

*International Civil Aviation Organization*



**AUTOMATIC DEPENDENT SURVEILLANCE –  
BROADCAST SEMINAR AND ELEVENTH MEETING  
OF AUTOMATIC DEPENDENT SURVEILLANCE –  
BROADCAST (ADS-B) STUDY AND  
IMPLEMENTATION TASK FORCE (ADS-B SITF/11)**



Jeju, Republic of Korea, 24-27 April 2012

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**Agenda Item 2: Review the outcome of the APANPIRG/22 on ADS-B SITF/10 and  
SEA/BOB ADS-B WG/7 Meetings**

**OUTCOME OF ADS-B SITF/10 AND APANPIRG/22 ON ADS-B**

(Presented by the Secretariat)

**SUMMARY**

This paper reviews the outcome of APANPIRG/22 on ADS-B and works accomplished by the Tenth Meeting of ADS-B Study and Implementation Task Force and the Fifteenth CNS/MET Sub-Group.

Action by ADS-B SITF/11 Meeting is at Paragraph 3.

**1. INTRODUCTION**

1.1 The APANPIRG/22 held from 5 to 9 September 2011 in Bangkok reviewed the outcome of the Tenth meeting of the ADS-B Study and Implementation Task Force (26 – 29 April 2011) including work accomplished by Sixth meeting of the SEA ADS-B Working Group. The outcome of APANPIRG/22 on matters relating to ADS-B is provided at **Attachment** to this paper for review by the meeting.

1.2 The reports of Tenth Meeting of ADS-B SITF and Sixth meeting of the working group were also reviewed by CNS/MET SG/15 meeting held in Bangkok, Thailand from 20 to 25 July 2011.

1.3 ATM related outcome on ADS-B based on the discussions at Twenty First meeting of ATM/AIS/SAR Sub-group of APANPIRG (27 June to 1 July 2011) is provided in a separate WP to this meeting.

1.4 The SEA/BOB ADS-B WG/7 Meeting also noted outcome of APANPIRG/22 on progress of ADS-B related work.

## 2. DISCUSSION

2.1 APANPIRG/22 meeting noted the trial and implementation status by States and developments and some issues observed during implementation of ADS-B in the Region. The actions taken by APANPIRG/22 meeting on ADS-B related matters are highlighted as follows:

- Decision 22/30 – adopted the updated Subject/Tasks List of ADS-B SITF
- Conclusion 22/31 – adopted guidance material on ADS-B:
  - a) Guidance Material on Building a safety case for the delivery of an ADS-B separation service provided in Appendix J to the Report on Agenda Item 3.4;
  - b) the revised Sample Agreement for Data Sharing contained in Appendix K; and
  - c) Amendments to the ADS-B Implementation Guidance Document (AIGD) as shown in the Appendix L consequential to amendment to the Flight Plan and Appendix M on the reliability and availability for ADS-B ground system.

Follow-up State Letter AP154111 (CNS) was issued 24 November 2011

- Conclusion 22/32 – Coordination for VHF for sharing Voice Communication

States have been urged to support provision of VHF radio voice air/ground communication infrastructure to adjacent States and co-ordinate with ICAO regional Office and their national Telecommunication Authority (Radio Frequency regulator) for assignment of VHF radio frequencies to be used by the adjacent States

Follow-up State Letter AP153/11 (CNS) was issued 24 November 2011

- Conclusion 22/33 – Support DO260 B Compliant Avionics

States providing ADS-B based surveillance services be urged to upgrade their ADS-B ground stations in time (2012-2015) to receive DO260B standard transmissions in addition to those aircraft transmitting ADS-B data compliant with DO260 and DO260A

Follow-up State Letter AP162/11 (CNS) was issued 8 Dec.2011

- Made a Decision 22/34 to rename SEA ADS-B Working Group into SEA/ BOB Sub-regional ADS-B Implementation Group (Separate WP on the development of TOR of the Working Group.

Working Paper prepared the Secretariat and presented to the 7th meeting of SEA/BOB WG, TOR of the WG has been updated by the WG.

