



*International Civil Aviation Organization*

**ELEVENTH MEETING OF THE SOUTHEAST  
ASIA AND BAY OF BENGAL SUB-REGIONAL  
ADS-B IMPLEMENTATION WORKING GROUP  
(SEA/BOB ADS-B WG/11)**



New Delhi, India 17 – 19 November 2015

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**Agenda Item 5: Review of TOR of the SEA/BOB ADS-B Working Group**

**TOR, ACTION ITEMS AND FOCUS OF THE WORKING GROUP**

(Presented by the Secretariat)

**SUMMARY**

This paper presents TOR, list of action items of the Working Group and review some issues for the future work of the Working Group identified in the last meeting.

**1. Introduction**

1.1 The Terms of Reference for the SEA/BOB ADS-B Working Group was updated by the 10<sup>th</sup> meeting of the WG. The action items for the working group developed in the previous meetings need to be updated at each working group meeting. The focus of the working group initially discussed at the last meeting need to be further explored.

**2. Discussion**

Terms of Reference for the Working Group

2.1 The Terms of Reference for the Working Group was updated by the SEA/BOB ADS-B WG/10 meeting. The TOR was slightly amended to include “to identify implementation issues and propose solutions for the identified issues” through following Decision.

***Decision SEA/BOB ADS-B WG 10/6 - Revised ToR of the SEA/BOB ADS-B Working Group***

*That, the revised TOR of SEA/BOB ADS-B Working Group provided in Appendix D to this Report be adopted.*

2.2 The updated TOR of the working group is provided in **Attachment A** to this paper.

#### Review Action Items for the SEA/BOB ADS-B WG

2.3 The list of actions items resulted from the SEA/BOB ADS-B WG/8, WG/9 and WG/10 meetings is provide in **Attachment B** to this paper. The list of action items was noted and updated by the ADS-B SITF/14 meeting held in April 2015.

#### Future Focus of the Working Group

2.4 The WG/10 meeting discussed the proposal for the future direction for the SEA/BOB ADS-B WG. The proposal noted that while many States had either implemented or commenced implementation of ADS-B, the progress of regional collaboration was slow. Since establishment of the Working Group 7 years ago it had identified at least 8 collaboration projects. Only 4 collaboration agreements had been made and implemented, involving only 6 Administrations (Australia, China, Hong Kong China, Indonesia, Singapore and Viet Nam).

2.5 The last WG meeting discussed the possible areas of focus for the Working Group in future. It was noticed that while several data-sharing projects were identified in the past, the implementation progress has been slow. Data sharing is the key to provide seamless ATM and is therefore important. The following main issued were highlighted in WP/9 presented by Singapore at WG/10 meeting.

2.5.1 To date, many states in this region have either implemented ADS-B or have commenced their implementation of ADS-B on their premises. However, the progress of regional collaboration is rather slow. Since its establishment seven years ago, the Working Group has identified at least eight regional collaboration projects. Among these projects, so far only **Australia and Indonesia, Hong Kong and China, Indonesia and Singapore, and Singapore and Vietnam have signed their ADS-B collaboration agreements and implemented then collaboration projects.**

2.5.2 In view of the slow collaboration progress and the rapid implementation of ADS-B, more issues related to the implementation and operations might have surfaced. For this reason, this working group can become a useful forum for States to share their issues and potentially seek solutions. Below are some of the issues that might be of interests to the members of the Working Group.

#### Slow response on regional collaboration

2.5.3 Some States which desire to share ADS-B data might have faced various difficulties such as political challenges, costs, ATC system readiness for ADS-B processing, lack of communication between the ANSPs. The working group may gather such difficulties and assist states in resolving them. The Working Group is expected to identify the difficulties and issues and work out how to consolidate and address the identified issues. (It is stated in the revised TOR of the WG).

#### Performance Monitoring

2.5.4 States and regions are increasingly expected to monitor the performance of their CNS/ATM facilities including ADS-B. The working group is expected to consider sharing of performance data and monitoring the following performance parameters:

- a) Probability of detection for ADS-B station (continuously) ;
- b) Range of ADS-B station (to be provided); and
- c) Abnormal behavior of avionics (to report to the database being progressed)

Proposed standards for Performance Based Communications and Surveillance (PBCS)

2.5.5 ICAO OPLINK Panel is developing the concept of PBCS. ADS-B is likely to be included in the PBCS in future. Based on the experience gained, the working group can look into establishing **a list of Required Surveillance Performance (RSP) specifications** for the ADS-B. States and the region could then monitor the performance of the ADS-B facilities against the establish RSP specifications. (Need to further discuss whether we need to progress this at regional level).

