

International Civil Aviation Organization



**AUTOMATIC DEPENDENT  
SURVEILLANCE – BROADCAST SEMINAR  
AND FOURTEENTH MEETING OF  
AUTOMATIC DEPENDENT  
SURVEILLANCE – BROADCAST (ADS-B)  
STUDY AND IMPLEMENTATION TASK  
FORCE (ADS-B SITF/14)**



Christchurch, New Zealand, 14 – 17 April 2015

---

**Agenda Item 4: Review States' activities and interregional issues on implementation of ADS-B and multilateralism**

**ADS-B STATE OF REGISTRY ADS-B APPROVAL ISSUES  
(REVIEW OF THE RESULT OF RESPONSE FROM STATES)**

**OPERATIONAL APPROVAL FOR RECEIVING ADS-B BASED SURVEILLANCE SERVICE**

(Presented by the Secretariat)

**SUMMARY**

This paper presents the outcomes of an ad-hoc working group established by APANPIRG to review Conclusions and Draft Conclusions relating to ADS-B, and specifically to address the removal of any requirement for operational approvals by the State of Registry. It reviews the result of discussion of SEA/BOB ADS-B WG/10 meeting on the subject. The meeting is invited to note the follow-up action taken by the Secretariat and responses from States/Administration to the State Letter. The meeting is expected to develop a recommendation for a solution.

**1. INTRODUCTION**

1.1 The APANPIRG/25 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.

1.2 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).

1.3 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.

## 2. DISCUSSION

### Guidance given APANPIRG/25

2.1 It was considered 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.

2.2 As a result of discussions, the APANPIRG/25 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.

2.3 India while supporting the adoption of the conclusion expressed its willingness to be a member of the ad-hoc 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.

2.4 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;

2.5 In considering the draft Conclusion mentioned above, APANPIRG/25 did not adopt second part of the draft Conclusion as mentioned above i.e. “States in the Asia and Pacific Regions may choose to require or not require an Operations Specification or Operations Approval for ADS-B OUT”. APANPIRG therefore asked the ad hoc group to develop a consensus on the requirement.

### **Outcome of a Teleconference of Ad Hoc Group**

2.6 The discussion and outcomes of the ad hoc group are provided in its Summary of Discussions including:

- **Proposed Draft Conclusion 26/xx:** Airworthiness and Filtering Processes for ADS-B Avionics Equipage;
- **Revised Conclusion 26/xx (21/39)** – Template for Promulgation of ADS-B Avionics Equipage Requirements; and
- **Revised Conclusion 26/xx (21/40)** – Guidelines for Airworthiness and Operational Approval for ADS-B OUT Avionics Equipage.

### **Outcome of the SEA/BOB ADS-B Working Group/10 meeting**

2.7 The SEA/BOB ADS-B WG/10 meeting discussed the outcome from the web-conference of the Ad Hoc Working Group on 4 November 2014, and agreed to the following Draft Conclusions:

#### **Draft Conclusion SEA/BOB ADS-B WG 10/1– Airworthiness and filtering process for ADS-B Avionics Equipage**

That, considering the need to harmonize States’ practices regarding Airworthiness and Operational Approval for ADS-B Avionics Equipage, and the outcomes of the Ad hoc working group on the review of the APANPIRG Conclusions 21/39, 21/40 and 20/54, and specifically that:

- i) in the light of experience, an operational approval from the State of Registry is neither an efficient nor a sufficient safety barrier against avionics transmitting misleading or non-compliant ADS-B;
- ii) in the light of experience, ADS-B data compliant with ICAO Annex 10, but transmitted from airframes having no operational approval from the State of Registry, contribute to the safety and efficiency of ATS services and provide concerned users with a better service;
- iii) both APANPIRG Conclusion 25/42 on regulations for Compliance of ADS-B Transmissions, urging States 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, and Conclusion

20/54 about Regional ADS-B Equipage Requirement and the certification process, constitute a first safety barrier to misleading and non-compliant ADS-B transmissions;

- iv) in the light of experience, a monitoring of misleading and non-compliant ADS-B transmissions and reactive filtering out of concerned aircraft (black list), and necessary follow-up with concerned operators, and their state regulators for the foreign registered aircraft, is an efficient second safety barrier to misleading and non-compliant ADS-B transmissions;
- v) in the light of experience, that air crew are already experienced in correct operation of ATC transponder and GPS systems, and that there is no ADS-B OUT specific action that the flight crew can take, and that whilst desirable, ADS-B OUT training has minimal (if any) impact on the safety and efficiency of ADS-B OUT based operations; and
- vi) in the light of the similarity of ADS-B systems to ATC transponder systems, and the fact that ATC transponder systems do not require operational approval.