- Conclusion 22/35 urged States to expedite ADS-B implementation project in South China Sea area:

States concerned with ADS-B implementation in the South China Sea area be urged to expedite required actions and coordination to achieve the implementation.

Follow-up State Letter AP163/11 (CNS) was issued 8 Dec.2011

- The meeting generally supported a proposal and adopted Conclusion 22/36:

The Regional Supplementary Procedure Doc 7030 be amended in accordance with the established procedure to include regional requirements on ADS-B.

Amendment process being coordinated

2.2 The meeting also noted development on Data Sharing Project between Australia and Indonesia and Indian ADS-B Implementation Plan.

2.3 The meeting appreciated the efforts and progress made by the ADS-B SITF and the SEA ADS-B WG and thanked Civil Aviation Authority of Singapore for hosting the Sixth Meeting of the South East Asia Sub-Regional ADS-B implementation Working Group and Tenth meeting of the ADS-B Study and Implementation Task Force.

2.4 APANPIRG/22 noted that the Seventh meeting of SEA/BOB ADS-B Implementation Working Group was scheduled in November 2011. The next ADS-B Study and Implementation Task Force meeting was scheduled for April 2012. The APANPIRG/22 meeting appreciated the kind offer made by the Airports Authority India for hosting the seventh Working Group meeting in Chennai and the kind offer by the Republic of Korea to host the Eleventh ADS-B Study and Implementation Task Force meeting in Republic of Korea.

2.5 The adopted guidance materials and the guidelines and the revised regional Surveillance Strategy adopted by APANPIRG/22 have been posted in the ICAO APAC website: <http://www.bangkok.icao.int/edocs>

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

3.1 The meeting is invited to review the outcome of the APANPIRG/22 and take any necessary follow-up actions.

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**3.4 CNS/MET Matters****Surveillance**Outcome of ADS-B SITF/10 Meeting

3.4.66 The CNS/MET SG/15 meeting noted that the Tenth Meeting of Automatic Dependent Surveillance – Broadcast (ADS-B) Study and Implementation Task Force (ADS-B SITF/10) hosted by Civil Aviation Authority of Singapore (CAAS) was held from 26 to 29 April 2011 in Singapore. An information sharing session on ADS-B development and implementation was organized on 26 April in conjunction with the ADS-B SITF/10 meeting. The outcome of deliberations at the information sharing session was taken into consideration at the 10<sup>th</sup> meeting of the Task Force.

Review of Terms of Reference and Subject/Tasks List

3.4.67 The TOR of ADS-B SITF was considered appropriate and the ADS-B SITF/10 CNS/MET SG/15 meeting did not propose any changes to the TOR. The meeting reviewed and proposed updated Subject/Tasks List for ADS-B SITF and adopted following Decision:

**Decision 22/30 - Subject/Tasks List of ADS-B Study and Implementation Task Force**

That, the updated Subject/Tasks List of ADS-B Study and Implementation Task Force provided in **Appendix I** to the Report on Agenda item 3.4 be adopted.

Guidance Material on building a safety case for ADS-B separation service

3.4.68 The CNS/MET SG/15 meeting reviewed and endorsed a guidance material on building a Safety Case for the delivery of an ADS-B separation services developed by the ADS-B SITF. The meeting noted that the ICAO Circular 311 had been pulled out of circulation and had been replaced by Circular 326 which will be ready for publication by September 2011. The meeting noted the structure and contents of the Guidance Material and adopted it through a consolidated Conclusion below.

Sample agreement for data sharing

3.4.69 The CNS/MET SG/15 meeting noted that the sample agreement was updated based on experience gained by Indonesia and Singapore on its adoption. The meeting noted the description of the changes to the original sample agreement and adopted a revised sample agreement on data sharing through a consolidated Conclusion below.

Amendments to AIGD

3.4.70 The CNS/MET SG/15 meeting noted that Amendment 1 to the PANS-ATM (Doc 4444) will become applicable on 15 November 2012 and endorsed a proposal for a consequential amendment to the ADS-B Implementation Guidance Document (AIGD). The meeting also agreed to add a guidance material to AIGD which contains 5 recommendations for reliability and availability of ADS-B ground system. In this connection, the meeting adopted amendment to AIGD through following consolidated Conclusion.

