETING OF THE SOUTHEAST ASIA  
SUB-REGIONAL ADS-B IMPLEMENTATION  
WORKING GROUP (SEA ADS-B WG/6)**



Singapore, 24 - 25 February 2011

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**Agenda Item 5: Review of sub-regional implementation plan**

**UPDATE ON THE ADS-B COLLABORATION PROJECT IN THE  
SOUTH CHINA SEA AREA**

(Presented by Indonesia, Singapore and Viet Nam)

**SUMMARY**

This paper updates the Working Group on the progress of the collaborative effort of Indonesia, Singapore and Viet Nam to achieve a seamless ADS-B surveillance coverage over the South China Sea Area with the eventual aim of improving flight efficiency and enhancing safety.

**1. INTRODUCTION**

1.1 At the SEA ADS-B WG/3 meeting in July 2008, Indonesia, Singapore and Vietnam updated the meeting on an agreed ADS-B collaboration project over the South China Sea area. This involves the installation of various ADS-B receivers and VHF transmitters to achieve a seamless ADS-B surveillance coverage with the eventual aim of providing ADS-B / radar-like separation over the South China Sea area. See Annex A-1 of this working paper.

1.2 At the ADS-B SITF/8 meeting in May 2009, CANSO presented a cost benefit study of the project which showed a strong business case arising from improved flight efficiency and reduced delays with the implementation of ADS-B over the South China Sea area.

1.3 In view of the positive progress made, Indonesia and Singapore updated the SEA ADS-B WG/5 meeting in January 2010 and subsequently at the ADS-B SIFT/9 meeting in August 2010, on the collaboration of ADS-B implementation in the South China Sea area which includes an projected implementation timeline based on previous discussions from the various States and stakeholders.

1.4 Between Singapore and Vietnam, positive stride have also been made in the ADS-B collaboration over the South China Sea area. This progress has allowed States involved to provide an update on the collaboration project with the aim of improving flight efficiency and enhancing safety. The updated timeline of task and proposed milestones can be found in Annex A-2 of this working paper.

## 2. DISCUSSION

2.1 The collaboration between Indonesia, Singapore and Vietnam has made it possible for Singapore to work towards implementing ADS-B operations in parts of Singapore FIR. In this respect, Singapore published an Aeronautical Information Circular (AIC) on 28 December 2010 pursuant to APANPIRG's Conclusion 19/37 and 21/39. This publication would give sufficient lead time to operators to equip their aircraft with the necessary avionics in order to operate within parts of the Singapore FIR that has been defined as ADS-B exclusive. See annex B-1 of this working paper.

2.2 Prior to implementation of exclusive ADS-B within the defined parts of the Singapore FIR, two operational trial phases will be carried out. This phased approach will allow air traffic controller, pilots and stakeholders to familiarise with the operations.

2.3 In Phase I of the ADS-B operational trials, ADS-B / radar-like separation will be applied for suitably equipped aircraft on ATS routes L642 and M771. ADS-B/radar-like separation will be applied on opportunity basis. It is foreseeable that longitudinal separation can be reduced in situations where two or more ADS-B equipped aircraft are flying in succession. The target commencement of Phase I Operation Trial is 2<sup>nd</sup> half of 2011.

2.4 In Phase II of the ADS-B operational trials, ADS-B / radar-like separation will be applied to the other routes within the parts of the Singapore FIR. In addition to ATS route L642 and M771, ADS-B/radar-like separation will also be applied to suitably equipped aircraft on N891, M753, L644 and N892. In this phase of operational trials, priority will be accorded to suitably equipped aircraft. This would mean ADS-B equipped aircraft would be given priority for their preferred optimal cruising level over another non-ADS-B equipped requesting that same cruising level. This will ensure that the capacity could be maximised by pooling two or more ADS-B equipped aircraft at their preferred optimal cruising level. The target commencement for Phase II Operational Trial is 2<sup>nd</sup> half of 2012.

2.5 The implementation of exclusive ADS-B airspace is targeted to be on or after 12 December 2013. Aircraft intending to operate at or above FL 290 within this defined ADS-B airspace will need to be ADS-B equipped and certified accordingly. The aircraft operator must have the relevant operational approval from the State of Registry. Aircraft that does not have the relevant ADS-B operational approval from the State of Registry will be assigned a flight level below FL 290 should they wish to operate within the lateral limits of the defined airspace.

