



*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

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

- Near-term implementation plan, including operational plan

**REVIEW OF SEA AND BAY OF BENGAL/SOUTH ASIA SUB-REGIONAL  
ADS-B IMPLMENTATION PROJECTS**

(Presented by the Secretariat)

**SUMMARY**

This paper presented the reviews of South East Asia (SEA) and Bay of Bengal/South Asia (SA) Sub-regional ADS-B Implementation Projects.

**1. INTRODUCTION**

1.1 In order to progress or identify new ADS-B implementation projects at sub-regional level, the ad hoc working groups were established during the Ninth Meeting of ADS-B SITF to progress proposals for sub-regional implementation plans for South East Asia, Bay of Bengal/South Asia sub-regions.

**2. DISCUSSION**

2.1 The Ninth Meeting of ADS-B SITF reviewed the updates on the Sub-regional ADS-B implementation project from South East Asia (SEA) as presented by the ad hoc working. The discussions were based on the outcome of previous meetings of the ADS-B SITF/8 and SEA ADS-B WG/5. The outcome of discussions by SEA Ad Hoc working group is provided in **Attachment 1** to this paper which could serve as a basis for further development of the sub-regional implementation plan.

Implementation Plan in the South China Sea Area

2.2 Indonesia and Singapore updated the implementation plan in the South China Sea area. It was informed that Indonesia, Singapore and Vietnam have been jointly working on the installation of ADS-B ground stations and VHF radios. Discussions were also held between the parties concerned on the ADS-B data and VHF radio facilities sharing.

2.3 ADS-B operations will be implemented in the Singapore FIR in 2 phases. In Phase I, ADS-B operations will apply to ATS routes L642 and M771 while other ATS routes in the Singapore FIR could be covered in Phase II. ADS-B operations will be exclusive and applicable between FL310 and FL410. Aircraft intending to operate in ADS-B airspace will need to be ADS-B equipped and certified accordingly. The task list and proposed milestones to achieve this is shown in **Attachment 2** to this paper.

2.4 The meeting supported task and milestones as specified in the paper. States concerned were urged to progress the project according to the proposed timelines. Indonesia informed the meeting that JAATS will be ready by the end of 2012.

2.5 It was clarified that confirmation to the final version of the timeline was not received from Viet Nam. As Viet Nam was not represented at the Task Force meeting, the ICAO Secretariat was requested to seek comments from Viet Nam on the implementation timelines and milestones as indicated in the proposed roadmap presented by Indonesia and Singapore.

2.6 In accordance with a decision of the meeting, the ICAO Regional Office has taken follow-up action to seek comments from Viet Nam. ICAO Secretariat was informed on 9 November 2010 that VATM had decided to install one ADS-B ground in Con Son and plan for sharing data with Singapore in 2H2011 and for sharing VHF A/G communication with Singapore in 2H2012.

#### Australia-Indonesia Data Sharing Project

2.7 Australia and Indonesia provided an update on their data sharing project between the Brisbane and Pandang FIRs. Airservices Australia has approved Phase 1A. Indonesia's DGCA has also approved Phase 1A and an ADS-B Filter has been installed in MAATS, Makassar. The ADS-B Filter has been tested and integrated into the ATC System in MAATS (Eurocat X). The tests were conducted between two States and the result of the test was successful. The need to reestablish satellite channel previously used between Bali and Brisbane had been identified.

2.8 The meeting noted that four ADS-B ground stations at Merauke, Saumlaki, Thursday Island and Gove have been installed and are operating. A draft agreement is in the final stage of co-ordination for signature by the two States. The draft is based on large part of the sample agreement developed by SEA ADS-B WG. The meeting noted the planned schedule of the projects and target dates of some specified milestone. Recognising that the agreement needs approval from Foreign and Defence Ministries of Indonesia, the meeting encouraged DGCA to make every effort to get it approved by the authorities as early as possible.

2.9 It should be clarified that no issue of sovereignty is involved as the data derived from aircraft has been shared in ADS-C applications for years. The difference between ADS-C and ADS-B is updating rates. It is not like radar data which may involve liability concerns. The target date of using ADS-B data for situational awareness and safety nets by ATC is set for 1 November 2010. – Need updates.

