



*International Civil Aviation Organization*



**THE TENTH MEETING OF THE SOUTH EAST  
ASIA AND BAY OF BENGAL SUB-REGIONAL  
ADS-B IMPLEMENTATION WORKING GROUP  
(SEA/BOB ADS-B WG/10)**

Singapore, 11 - 13 November 2014

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**Agenda Item 2:           Review the outcome of ADS-B SITF/13 and APANIRG/25**

**OUTCOME OF ADS-B SITF/13 AND APANPIRG/25 ON ADS-B**

(Presented by the Secretariat)

**SUMMARY**

This paper reviews the outcome of APANPIRG/25 on ADS-B and works accomplished by the Thirteenth Meeting of ADS-B Study and Implementation Task Force and the Seventeenth meeting of CNS Sub-group of APANPIRG.

**1.       INTRODUCTION**

1.1           APANPIRG/25 meeting held from 8-11 September 2014 in Kuala Lumpur reviewed the outcome of the Thirteenth Meeting of the Automatic Dependent Surveillance – Broadcast (ADS-B) Study and Implementation Task Force (ADS-B SITF/13) and an ADS-B Seminar held from 22 to 25 April 2014 in Hong Kong China including the work accomplished by the Ninth meeting of the SEA and BOB ADS-B Working Group. The outcome of APANPIRG/25 on matters relating to ADS-B is provided at **Attachment** to this paper for review by this meeting.

1.2           The SEA/BOB ADS-B Working Group reports its outcome of discussion to APANPIRG through ADS-B Study and Implementation Task Force and CNS Sub-group of the ANPANPIRG. The complete report of the ADS-B SITF/13 meeting including review result of SEA/BOB ADS-B WG/9 meeting is posted at:  
<http://www.icao.int/APAC/Meetings/Pages/2014-ADSB-SITF13.aspx>

1.3           The reports of Thirteenth Meeting of ADS-B SITF and Ninth Meeting of the SEA/BOB Working Group were also reviewed by CNS SG/18 meeting held at ICAO Regional Sub-office in Beijing, China in July 2014 and noted by ATM SG/2 meeting held in Hong Kong China in August 2014.

## 2. DISCUSSION

2.1 APANPIRG/25 meeting noted the updates of implementation activities by States and developments and some issues observed during implementation of ADS-B in the Region. The actions taken by APANPIRG/25 meeting on ADS-B related matters are highlighted below:

- **Conclusion 25/40 – revised ADS-B Implementation and Guidance Document**  
That, the revised ADS-B Implementation and Guidance Document (AIGD) provided in APANPIRG/25/WP09, **Appendix T (including T2)** be adopted.  
(Follow-up State Letter T 8/10.21:AP146/14 (CNS) dacted 1 October 2014)
- **Conclusion 25/41 – Flight Plan Item 10 ADS-B Indicators**  
That, That, ICAO be invited to consider to amend relevant contents in Doc 4444 PANS/ATM Appendix 2 (A2-7) and Appendix 3 (A3-13) as shown below:
  - E Transponder — Mode S, including aircraft identification, pressure-altitude and ~~extended squitter (ADS-B out)~~ capability
  - L Transponder — Mode S, including aircraft identification, pressure-altitude, ~~extended squitter (ADS-B out)~~ and enhanced surveillance capability
  - B1 ADS-B with ~~dedicated 1 090 MHz ADS-B~~ “out” capability using 1 090MHz extended squitter.
  - B2 ADS-B with ~~dedicated 1 090 MHz ADS-B~~ “out” and “in” capability using 1 090MHz extended squitter.
- In this recommended amendment, there was duplication of indication of ADS-B carriage for aircraft where the Mode S transponder was the transmission device.
- This recommendation would be unlikely to require significant changes to ATM systems; the descriptors were unchanged but their interpretation was clarified. Some adaptation changes could be required where ANSPs were currently using the descriptors as triggers for system processing such as controller HMI indications.

Changes to flight planning systems would be required in cases where the text associated with each descriptor was provided for pilot reference and to individual States’ AIP where ICAO DOC 4444 flight planning requirements were repeated.