2.6 Singapore is now working towards conducting the necessary safety assessment before commencing the operational trials within Singapore FIR. A period of monitoring on the performance of the ADS-B surveillance would also be carried out to ensure satisfactory performance of the ADS-B surveillance. The operational trial and implementation timeline for ADS-B operations within parts of Singapore FIR can be found in Annex B-2 of this working paper.

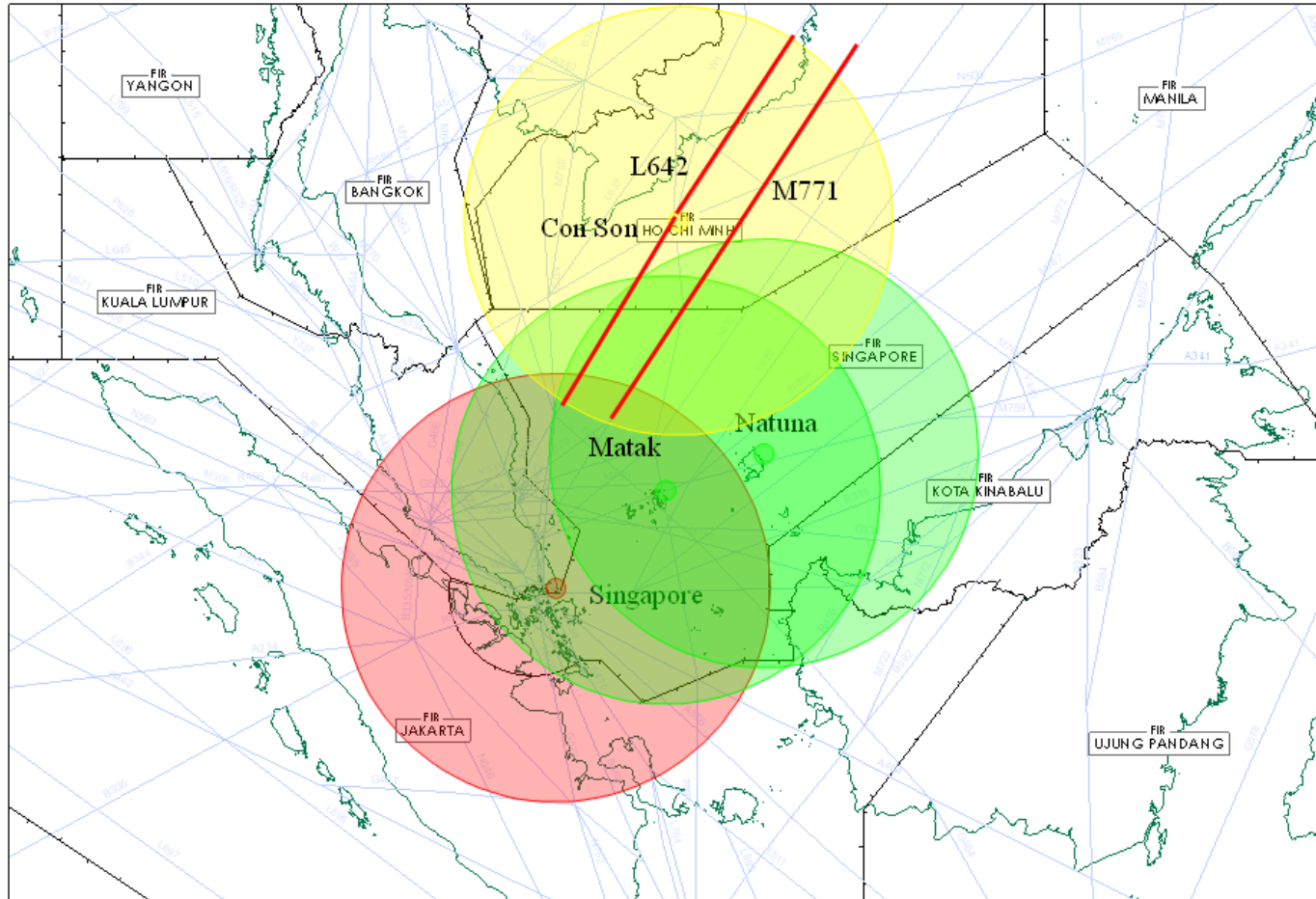
### **3. ACTION BY THE MEETING**

3.1 The meeting is invited to :

- i) note the progress of the project and the cooperation between the States involved in working towards improving flight efficiency and enhancing safety in this sub region.
- ii) support the tasks and proposed milestones as shown in Annex A.
- iii) explore other collaborative effort to improving flight efficiency and enhancing safety through implementation of ADS-B surveillance.

