



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, 12 - 13 November 2014

Agenda Item 3: Review implementation and co-ordination activities and sub-regional implementation plans

3.6) Harmonization of ADS-B regulations, rules and procedures

**OUTCOMES OF THE AD-HOC WORKING GROUP ON THE REVIEW
OF APANPIRG CONCLUSIONS RELATING TO ADS-B**

(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.

1. INTRODUCTION

1.1 The 13th Meeting of the Asia/Pacific Region ADS-B Study and Implementation Task Force (ADS-B SITF/13, Hong Kong, China, 22 – 25 April 2014) developed a draft Conclusion *inter alia* proposing that administrations may elect to either require or not require the operational approval of the State of Registry for aircraft transmitting ADS-B data and receiving an ADS-B service.

1.2 The 25th Meeting of the Asia/Pacific Region Air Navigation Planning and Implementation Regional Group (APANPIRG/25, Kuala Lumpur, Malaysia, 8 – 11 September 2014) considered the Draft Conclusion, and elected to form an ad-hoc group to reach a consensus on the requirement or otherwise for operational approval for ADS-B OUT. The ad-hoc group met in a web-based conference on 3 November 2014, formulating revisions to Conclusions 21/39 and 21/40, and a proposed Draft Conclusion for consideration by ADS-B SITF and APANPIRG.

2. DISCUSSION

2.1 APANPIRG *Conclusion 21/39 – Template for Promulgation of ADS-B Avionics Equipage Requirements*, adopted in 2010, included guidance for Asia/Pacific States intending to regulate for introduction of an ADS-B surveillance service. The text of the template included the requirement that *the aircraft operator must have the relevant operational approval from the State of Registry*. Post-implementation operational experience had subsequently demonstrated that the requirement for operational approvals was not necessary, and hindered both safety and efficiency.

2.2 Proposals to remove the Conclusion 21/39 requirement for operational approval had been discussed at several ADS-B-SITF and SEA/BOB ADS-B WG meetings. Several administrations including Australia and USA supported the removal of the requirement but some others, including some administrations that had mandated ADS-B equipage in certain airspace from December 2013, supported retention of the requirement. In order to permit States and Administrations to remove any requirement for operational approvals ADS-B SITF/13 agreed to the following Draft Conclusion, for further consideration by CNS Sub-Group and APANPIRG:

Draft Conclusion 13/4 - 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;

States in the Asia and Pacific Regions may choose to require or not require an Operations Specification or Operations Approval for ADS-B OUT.

2.3 In considering the Draft Conclusion APANPIRG/25 agreed to the portion of the Draft Conclusion relating to Regional Supplementary Procedure MID/Asia 5-3 (Conclusion 25/42). The meeting also agreed to a recommendation to review Conclusion 21/39, forming an ad-hoc group to:

- 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 the results of the review and recommendations regarding continued applicability of Conclusion 21/39 to APANPIRG and ADB-SITF by correspondence; and
- Report to the RASG meeting and DGCA/51 Conference, 24-27 November 2014.

2.4 The discussion and outcomes of the ad hoc group are provided in its Summary of Discussions (**Attachment A**), including:

- proposed Draft Conclusion 26/XX: Airworthiness and Filtering Processes for ADS-B Avionics Equipage;
- revised Conclusion 21/39 – Template for Promulgation of ADS-B Avionics Equipage Requirements; and
- revised Conclusion 21/40 – Guidelines for Airworthiness and Operational Approval for ADS-B OUT Avionics Equipage.

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

- a) note the information contained in this paper; and
- b) discuss and agree to the proposed Draft Conclusion and revised Conclusion.

Summary of Discussions (final edition)

**Ad hoc working group on ADS-B OUT conclusions
Review of the APANPIRG Conclusions 21/39, 21/40 and 20/54**

03 Nov. 14 meeting outcome

Participants:

- Mr. Greg Dunstone, Mr. Kojo Owusu, Mr. Warren Beeston (Australia)
- Mr. Jianqing Jia (China)
- Mr. MH Hui, Mr Ron Wong, Mr Tommy Woo, Mr Thomson Luk (Hong Kong China)
- Mr. Roy Johanis, Mr. Eko Trisnanto (Indonesia)
- Mr. Takashi Ito (Japan)
- Mr. Wee Sin (Singapore)
- Mr. Brian Bagstad (USA)
- Mr. Shane Sumner, Mr. Li Peng (ICAO Regional Office)

Moderator: Mr. Frederic Lecat (ICAO Regional Office)

The following agenda was adopted:

1. lessons learnt by experienced APAC States on ADS-B OUT operational approval; process conducted now to mitigate risks of misleading ADS-B transmissions
2. for non-experienced APAC States on ADS-B OUT, problems expected to be covered by any form of operational approval (and that would not be covered by certification and a black list based monitoring processes)
3. experience of airspace users (IATA, IBAC) with ADS-B operational approval
4. development of conclusions and recommendation

Summary of discussions :

1. adoption of agenda

The tentative agenda was adopted.