2.10 The project is expected to extend to Phase 1B and possibly Phase 2. The Phase 1A shall be operational before requesting approval to commence phase 1B which would comprise following additional sites: Broome, Doongan in Australia and Kintamani, Kupang in Indonesia. The Phase 2 would transform to full radar like separation when both parties have in place suitable infrastructure such as duplicated data communication links and DCPC capability. The meeting appreciated the progress made by the two States and supported the continued execution of the project.

2.11 The meeting congratulated Indonesia and Australia for making progress on ADS-B data sharing and appreciated efforts made. IATA emphasized that cost effective solution of surveillance service is achieved through ADS-B data sharing and commended two states on the enormous achievements for ADS-B data sharing as good example of cooperation. CANSO also echoed and cited it as an excellent example of neighbouring ANSPs working together for the common benefits of aviation.

Sample agreement for data sharing

2.12 Indonesia and Singapore shared with the meeting their experiences on the adoption of the sample agreement. It was explained that the entire agreement has been revamped quite a bit as the parties tried to make the agreement more comprehensive, precise, simple, easier to read and more acceptable by both parties. At the same time, the number of annexes was agreed to be reduced. In addition, the agreement was subject to vetting by various authorities, which resulted in further amendments.

2.13 The member States of the Task Force were requested to provide comments and feed back on their experience in using the draft data sharing template. Singapore was requested to provide an updated version of the data sharing agreement template based on the version signed with Indonesia at next SEA ADS-B Working Group meeting.

Review of Bay of Bengal/South Asia Sub-regional Projects

2.14 While discussing the implementation of ADS-B in the Bay of Bengal and South Asia, the meeting reviewed a proposal for data sharing between Indonesia and Malaysia which would potentially provide benefits for air traffic across the Bay of Bengal. The meeting noted that India plays a key role in the sub-region. The Chairman questioned whether a similar working group arrangement to SEA ADS-B WG could be made in developing ADS-B implementation Plan for the sub-region. IATA informed the meeting that the subject had been discussed at the BOB-RHS Task Force meetings. There is significant potential for ADS-B deployment in the sub-region as five States are there in a very small corner of airspace with a significant traffic levels. Geographically the area lent itself to extended coverage by ADS-B and the possibilities should be explored in the near term. IATA suggested that while another sub regional working group may be desirable, the nature of operations would either mean overlapping membership of the existing SEA ADS-B WG or that the proposed group would require significant coordination with the existing group.

2.15 Some recommendations were discussed at previous BOB/SA Ad Hoc Working Group meeting including installation of an ADS-B ground station at Port Blair as an initial phase which will considerably lead to enhanced safety and increased efficiency at intersection points between parallel and crossing ATS routes.

2.16 The meeting considered that a more pragmatic solution in the near term is to invite India and Myanmar to the next meeting of the SEA ADS-B Working Group, which had already been discussed and agreed by the working group. It was also suggested that both Pakistan and Nepal should also be invited.

Optimum Surveillance Coverage

2.17 The Fifth meeting of the SEA ADS-B Working Group considered useful if coordination was carried out early on a Sub-regional basis to ensure optimum coverage. In this connection, a surveillance coverage chart was updated in order to identify optimum coverage. The updated chart is provided in **Attachment 3** to this paper for reference and review by this meeting.

**3. ACTION BY THE MEETING**

- 3.1           The meeting is invited to
- a) note information provided in this paper; and
  - b) review and update information in the attachments.
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**ADS-B SITF/9**  
**Appendix N to the Report**

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The South East Asia Group provide an update on the near term implementation of the following projects that were identified in the last task force meeting.

**Project 1 – ADS-B Data Sharing Between Australia and Indonesia**

Indonesia and Australia will share data from the following stations:

**Phase 1a (by 2010)**

- Saumlaki ADS-B (Indonesia) (Installed)
- Merauke ADS-B (Indonesia) (Installed)
- Kupang ADS-B (Indonesia) (Installed)
- Kintamani - Bali (Indonesia) (Installed)
- Thursday Island ADS-B (Australia) (Installed)
- Gove ADS-B (Australia) (Installed)
- Broome ADS-B (Australia) (Installed)
- Doongan ADS-B (Australia) (Installed)

Data sharing agreement to be signed by November 2010.  
Data sharing to commence in November 2010.

