

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

**TOR, ACTION ITEMS AND READINESS STATUS FOR RECEIVING
VERSION 2 ADS-B DATA**

(Presented by the Secretariat)

SUMMARY

This paper presents TOR, list of action items of the Working Group and review the readiness status of ADS-B ground stations for receiving Edition 2 compliant ADS-B data.

1. Introduction

1.1 The Terms of Reference for the SEA/BOB ADS-B Working Group was reviewed by the 11th meeting of the WG. The action items for the working group developed in the previous meetings were initially updated based on the development of ADS-B SITF/15 meeting which needs further updating.

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/11 meeting. The TOR was slightly amended to update the reporting path. The changes were confirmed by APANPIRG Decision 27/46.

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/10 and WG/11 meetings is provide in **Attachment B** to this paper. The list of action items was noted by the ADS-B SITF/15 meeting held in April 2016.

Update the readiness Status of ADS-B ground Stations that are able to receive Version 2 (ADS-B D0260B) compliant ADS-B data

2.4 ADS-B Study and Implementation Task Force considered necessary to collect the status of ADS-B ground stations that are able to receive and process Version 2 (ADS-B D0260B) compliant ADS-B data. The previous working group meetings and the Fourteenth meeting of the ADS-B Study and Implementation Task Force updated the status which is provided in **Attachment C** to this paper. The meeting is requested to further update the information in the Table.

Future Focus of the Working Group

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.

2.6 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, 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. India and Myanmar also have signed the data sharing agreement.**

2.7 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.

Slow response on regional collaboration

2.8 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

2.9 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)

2.10 ADS-B is likely to be included in PBCS which is becoming ICAO standard/recommended practice. 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

2.11 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 the sub-regional environment such as surveillance gap filling and backing up ground ADS-B stations in SEA and BOB. This was considered as work for ADS-B Study and Implementation Task Force and in the future the Surveillance Implementation Coordination Group of APNAPIRG.

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;
- c) update the readiness status of ADS-B Ground Stations which are able to receive Version 2 (ADS-B D0260B) compliant ADS-B data; and
- d) note the outcome of discussions at previous meetings regarding the future focused issues of the working group and discuss if any follow-up action requires to be taken.

D) Slightly revised TOR of SEA/BOB ADS-B Implementation Working Group

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 [Surveillance Implementation Coordination Group](#). ~~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

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 Surveillance Implementation Coordination Group
~~ADS-B Study and Implementation Task Force.~~

LIST OF ACTION ITMES (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/12	On-going	Malaysia
2.	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
3.	Harmonize process of detection bad TX for inclusion into “Blacklist”	SEA/BOB ADS-B WG/8	ADS-B SITF/15	Review and update on the monitoring mechanism	Singapore & Hong Kong China, RSO Requirements for monitoring items identified – on going
4.	Update “harmonization Framework Document” for BOB	SEA/BOB ADS-B WG/8	ADS-B SITF/15	Report progress – on going	India, Myanmar On-going
5.	In MEL not included the effect of GNSS failure on ADS-B output which should be included.	SEA/BOB WG/9	ADS-B SITF/15 (confirmation)	Contact Boeing and Airbus through operators	IATA and Hong Kong China Initial result based on contact with AIRBUS & BOEING subject to confirmation

Attachment B to SEA/BOB ADS-B WG/12 – WP/03

SEA/BOB ADS-B WG/11
Appendix E to the Report

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

No.	Subject	Forum Raised	Status / Target Date	Remarks / follow-up	Action Party
6.	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 updated at WG/11 A simple document containing projects for BoB data sharing to be prepared by India		May 2015	Develop and implement sub-regional ADS-B collaboration projects. On-going	Bay of Bengal States Detailed needs to be finalized by SEA/BOB
7.	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	Table updated by ADS-B SITF/14 and to be maintained by Task Force SEA/BOB WG and SURICG
8.	General ADS-B Avionics Problem Reporting Database (APRD) (being implemented)	SEA/BOB WG/9	Specification and database at ADS-B SITF/15	Further updates on the status and improvement to be made	Hong Kong China and RSO On-going - being progressed
9.	Inform member airlines about the B787 ADS-B Deficiency and the service Bulletin (SB) B787-81205-SB340005-00 and accomplish the upgrade as soon as possible after the Service Bulletin release. Administrations were also requested to provide update whether their registered B787 has applied service bulletin	SEA/BOB WP/11	ADS-B SITF/15	Inform member airlines	IATA
10.	Further develop a checklist for performance monitoring in coordination with Australia, India, Hong Kong China and Singapore. A WP on this subject prepared for consideration by next ADS-B SITF meeting (AIGD) Agreed checklist was included into AIGD Edition 9	SEA/BOB WP/11	ADS-B SITF/15	Coordination and prepare a WP for review by the Task Force Completed	Malaysia

ADS-B SITF TASK 7/36 – States to advise when their ground stations can be upgraded to receive ADS-B D0260B compliant ADS-B data					
State or Administration	No. of ADS-B Ground Stations Installed	D0260B Compliant?			
		Yes (all)	Yes (some)	No	If <i>some</i> or <i>No</i> , planned date of full D0260B capability
Australia	33	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	All ADS-B and WAM systems upgraded.
Bangladesh	Nil	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
China	20	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	All stations have 260B ADS-B OUT Compliant, not yet for TIS-B.
Hong Kong, China	9	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Macao, China	Nil	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	No current plans for ADS-B
France (French Polynesia)	Nil	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	No current GS
Fiji	??	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Upgrade TBD
India	21	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Indonesia	31	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Planned for 2016
Japan	Nil	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	No operational GS yet.

ADS-B SITF TASK 7/36 – States to advise when their ground stations can be upgraded to receive ADS-B D0260B compliant ADS-B data					
State or Administration	No. of ADS-B Ground Stations Installed	D0260B Compliant?			
		Yes (all)	Yes (some)	No	If <u>some</u> or <u>No</u> , planned date of full D0260B capability
Malaysia		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Tenders have been called for new GS. DO-260B capability included in specification
Maldives	4	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Not yet determined.
Myanmar		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Nepal	Nil	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
New Zealand	22	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	May 2015 (software upgraded by end of 2015) Software release is ready
Pakistan	1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Test basis. Will discuss outcomes from ADS-B SITF Meeting.
Papua New Guinea	Nil	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	ADS-B planned but no current GS.
Philippines	Nil	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	No GS yet
Republic of Korea	2	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	2020
Singapore	1	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

ADS-B SITF TASK 7/36 – States to advise when their ground stations can be upgraded to receive ADS-B D0260B compliant ADS-B data					
State or Administration	No. of ADS-B Ground Stations Installed	D0260B Compliant?			
		Yes (all)	Yes (some)	No	If <u>some</u> or <u>No</u> , planned date of full D0260B capability
Thailand	5	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Test basis
USA	634	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Viet Nam	3	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	