



*International Civil Aviation Organization*

**THE TENTH MEETING OF AUTOMATIC  
DEPENDENT SURVEILLANCE – BROADCAST  
(ADS-B) STUDY AND IMPLEMENTATION TASK  
FORCE (ADS-B SITF/10)**



Singapore, 26 - 29 April 2011

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**Agenda Item 7: Development of Asia/Pacific Regional ADS-B implementation plan and sub-regional ADS-B 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 Task Force 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 held in July 2008, Indonesia, Singapore and Vietnam updated the meeting on an agreed ADS-B collaboration project over the South China Sea area. This would involve the installation of various ADS-B receivers and VHF radio transceivers 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 and radar-like separation 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 held in January 2010 and subsequently at the ADS-B SIFT/9 meeting held in August 2010, on the collaboration of ADS-B implementation in the South China Sea area which included an projected implementation timeline based on previous discussions between the various States and stakeholders.

1.4 Between Singapore and Vietnam, positive strides have also been made in the ADS-B collaboration over the South China Sea area. This progress has allowed the States involved to update on the collaboration project with the aim of enhancing safety and improving flight efficiency to reduce delays and carbon emissions. 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 the 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.

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

2.3 In Phase I of the ADS-B operational trials, ADS-B / radar-like separation will be applied between suitably equipped aircraft on ATS routes L642 and M771. ADS-B/radar-like separation will be applied on an 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 routes L642 and M771, ADS-B/radar-like separation will also be applied to suitably equipped aircraft on ATS routes N891, M753 and L644. In this phase of the operational trials, priority will be accorded to suitably equipped aircraft. This would mean that ADS-B equipped aircraft will be given priority for their preferred optimal flight level over non-ADS-B equipped requesting for the same flight level. This will ensure that the capacity could be maximised by pooling two or more ADS-B equipped aircraft at their preferred optimal cruising flight 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 the 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 the Singapore FIR can be found in **Annex A-3** of this working paper.

2.7 In the future, the collaboration project may be expanded to include the major routes ATS routes N892, L625, N884 and M767, as shown in **Annex A-4**. In addition to ConSon ADS-B ground station, Viet Nam planned to deploy more ADS-B ground stations to overlap the existing ADS-C and radar coverages in the south-east part of Ho Chi Minh FIR.

### **3. ACTION REQUIRED 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 enhancing safety and improving flight efficiency in this sub region;
- ii) note the tasks and proposed milestones as shown in Annex A-2; and
- iii) explore other collaborative effort to improving flight efficiency and enhancing safety through implementation of ADS-B surveillance.

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