States be urged to:

- a) consider that no operational approval for ADS-B OUT operations is required while reminding airlines, operators, manufacturers and industry of their obligations including training and maintenance aspects;
- b) monitor ADS-B transmissions from aircraft and take action to ensure compliance with Regional Supplementary Procedure MID/ASIA Section 5.5; and
- c) provide capabilities to either
  - reject ADS-B data from aircraft which are known to transmit misleading ADS-B data until corrective actions have been successfully conducted; or
  - implement procedures to ensure that such aircraft are safely managed;

**Draft Conclusion SEA/BOB ADS-B WG 10/2 – Template for promulgation of ADS-B Avionics Equipage Requirements**

That, based on APANPIRG Conclusion 20/54, States intending to implement ADS-B based surveillance service for a defined airspace and having not published regulations be urged to promulgate mandating rules for ADS-B Avionics Equipage Requirements as soon as possible using the following template:

On and after dd/mm/yyyy, if an aircraft operates on airways (insert routes).....at  
or above FLXXX.....(or in defined airspace boundaries ..... at or above FLXXX):

the aircraft must carry serviceable ADS-B transmitting equipment that has been certificated as meeting EASA AMC 20-24, or FAA AC No. 20-165A – Airworthiness Approval of ADS-B, or meets the equipment configuration standards in Appendix XI of Civil Aviation Order 20.18 of the Civil Aviation Safety Authority of Australia;

An aircraft carrying 1 090 MHz extended squitter (1090ES) ADS-B equipment shall disable ADS-B transmission unless:

- a) the aircraft emits position information of an accuracy and integrity consistent with the transmitted value of the position quality indicator; or
- b) the aircraft always transmits a value of 0 (zero) for one or more of the position quality indicators (NUCp, NIC, NAC or SIL); or
- c) the operator has received an exemption granted by the appropriate ATS authority.

*Note: This Conclusion supersedes APANPIRG Conclusion 21/39*

#### **Draft Conclusion SEA/BOB ADS-B WG 10/3 – Guidelines for Airworthiness Approval for ADS-B Avionics Equipage**

That, States be advised to use the guidelines provided in **Appendix A** for Airworthiness Approval for ADS-B Out Avionics Equipage.

*Note: This Conclusion supersedes APANPIRG Conclusion 21/40*

#### **Correspondence with chairs of ADS-B SITF, CNS SG and APANPIRG**

2.8 The outcome of the Ad Hoc Group meeting and SEA/BOB ADS-B WG/10 meeting was reported to the Chairpersons of the APANPIRG, CNS Sub-group, and ADS-B Study and Implementation Task Force who informed the ICAO Regional Office that they favored a fast track process for consulting with States/Administrations and International Organizations on the three draft Conclusions developed by the Ad hoc Working Group and updated by the SEA/BOB ADS-B WG/10. These would be additional Conclusions as consequential outcome of APANPIRG/25.

#### **4<sup>th</sup> RASG-APAC Meeting and 51<sup>st</sup> DGCA Conference**

2.9 A brief report of the work completed by the Ad hoc Working Group and subsequent discussions by SEA/BOB WG/10 meeting were presented to the 4th RASG-APAC Meeting (20 - 21 November 2014) and to the 51st DGCA Conference (24 - 26 November 2014) as directed by the APANPIRG/25 action plan.