**Conclusion 22/31 – Development of Guidance Material on ADS-B**

That, the following regional guidance materials on ADS-B implementation be adopted and published on the APAC Website.

- a) Guidance Material on Building a safety case for the delivery of an ADS-B separation service provided in **Appendix J** to the Report on Agenda item 3.4 ;
- b) the revised Sample Agreement for Data Sharing contained in **Appendix K**;
- c) amendments to the ADS-B Implementation Guidance Document (AIGD) as shown in the **Appendix L** consequential to amendment to the Flight Plan and **Appendix M** on the reliability and availability for ADS-B ground system.

#### Radio Frequencies for Provision of VHF Voice Communications

3.4.71 The CNS/MET SG/15 meeting recalled that APANPIRG/19 urged States to support provision of VHF radio voice communication associated with ADS-B data sharing between adjacent States. In order to enable radar like separation, ADS-B based surveillance service must be complemented by the Direct Controller Pilot Communication (DCPC) such as VHF radio voice communication. Viet Nam made a proposal that APANPIRG should further support the decision for States to provide VHF voice communications facilities for other States by developing a Conclusion. This would help in the domestic approval process for VHF radio frequency assignment. Consequently, the meeting adopted following Conclusion.

#### **Conclusion 22/32 – Coordination for VHF for sharing Voice Communication Capability**

That,

- a) States be urged to support provision of VHF radio voice air/ground communication infrastructure for use by adjacent States; and
- b) States sharing ADS-B data and providing VHF Voice air-ground communication infrastructure to adjacent States should co-ordinate with ICAO Regional Office and their national Telecommunication Regulatory Authority for assignment of specific VHF radio frequencies to be used by the adjacent States.

#### Requirement of SA Aware

3.4.72 The CNS/MET SG/15 meeting noted a proposal from IATA to ADS-B SITF/10 meeting that the Australian ADS-B rule should be amended to extend the date of compliance by 2 years. Noting reasons stated and the date 12 December 2013 becoming a generally accepted date among APAC Region States for the commencement of ADS-B mandates, the meeting considered that it would be a reasonable compromise to extend the date for SA aware forward fit compliance to the mandate date, rather than 28 June 2012. In view of the foregoing, the meeting endorsed the recommendation provided in the draft Conclusion of ADS-B SITF/10 meeting report. It was recommended for consideration by Australia that the existing forward fit requirement in the Australian CAO 20.18 for SA Aware to be incorporated in GNSS receivers providing position source data for ADS-B be extended from 28 June 2012 to 12 December 2013.

Support for DO260B

3.4.73 The CNS/MET SG/15 meeting recognized that aircraft equipped with ADS-B Out avionics compliant with DO260B are likely to enter Asia Pacific airspace in 2012-2015 timeframe. There will be a need for the States providing ADS-B based surveillance service to include the service to aircraft with DO260B compliant avionics. The meeting therefore adopted following Conclusion formulated by the ADS-B SITF:

**Conclusion 22/33 – Support DO260B Compliant Avionics**

That, States providing ADS-B based surveillance services be urged to upgrade their ADS-B ground stations in time (2012-2015) to receive DO260B standard transmissions in addition to those aircraft transmitting ADS-B data compliant with DO260 and DO260A.

Review of the TOR and Name of the SEA ADS-B Implementation Working Group

3.4.74 The CNS/MET SG/15 meeting noted the outcome of the sixth meeting of the South East Asia ADS-B Implementation Working Group held from 24 to 25 February 2011 in Singapore. The complete report of the meeting is available on the ICAO APAC website:  
[http://www.bangkok.icao.int/cns/meeting.do?method=MeetingDetail&meeting\\_id=36](http://www.bangkok.icao.int/cns/meeting.do?method=MeetingDetail&meeting_id=36)

Bay of Bengal/South Asia Sub-regional Project

3.4.75 The CNS/MET SG/15 meeting noted an initial proposal for the deployment of ADS-B ground stations in the Bay of Bengal and various developments that have taken place regarding ADS-B implementation in the States concerned.