(this subject to further review by the ANC for the APANPIRG report)

- **Conclusion 25/42 – Regulations for Compliance of ADS-B Transmissions**  
That, States be urged to implement regulations to give effect to Regional Supplementary Procedure Serial APAC-S12/10 – MID/Asia 5-3 to ensure that all aircraft transmitting ADS-B are compliant with the standards.  
(This is 1<sup>st</sup> half of draft Conclusion 18/18 of CNS SG and Draft

Conclusion 13/4 of ADS-B SITF. This was further addressed by Ad Hoc working group of ADS-B on the operational requirement. State Letter T 8/2.11 & T 8/10.21:AP132/14 (CNS) and teleconference was held 3 November 2014)

### **Follow-up to AN-Conf/12 Recommendations**

2.2 The Twelfth Air Navigation Conference (AN-Conf/12) held in Montréal from 19 to 30 November 2012 made fifty-six recommendations under its six agenda items covering a variety of air navigation subjects. On 28 June 2013, APANPIRG/24 formulated Conclusion 24/4 requesting States and International Organizations, on the basis of analysis to take follow-up action as appropriate on the applicable recommendations of AN-Conf/12 and made Decision 24/5 asking the subgroups of APANPIRG to study the recommendations of the AN-Conf/12, initiate appropriate follow-up actions and submit a report on the outcomes of these actions to APANPIRG/25.

2.2.1 The responses from APAC States/Administrations, ADS-B SITF/13 and ACSICG/1 meetings were consolidated into a single recommended action by the CNS SG/18 meeting. The ATM SG/2 meeting held in August 2014 reviewed this outcome with some comments. The meeting reviewed the consolidated response from CNS SG/18 and ATM SG/2 (flimsy 2) and adopted the following Conclusion 18/1 endorsed by CNS SG/18 and ATM SG/2 meetings:

#### **Conclusion APANPIRG 25/27 – AN-Conf/12 Recommendations**

That, the regional response to the Recommendations of the AN-Conf/12, in APANPIRG/25/WP09 **Appendix A and flimsy 2** be adopted as guidance for consideration by the States.

2.3 APANPIRG/25 meeting appreciated the efforts and progress made by the ADS-B SITF and the SEA and BOB ADS-B WG.

2.4 New Zealand kindly offer to host next ADS-B Study and Implementation Task Force meeting (ADS-B SITF/14) scheduled for 14-17 April 2015 with 14 April for an ADS-B Seminar. This offer is recorded in the future work programme for APANPIRG under its Agenda Item 5 of APANPIRG/25 Report.

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

3.1 The meeting is invited to review the outcome of the APANPIRG/25 and take any necessary follow-up actions.

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**APANPIRG/25 Report on ADS-B related issues:**

3.4.31 The CNS SG/18 meeting reviewed an updated version of the ADS-B Implementation and Guidance Document (AIGD) that incorporated guidance for monitoring and analysing of the performance of ADS-B avionics, synergy between ADS-B and GNSS, revised ATC phraseology and clarification on the flight planning requirements. In view of the foregoing, the meeting adopted the draft Conclusion 18/16 endorsed by CNS SG/18 and ATM SG/2 meetings as follows:

**Conclusion APANPIRG 25/40 – Revised ADS-B Implementation and Guidance Document**

That, the revised ADS-B Implementation and Guidance Document (AIGD) provided in APANPIRG/25/WP09, **Appendix T (including T2)** be adopted.

3.4.32 It was foreseen by APANPIRG/25 that increasing number of States worldwide would start to formulate plans to implement ADS-B in order to meet their operational needs and implement relevant Aviation System Block Upgrades (ASBUs). Therefore, the meeting recommended that the AIGD should be promulgated to States in other Regions as guidance materials for experience and knowledge sharing on ADS-B implementation in order to reap early operational benefits and save efforts. The CNS SG/18 meeting was informed that the AIGD had already been forwarded to other ICAO Regional Office for their reference and agreed to seek assistance from ICAO Headquarters to make the AIGD available to States in other Regions to achieve better synergy in ADS-B implementation.

3.4.33 Taking into account that serviceable ADS-B capability was not always consistently indicated in Flight Plan data, CNS SG/18 meeting endorsed the Draft Conclusion 18/17 about Flight Plan Item 10 ADS-B Indicators which was adopted by the meeting as follows:

**Conclusion APANPIRG 25/41 – Flight Plan Item 10 ADS-B Indicators**

That, ICAO be invited to consider to amend relevant contents in Doc 4444 PANS/ATM Appendix 2 (A2-7) and Appendix 3 (A3-13) as shown below:

- E Transponder — Mode S, including aircraft identification, pressure-altitude and ~~extended squitter (ADS-B out)~~ capability
  - L Transponder — Mode S, including aircraft identification, pressure-altitude, ~~extended squitter (ADS-B out)~~ and enhanced surveillance capability
  - B1 ADS-B with dedicated 1 090 MHz ADS-B “out” capability using 1 090MHz extended squitter.
  - B2 ADS-B with dedicated 1 090 MHz ADS-B “out” and “in” capability using 1 090MHz extended squitter.
- In this recommended amendment, there was duplication of indication of ADS-B carriage for aircraft where the Mode S transponder was the transmission device.
  - This recommendation would be unlikely to require significant changes to ATM systems; the descriptors were unchanged but their interpretation was clarified. Some adaptation changes could be required where ANSPs were currently using the descriptors as triggers for system processing such as controller HMI indications.