2. lessons learnt by experienced APAC States on ADS-B OUT operational approval; process conducted now to mitigate risks of misleading ADS-B transmissions

Inputs were received from Airservices Australia and FAA and presented during the meeting.

3. for non-experienced APAC States on ADS-B OUT, problems expected to be covered by any form of operational approval (and that would not be covered by certification and a black list based monitoring processes)

No such problem was reported upon in the meeting.

4. experience of airspace users (IATA, IBAC) with ADS-B operational approval

Mr. David Rollo (IATA) could not join the meeting due to technical connection problems, but confirmed by email IATA's support to the removal of the requirement and that ADS-B should be treated like "normal" mature avionics such as Transponders.

5. development of conclusions and recommendation

Based on the initial drafting the meeting reviewed and agreed on the new draft conclusions and on a revised text for conclusions *Conclusion 21/39 – Template for promulgation of ADS-B Avionics Equipage Requirements* and *Conclusion 21/40 – Guidelines for Airworthiness and Operational Approval for ADS-B Avionics Equipage* which are provided in the Attachment to this Summary of Discussion.

Next steps will be:

- 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.

The way the new draft conclusion could be adopted was discussed.

2 possible solutions:

- Standard process (draft conclusion elevated through ADS-B SITF, CNS and APANPIRG)
- Fast track process, as some degree of urgency was felt during APANPIRG/25 meeting. In this case the Secretariat would circulate the conclusion developed by the ad hoc WG and reviewed by SEA/BOB ADS-B WG to all APAC States/Administrations and International Organizations and asks officially if the conclusion is accepted, in order to expedite the matter.

It was discussed that these two ways forward would be highlighted in the correspondence to APANPIRG and ADB-SITF.

Hong Kong China mentioned that the CNS SG chairman should also be consulted if the fast track process was adopted.

ATTACHMENT

Draft Conclusions

03 Nov. 14 meeting outcome

Conclusion 26/XX – 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 conclusion 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, yet 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;

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

a/ States be urged to 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/ States be urged to monitor ADS-B transmissions from aircraft and take action to ensure compliance with Regional Supplementary Procedure Serial APAC-S12/10 – MID/Asia 5-3

c/ States be urged to provide capabilities to either

- i) reject ADS-B data from aircraft which are known to transmit misleading ADS-B data until corrective actions have been successfully conducted; or
- ii) implement procedures to ensure that such aircraft are safely managed;

d/ following amendments to the conclusions 21/39 and 21/40 be adopted:

Conclusion 21/39 – 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 rule 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 meets the equipment configuration standards in Appendix XI of Civil Aviation Order 20.18 of the Civil Aviation Safety Authority of Australia; **(need to include a reference to FAA provisions? EASA mandate?)** and

template to be modified to track the compliance against Regional Supplementary Procedure Serial APAC-S12/10 – MID/Asia 5-3 to ensure that all aircraft transmitting ADS-B are compliant with the standards

Conclusion 21/40 – Guidelines for Airworthiness and Operational Approval for ADS-B Avionics Equipage

That, States be advised to use the guidelines provided in Appendix P to the Report on Agenda Item 3.4 for Airworthiness and Operational Approval for ADS-B Out Avionics Equipage.

Appendix P quoted in Conclusion 21/40:

Guidelines for Airworthiness and Operational Approval for ADS-B Avionics Equipage

- a) The airworthiness compliance of the aircraft under the airframe OEM Type Certificate approval in the Airplane Flight Manual, in an AFM supplement or other appropriate airworthiness documentation is normally accepted by the State of Registry. If the aircraft does not have an existing certification, compliance with Appendix XI of CASA CAO 20.18 specified requirements needs to be established;
http://www.casa.gov.au/wcmswr/_assets/main/download/orders/cao20/2018.pdf
- b) The continuing airworthiness of ADS-B system must be assured. Existing established maintenance practices or a proposed maintenance programme for the aircraft needs to be reviewed to ensure that it meets relevant requirements. This is typically a demonstration that ADS-B is included as part of the normal maintenance process in the documentation provided; (NB: most ADS-B systems comprise transponder & GPS systems already the subject of existing maintenance and ongoing airworthiness programs)
- c) The Minimum Equipment List needs to reflect the functional requirements of the ADS-B system;

d) Appropriate flight operations training programme and operational procedures are established to ensure that pilots are knowledgeable about their onboard operational equipment. This is typically a demonstration that all used aircraft systems are included in the training process and operational documentation including Flight Dispatch considerations;

In light of the fact that usually there are no ADS-B specific actions 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, it is not considered essential that flight crew have been trained explicitly on ADS-B