3.4.76 With respect to the Work Programme of the SEA ADS-B working group to cover Bay of Bengal area, meeting considered the need to invite States in the Bay of Bengal area to participate in the working group meeting on a regular basis and agreed to the proposal to change the name of the Working Group from SEA ADS-B Working Group to South East Asia and Bay of Bengal ADS-B Implementation Working Group (SEA/BOB ADS-B WG) as proposed by the ADS-B SITF and adopted following Decision.

**Decision 22/34 – Name and Terms of Cooperation of ADS-B Implementation WG**

That, recognizing the need to expedite ADS-B implementation and surveillance data sharing in the Bay of Bengal area, the South East Asia Sub-regional ADS-B Implementation Working Group be renamed as “South East Asia and Bay of Bengal Sub-regional ADS-B Implementation Working Group”. Revised Terms of Cooperation and work programme based on the existing one for the SEA Sub-regional ADS-B Implementation Working Group be further developed by the new Working Group.

ADS-B Collaboration Project in the South China Sea Area

3.4.77 Noting the progress of ADS-B Implementation made by States in the South China Sea area, the meeting encouraged States concerned to expedite implementation of the project and adopted following Conclusion:

**Conclusion 22/35 – Expedite ADS-B implementation project in South China Sea area**

That, States concerned with ADS-B implementation in the South China Sea area be urged to expedite required actions and coordination to achieve the implementation.

Australia-Indonesia Data Sharing Project

3.4.78 The CNS/MET SG/15 meeting noted that a satellite datalink between Australia and Indonesia was established to exchange the ADS-B data using multicast and using ASTERIX Category 21 Version 0.23. A Deed of Agreement to support ADS-B data sharing was signed on 20 September 2010. Full operation was achieved on 1 February 2011, with ADS-B data from adjacent FIRs on screen in both Brisbane and Makassar ATC centers.

Promotion of ADS-B Implementation by CANSO (WP/19)

3.4.79 The meeting was informed that CANSO has been promoting the implementation of ADS-B to enhance safety and efficiency in high traffic density airspace. CANSO and IATA support ICAO ADS-B activities and jointly promote the implementation of ADS-B in the Region starting with two trunk routes over the South China Sea i.e. L642 and M771. A cost benefit study conducted by CANSO in 2009 for the two routes showed significant savings and environmental benefits. Some other high traffic density routes over the South China Sea and the Bay of Bengal area that would benefit from ADS-B surveillance have been identified by CANSO. CANSO approached the Philippines and Brunei in 2010 to consider working together to enhance the benefits of ADS-B implementation. Subsequently CANSO conducted an ADS-B seminar in Manila for the Philippines in August 2010. The seminar discussed the Philippines' ADS-B master plan and the possibility of optimizing the ADS-B sites in the south. CANSO also conducted an ADS-B seminar in Yangon for Myanmar in February 2011. The seminar similarly discussed Myanmar's ADS-B master plan which was later presented to the ADS-B SITF/10 meeting in April 2011.

3.4.80 Need was identified for the States to work closely together to harmonise their ADS-B implementation plans to optimise overall benefits. States concerned were strongly urged to follow up on the proposed expansion of ADS-B coverage over the South China Sea and Bay of Bengal area.

Note of appreciation

3.4.81 The CNS/MET SG/15 meeting expressed appreciation and gratitude to the Civil Aviation Authority of Singapore for hosting the Tenth Meeting of ADS-B Study and Implementation Task Force (ADS-B SITF/10) and the Sixth Meeting of the SEA ADS-B Working Group in 2011 and for the excellent arrangements including all activities organized during the meeting.

Time and Venue of Next Meeting

3.4.82 The seventh meeting of SEA/BOB ADS-B Implementation Working Group is scheduled from 28 to 30 November 2011. The next ADS-B Study and Implementation Task Force meeting is scheduled for April or May 2012. The CNS/MET SG/15 meeting appreciated the kind offer made by India to host the seventh Working Group meeting in Chennai and the kind offer by the Republic of Korea to host the Eleventh ADS-B Study and Implementation Task Force meeting in Republic of Korea.