- Changes to flight planning systems would be required in cases where the text associated with each descriptor was provided for pilot reference and to individual States' AIP where ICAO DOC 4444 flight planning requirements were repeated.

3.4.34 The meeting recalled that a number of Asia Pacific States required State of Registry operational approvals for the receiving ADS-B based surveillance service in the airspaces commencing from December 2013, possibly to comply with earlier APANPIRG conclusion 21/39 – Template for promulgation of ADS-B Avionics Equipage Requirements and other related conclusions, namely conclusion 21/40 – Guidelines for Airworthiness and operational approval for ADS-B Avionics Equipage and conclusion 20/54 - Regional ADS-B Equipage Requirement.

3.4.35 At ADS-B SITF/13 meeting, a number of States recommended that States and ANSPs should reconsider any current requirements for “operational approval” for aircraft operators, and remove any such reference to a requirement for an “operational approval” or “operational specification” from State regulations and AIP. Experience gained in some States shows that the basis for part b/ of the conclusion C21/39: Template for promulgation of ADS-B Avionics Equipage Requirements (*the aircraft operator must have the relevant operational approval from the State of Registry*) may have evolved and warrants review as causes of transmission of erroneous data (wrong flight ID, installation problems etc) appeared to have been largely mitigated. However it may have occurred thanks to a ten year effort to track and mitigate erroneous avionics/installations by the concerned States. Furthermore there was no clear evidence of benefits of operational approval. To that extent maintaining or adopting an operational approval for ADS-OUT may be an unnecessary and costly process for stakeholders (users, regulators).

3.4.36 On the other hand, it was recognized that new States may require sufficient time to gain that experience and consider operational approval to comply with APANPIRG Conclusions 21/39, 21/40 and 21/41 and those States would rely on conclusion 21/39, conclusion 21/40 on the operational approval guidelines and conclusion 20/54 regarding ADS-B authorization to request an operational approval.

3.4.37 It was discussed that the APAC Region would benefit from an alignment with the experience of States that have used ADS-B for many years. This would in turn provide substantial benefits to operators and enhance inter-regional operations.

3.4.38 As a result of discussions, the meeting agreed on a recommendation to review the conclusion 21/39 with interested parties and to form an ad hoc group with following terms of reference:

- Review the APANPIRG Conclusion 21/39 (and 21/40 and 20/54) with interested parties before 11 November 2014 to reach a consensus on “to require or not require an Operations Specification or Operational Approval for ADS-B OUT” with the following participation:
  - Australia, Hong Kong China, India, Singapore, Viet Nam, USA. Other parties, if any, were invited to join before 30 September 2014.
  - IATA, IBAC as international organizations.
  - ICAO as facilitator.
- Discuss the potential changes at SEA/BOB ADS-B WG/10, 11-13 November 2014.
- Report results of review and recommendation regarding continued applicability of Conclusion 21/39 to APANPIRG and ADB-SITF by correspondence.
- Report to RASG meeting and DGCA/51 Conference, 24-27 November 2014.

3.4.39 India while supporting the adoption of the conclusion expressed its willingness to be a member of the ad-hoc formal group. ADS-B out receivers have been commissioned in 21 locations and India is planning for mandating ADS-B (OUT) in Indian airspace from 2016 onwards.

3.4.40 It was discussed that meanwhile the first bullet of Draft Conclusion 18/18 about Regulations for Compliance of ADS-B Transmissions had to be adopted. Therefore Draft Conclusion 18/18 was amended and adopted by the meeting as follows:

**Conclusion APANPIRG 25/42 – Regulations for Compliance of ADS-B  
Transmissions**

That, States be urged to implement regulations to give effect to Regional Supplementary Procedure Serial APAC-S12/10 – MID/Asia 5-3 to ensure that all aircraft transmitting ADS-B are compliant with the standards;

3.4.42 The meeting noted the decision 18/23 - *Development of the CNS part of future eANP in the CNS fields and associated Proposals for Amendments (PfAs)* by CNS SG/18 meeting to develop a new APAC ANP/eANP (CNS Part) based on the Council-approved ANP Template as part of the work programme of the APANPIRG CNS Sub-group. The APAC ANP/eANP (CNS Part) would be expected to be presented to APANPIRG/26 in 2015 for endorsement.

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