**Initial Benefits**

Data to be used for air situational awareness and safety nets.  
Enhanced Safety at FIR boundary.

**Phase 1b (Tentatively after 2012)**

- Waingapu ADS-B (Indonesia) (Installed)
- Another station from Australia (Location to be determined)

**Project 2 – ADS-B Data Sharing In South China Sea**

Under the near term implementation plan, Indonesia, Singapore and Vietnam would share the ADS-B data from the following stations:

- Singapore ADS-B (Singapore provide data to Indonesia) (Installed)
- Natuna ADS-B (Indonesia provide data to Singapore) (Installed)
- Matak ADS-B (Indonesia provide data to Singapore) (Installed)
- Con Son ADS-B (Viet Nam provide data to Singapore) (Installed by 2010) (Date to be confirmed by Viet Nam)

VHF radio communication services (DCPC) would be provided from the following stations to Singapore. This is to enable implementation of radar-like separations in the non-radar areas within the Singapore FIR.

- Natuna VHF (Install for Singapore, may be installed by Indonesia and/or Singapore) (Installed by Dec 2010)

- Matak VHF (Install for Singapore, may be installed by Indonesia and/or Singapore) (Installed by Dec 2010)
- Con Son VHF (Vietnam install for Singapore) (Installed by 2010) (Date to be confirmed by Viet Nam)

ADS-B Data sharing and DCPC services agreement between Singapore and Indonesia would be signed by Sep 2010.

ADS-B Data sharing and DCPC services agreement between Singapore and Vietnam would be signed (date to be determined).

Initial Benefits

The above sharing arrangement will benefit L642 and M771. Enhanced safety and reduced separation may be applied. Mandate may be effective in 2013. (Subjected to Viet Nam concurrence)

Phillipines will look into the provision a station in Quezon Palawan to help cover N884 and M767. The group supported CANSO's proposal to request Brunei to install an ADS-B to cover the said routes. The group will further explore other possibilities cover L625 and N892 in future discussions.

Additions to this project

China expressed the possibility of sharing the data from an ADS-B station at Xisha with Philippines. Currently, the ADS-B data is shared with Hong Kong, China.

**Project 3 – ADS-B data sharing between Indonesia and Malaysia**

Indonesia would share the ADS-B data from Aceh with Malaysia. The station is already installed. The data sharing arrangement is still under discussion.

Initial benefits

Enhanced Safety at FIR boundary

**Project 4 – ADS-B data sharing between Cambodia, Thailand and Viet Nam**

Cambodia requested ADS-B data sharing from Thailand and Viet Nam. A meeting will be planned between the three States.

Initial benefits

Situational awareness

ADS-B SITF/9  
Appendix K to the Report

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**IMPLEMENTATION OF ADS-B OPERATIONS IN  
THE SOUTH CHINA SEA AREA**

Tasks and Proposed Milestones

- A Installation of ADS-B ground stations
  - i) Natuna and Matak - completed
  - ii) Singapore - completed
  - iii) Con Son - 2H 2010
- B Installation of VHF stations and links
  - i) Natuna and Matak - 2H 2010 (for 1 frequency) and 1H2011 (for 2 frequencies)
  - ii) Conson - 2H 2010
- C Signing of ADS-B data and VHF radio facility sharing agreement
  - i) Between Indonesia and Singapore - 2H 2010
  - ii) Between Vietnam and Singapore - 2H 2010
- D Conduct of Safety Assessment - 2H 2010
- E Signing of LOA between Ho Chi Minh and Singapore ACCs - 2H 2010
- F Issue AIP Supplement on aircraft equipage mandate - 2H 2010
- G Integration with Singapore ATC system - 2H 2011
- H Conduct of ADS-B monitoring - 1H 2011
- I Operational trial without priority - 2H 2011
- J Priority for suitably-equipped aircraft and Phase II - 2H 2012
- K Implementation of ADS-B operations - 1H 2014

SEA ADS-B WG/6 - WP/4  
Attachment 2