#### **2.10 Response to ICAO State letter from States/Administrations**

2.10.1 In following up the action plan, ICAO Regional Office issued the State Letter T8/2.11 & T 8/10.21:AP167/14 (CNS) dated 11 December 2014 regarding adoption of draft Conclusions 25/52, 25/53 and 25/54. By the specified deadline 29 December 2014, some responses were received from States/Administrations (Hong Kong China, Japan, USA, Australia, Thailand and New Zealand), most of which expressed either no comments or supported the adoption of Draft Conclusions 25/25, 25/53 and 25/54. In the response, Hong Kong China provided following comments:

*“The draft Conclusions 25/25, 25/53 and 25/54 as agreed by the SEA/BOB WG/10 are acceptable to Hong Kong China. We support the removal of the ADS-B (Out) operational approval; however, we will continue supporting our operators by granting them the operational approval if it is a prerequisite for them to operate elsewhere.”*

2.10.2 In response to the State letter, Japan provided comments as follows:

*“At present, when the state of registry authorizes the ADS-B OUT operation, he/she inspects and ensures that the air operator has developed training programs of air crew and normal and emergency operating procedures. If no operational approval for ADS-B OUT operations is required, the state of registry probably can't ensure that the air operator establishes training programs and proper operating procedures. Therefore, we think that operational approval for ADS-B OUT operations should be required.”*

2.10.3 Further correspondence was exchanged with Japan with additional explanations. On 19 January 2015, and 27 February 2015, Japan responded maintaining its position i.e. operational approval is the way to enhance or ensure that proper training and adequate procedure in place for airlines to receive ADS-B based surveillance service. The following was stated in Japan's additional responses:

*“When the state of registry approves/accepts operations manual, he/she does not inspect operator establishes all training programs which are required in applying for ADS-B OUT operational approval. Therefore, the state of registry need to perform ADS-B OUT operational approval to ensure that operator establishes appropriate training programs for ADS-B OUT operations. Also, general aviation operator doesn't have operations manual and need not get approval for their training program. So State can't ensure that all operators establish appropriate training programs and operational procedures for ADS-B OUT if he/she does not perform operational approval. In previous e-mail, I listed some of the requirements extracted from the circular which Japan establishes for approving ADS-B OUT operation (similar to AMC 20-24), but those are only part of the training requirements for getting operational approval. Most of the requirements described in the JCAB circular or AMC 20-24 are not included in the AOC requirements.”*

2.10.4 It was further stated that:

*“ when avionics transmitting misleading or non-compliant ADS-B ( e.g. incorrect Flight ID but the pilot is unable to re-set the Flight ID ), pilot may switch off ADS-B OUT, requested by ATC. (Of course to swap transponder is one of the means for corrective action.) As mentioned in above description, pilot needs to understand that 'disabling the ADS B function will also lead to disable the ACAS function when there is not an independent Flight Deck Control selection between the ADS-B function (ADS-B on/off) and the ATC transponder function' for emergency. In addition, emergency procedures depend on the type of equipment carried and we think operator needs to establish training program related with above emergency procedures. ”*

2.10.5 It was further stated that:

*“not (requiring?) operational approval was not an efficient safety barrier against the misleading transmissions. In other words, airworthiness requirements have an influence on the safe operation of ADS-B, but it isn’t clear that operational approval does have no effect on the safe operation of ADS-B at present. ... Therefore, we think it is too early to determine that no operational approval is required...”*

**Way forward**

2.11 Once common understanding is achieved through discussions by the ADS-B SITF based on the input by SEA/BOB ADS-B WP/10, the meeting is invited to endorse those draft Conclusions agreed by the SEA/BOB ADS-B WG/10 for consideration by APANPIRG through CNS SG as listed in the paragraph 2.7 of this paper.

**3. ACTION BY THE MEETING**

3.1 The meeting is invited to discuss information provided in this paper and consider the proposed action “Way forward as highlighted in paragraph 2.11, 2.12 and 2.13 as appropriate.

3.2 The meeting is invited to endorse Draft Conclusions -

- **Draft Conclusion SEA/BOB ADS-B WG 10/2** – Template for promulgation of ADS-B Avionics Equipage Requirements and Draft Conclusion;
- **Draft Conclusion SEA/BOB ADS-B WG 10/3** – Guidelines for Airworthiness Approval for ADS-B Avionics Equipage;
- **Draft Conclusion SEA/BOB ADS-B WG 10/1**– airworthiness and filtering process for ADS-B Avionics Equipage or discuss a revised version as necessary.

-----