Review of Regional Surveillance Strategy

3.4.83 The meeting reviewed the regional Surveillance Strategy of Asia/Pacific Region which was updated by the ADS-B SITF/9, CNS/MET SG/14 and adopted by APANPIRG/21 in 2010 under Conclusion 21/41. The Strategy was considered appropriate and the CNS/MET SG/15 meeting did not identify the need to amend it.

Amendment to Regional Supplementary Procedure on ADS-B

3.4.84 Australia proposed to initiate amendment to Regional Supplementary Procedures (Doc7030) MID/ASIA to include requirement for aircraft operators to disable 1090 ES ADS-B transmissions that are misleading or are non compliant. The purpose of the proposal is to ensure that safety of air-air and air-ground operations is maintained. One state (Australia) promulgated regulations in 2007 that prohibits misleading and non compliant ADS-B transmissions. The regulation became effective in 2007 and applies to the whole Australian airspace at all flight levels. The proposed wording of the amendment is provided in **Appendix N** to this report.

3.4.85 The meeting generally supported the proposal and adopted following Conclusion:

**Conclusion 22/36 – Amendment to Regional Supplementary Procedures on ADS-B**

That, the Regional Supplementary Procedure Doc 7030 be amended in accordance with the established procedure to include regional requirements on ADS-B as provided in the **Appendix N** to the Report on Agenda item 3.4 .

Surveillance and Broadcast Services (SBS) Programme in USA

3.4.86 USA informed the CNS/MET SG/15 meeting about the status of Surveillance and Broadcast Services (SBS) implementation programme for both the air traffic control (ATC) separation service (also known as ‘ADS-B critical services’) and the up-linking of Traffic Information Services - Broadcast (TIS-B) and Flight Information Services – Broadcast (FIS-B) to the equipped aircraft. It was informed that approximately 300 ground stations had been installed across the National Airspace System (NAS) as on date and a total of 321 ground stations were scheduled to be installed later this year. The ground station deployment will be completed across the NAS, approximately everywhere there is a radar coverage by 2013. In response to a query as to what standards will be used for the critical service before ADS-B mandate in 2020, it was informed that a fusion of radar and ADS-B surveillance would be used for separation service.

Indian ADS-B Implementation Plan

3.4.87 In line with APANPIRG Conclusion, India plans to implement ADS-B at 14 locations i.e, Jaipur, Lucknow, Calicut, Agartala, Trivandrum, Ahmadabad, Guwahati, Port Blair, Nagpur, Mangalore, Coimbatore, Cochin, Varanasi and Amritsar for supplementing the MSSR coverage initially in the low density traffic areas. In these locations, ATS automation systems under implementation will have the capability to process input from ADS-B sensors. At 10 out of the above mentioned 14 Airports, ADS-B will be employed for the provision of ATC in Terminal Areas (where procedural ATC is in vogue presently). Implementation of ADS-B is also planned at Port Blair, to cater for increasing enroute surveillance. Implementing ADS-B at Port Blair will enable provision of efficient air traffic services on routes L759, P628, N877, P761 and L510 and aid the controllers in better conflict detection and separation over crossing points. The existing separation of 15 minutes over crossing points can be reduced to ATS surveillance separation minima allowing aircraft on crossing tracks to maintain optimum levels. India has successfully integrated all Radars in Chennai



FIR thus enabling seamless upper airspace with lower limit as FL 260. India has planned to issue ADS-B mandate for the entire Indian airspace and is planning to operationalise ADS-B stations by Dec 2013 as per ICAO Asia/Pacific regional plan. India is also willing to actively support and participate in the “South-East Asia and Bay of Bengal Sub-regional ADS-B Implementation Working Group” as adopted by APANPIRG/22. The meeting noted with appreciation India’s ADS-B implementation initiatives and India’s willingness to share the data with its neighboring States. Aircraft operators were urged to equip their aircraft suitably in a time-bound manner to facilitate implementation of ADS-B in APAC Region.

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