Exploration of application of new ADS-B related technologies

2.5.6 There are new ADS-B related technologies emerging. The most prominent one would be space-based ADS-B. The Working Group could explore the use of space-based ADS-B in our environment such as surveillance gap filling and backing up ground ADS-B stations. This was considered as work for ADS-B Study and Implementation Task Force and in the future the Surveillance Implementation Coordination Group of APNAPIRG. In this connection, the ADS-B SITF/14 meeting endorsed the following Decision based on the proposal from this Working Group.

***Decision ADS-B SITF 14/2 – Study the application of space based ADS-B***

*That, the ADS-B SITF or its alternate body to:*

- a) study the application of space-based ADS-B in the Asia Pacific region; and*
- b) focus on regional aspects, develop recommendations on implementation of ADS-B delivered from space-based platforms, and on required performance standards.*

Existing gaps in ADS-B standards

2.5.7 Currently, there are combinations with various types of communication means such as ADS-B with CPDLC and ADS-B with SATCOMM Voice that may be available for operational use, but no separation minimum has been established for such combinations. The Working Group may consider the studying and recommending such separation minimum. The ADS-B WG/10 draft Conclusion 10/4 was endorsed by the ADS-B SITF/14 and CNS SG/19 but not supported by ATM SG/3 as mentioned in WP/2 of this meeting.

**3. Action by the Meeting**

3.1 The meeting is invited to:

- a) review the TOR of the WG provided in Attachment A;
- b) update the list of action items for the WG provided in Attachment B; and
- c) further discuss the future focused issues identified at last meeting.

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## TERMS OF REFERENCE

### SOUTHEAST ASIA AND BAY OF BENGAL SUB-REGIONAL ADS-B IMPLEMENTATION WORKING GROUP

#### Terms of Reference

APANPIRG18 Conclusion 18/38 agreed to the establishment of a sub-regional ADS-B implementation Working Group in the South-East Asia area (SEA ADS-B WG) by the end 2007 to develop the *terms of cooperation* and an *implementation plan* for near-term ADS-B applications in the sub-region.

APANPIRG/22 Decision 22/34 agreed to rename the Southeast Asia Sub-regional ADS-B Implementation Working Group to “South East Asia and Bay of Bengal Sub-regional ADS-B Implementation Working Group” and tasked the new Working Group to develop a revised Terms of Cooperation and work programme in the sub-regions.

The outcome of the ADS-B Working Group will report to APANPIRG through the ADS-B Study and Implementation Task Force.

The SEA/BOB ADS-B WG shall

- (a) Develop **Terms of Co-operation** which will include :
- establishing model documents for possible use by States when :
    - Agreeing to share ADS-B data, and DCPC (such as VHF radio voice communication) capability between adjoining States for various ADS-B applications (including a sample letter of agreement); or
    - Establishing ADS-B avionics fitment mandates
  - identifying optimum coverage for ADS-B ground stations and associated VHF radio voice communication in the sub-regional FIR boundary areas.
- (b) Develop an **implementation plan** for near term ADS-B application which will delivery efficient airspace and increased safety on a regional basis that include :
- schedule and priority dates to bring into effect ADS-B based services taking into account;
    - Timing of any equipage mandates.
    - Timing of any ATC automation upgrades to support ADS-B.
    - Timing of commissioning of any ADS-B data and associated VHF radio voice communication facilities.
  - consideration of major traffic flows
- (c) Coordination for implementation of the plan **and identify implementation issues and solutions**

SEA/BOB ADS-B WG/10  
Appendix D to the Report

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**Composition:** The Group will be composed of experts nominated by States in the Sub-region including: Australia, Bangladesh, Brunei Darussalam, China, Hong Kong China Cambodia, India, Indonesia, Malaysia, Maldives, Myanmar, Nepal, Pakistan, Philippines, Singapore, Sri Lanka, Thailand, Vietnam, IATA and CANSO.

**Reporting:** The Group will present its report to ADS-B Study and Implementation Task Force.

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SEA/BOB ADS-B WG/10  
Appendix E to the Report