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### ADS-B COLLABORATION PROJECT OVER THE SOUTH CHINA SEA AREA

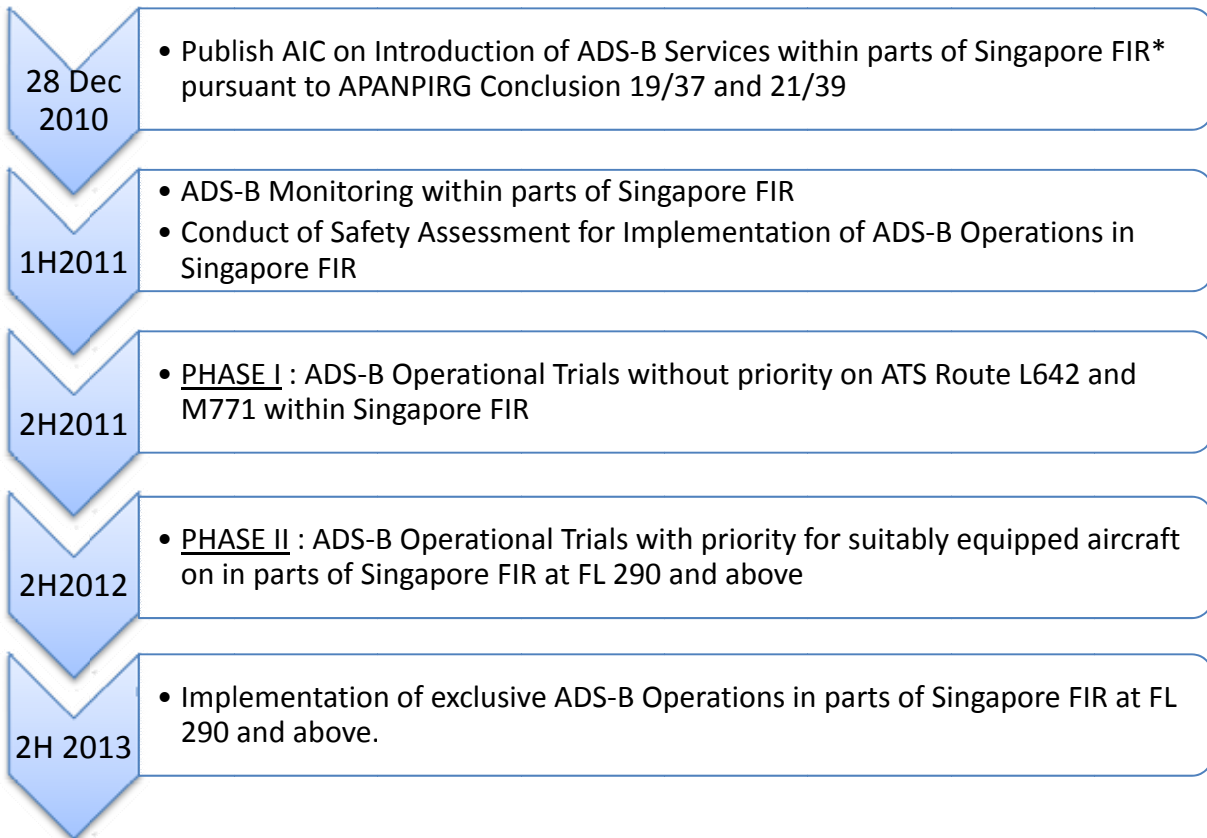


**ADS-B Collaboration over the South China Sea**  
**Tasks and Proposed Milestones**

<b>Item</b>	<b>Description</b>	<b>Status</b>	<b>Target Completion</b>
A	Installation of ADS-B ground stations		
	i) Natuna and Matak	Completed	
	ii) Singapore	Completed	
	iii) Con Son	On-Going	2H2011
B	Installation of VHF station and links		
	i) Natuna and Matak	On-Going	2H2011
	ii) Conson	On-Going	2H2012
C	Signing of ADS-B data and VHF radio facility sharing agreement		
	i) Between Indonesia and Singapore	Completed	
	ii) Between Vietnam and Singapore		2H2011
D	Signing of ATS Operational LOA between Ho Chi Minh and Singapore ACCs		1H2011
E	Issue AIC on aircraft equipage mandate	Completed	
F	Technical Monitoring of ADS-B		1H2011
G	Operational trial and Implementation	See Annex B	



## ADS-B Operational Trial and Implementation In Singapore FIR



\* See Annex B-1 for the defined area