## LIST OF ACTION ITEMS (COMPLETED ACTION ITEMS HAVE BEEN REMOVED)

No.	Subject	Forum Raised	Status / Target Date	Remarks / follow-up	Action Party
1.	Prepare a paper on the plans for and status of ADS-B data sharing between Indonesia-Malaysia	SEA ADS-B WG/4	Updated in ADS-B SITF/8 ; SEA/BOB WG/10	On-going	Malaysia
2.	<del>To examine existing air-ground communication and surveillance capability in the boarder area between China and Myanmar and identify the need and possibility for sharing ADS-B data from potential ADS-B ground station at Lashio. (China and Myanmar has established new dataline to support voice com. between ACCs of Kunming and Yangon)</del>	<del>SEA ADS-B WG/6</del>	<del>On-going ADS-B WG/10</del>	<del>Report status and position At ADS-B SITF/14</del>	<del>China &amp; Myanmar Closed by ADS-B SITF/14 – SSR installed at Baoshan and Puer and surveillance gap no longer exists.</del>
3.	To exam possibility of sharing ADS-B data from potential ADS-B ground station from Coco and Sittwe. The agreement on sharing will be signed by end of 2014.	SEA ADS-B WG/6	On going ADS-B WG/10	Report status and possibility Completed	Myanmar & India
4.	ATS operational letter of agreements between neighboring FIRs among South China Sea States for radar-like surveillance service (Operational agreement between Singapore and Viet Nam was signed first in Nov. 2013 and later updated in July 2014 for 30 NM separation)	SEA ADS-B WG/6	Ongoing – Reports at each meeting	Report progress	China, Hong Kong China, Viet Nam and Singapore On-going needs seamless agreement for the minima – major traffic flow
5.	<del>India to coordinate with Bangladesh Maldives and Sri Lanka for ADS-B data sharing</del>	<del>SEA ADS-B WG/7</del>	<del>On-going revised target SEA/BOB WG/10</del>	<del>Coordination Initiated and on-going</del>	<del>India Duplicated with other items</del>
6.	Harmonize process of detection bad TX for inclusion into “Blacklist”	SEA/BOB ADS-B WG/8	ADS-B SITF/14	Review and update on the monitoring mechanism	Singapore & Hong Kong China, RSO Requirements for monitoring items identified – on

**LIST OF ACTION ITMES (COMPLETED ACTION ITEMS HAVE BEEN REMOVED)**

No.	Subject	Forum Raised	Status / Target Date	Remarks / follow-up	Action Party
					going
7.	ADS-B data sharing agreement for BOB	SEA/BOB ADS-B WG/8	ADS-B SITF/14	Report progress ADS-B SITF14	Myanmar, India Being done/On-going
8.	Update “harmonization Framework Document” for BOB	SEA/BOB ADS-B WG/8	ADS-B SITF/14 (31 Dec. 2012)	Report progress – on going	India, Myanmar On-going
9.	Explore possibility for installation of an ADS-B ground station on the Nicobar Islands to cover eastern gateway of BOB Sub-region  (seeking alternate location nearby)	SEA/BOB ADS-B WG/8	ADS-B SITF/14	Report result of study	India On-going by SEA/BOB
10.	In MEL not included the effect of GNSS failure on ADS-B output which should be included.	SEA/BOB WG/9		Contact Boeing and Airbus through operators	IATA and Hong Kong China Initial result based on contact with AIRBUS & BOEING subject to confirmation
11.	Develop and implement regional collaboration project for ADS-B out operational use including data sharing in Bay of Bengal area and report on implementation progress.  Status reported at WG/10		May 2015	Develop and implement sub-regional ADS-B collaboration project.	Bay of Bengal States  Detailed needs to be finalized by SEA/BOB

**LIST OF ACTION ITMES (COMPLETED ACTION ITEMS HAVE BEEN REMOVED)**

No.	Subject	Forum Raised	Status / Target Date	Remarks / follow-up	Action Party
12.	States to advise when their ground stations can be upgraded to receive ADS-B DO260B compliant ADS-B data. A survey was conducted during ADS-B SITF/13 (Appendix E). On-going bases	SEA/BOB WG/9	On-going	Further updates the Table and report to ADS-B SITF	On-going Table updated by ADS-B SITF/14 and to be maintained by Task Force
13.	General ADS-B Avionics Problem Reporting Database (APRD) (being implemented)	SEA/BOB WG/9	Specification and database at ADS-B SITF/14		Hong Kong China and RSO On-going - being progressed
14.	Examine the previous cost-benefit study to quantify the benefits and dis-benefits of the ADS-B mandate	WG/10	SEA/BOB ADS-B WG/11	Conduct the Study	Singapore, CANSO, IATA and FAA.
15.	Correspond with Philippines through an official letter to obtain firm information on their plan for ADS-B ground station deployment	WG/10	SEA/BOB ADS-B WG/11	Update the deployment plan	Secretariat Letter sent to CAAP. Official updated provided to ADS-B SITF/14
16.	<del>Reporting and analysis processes and recommendations on the ADS-B anomalies</del>	<del>WG/10</del>	<del>ADS-B SITF/14</del>	<del>Prepare a Paper</del>	<del>Australia Completed at ADS-B SITF/14 -d included in AIGD</del>
17.	<del>Provide clarification on applicability of Cir. 326 in the complexity air space</del>	<del>WG/10</del>	<del>SEA/BOB ADS-B WG/11</del>	<del>Prepare a Paper</del>	<del>Australia Completed at ADS-B STIF/14 – included in AIGD</del>

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