



International Civil Aviation Organization

**THE NINTH MEETING OF AUTOMATIC
DEPENDENT SURVEILLANCE – BROADCAST
(ADS-B) STUDY AND IMPLEMENTATION TASK
FORCE (ADS-B SITF/9)**



Jakarta, Indonesia, 18 -19 August 2010

**Agenda Item 5: Report and updates by the leading member of the Task Force on
Tasks assigned**

**HARMONISATION OF ADS-B AIRSPACE MANDATES AND
OPERATIONAL APPROVALS**

(Presented by New Zealand)

SUMMARY

The promulgation of ADS-B airspace designations and the operational approval of aircraft are key to implementation success. This paper identifies the key elements for implementation.

1. Introduction

1.1 The successful implementation of ADS-B depends on States promulgating the requirements and for operators to achieve operational approval. Further, timely publication of State requirements affects the early take-up by operators.

1.2 Operational approval for operators is necessary but needs to follow the procedures already established for other operational approvals such as RVSM and the numerous PBN navigation specifications. Utilising existing processes will maintain a simple consistency through the regulatory approval process.

2. Discussion

2.1 The promulgation of airspace requirements for ADS-B in States needs to occur as early in the process as possible. Where ADS-B is to be implemented with the intent of being upgraded to later standards e.g. DO-260B, States need to provide as much lead-time as possible for aircraft manufacturers to plan upgrades / retrofits and operators to make business decisions to equip aircraft appropriately or plan their required equipment upgrades. It is therefore recommended that States include the following information in the documentation when mandating ADS-B airspace:

- a. Identify the airspace or routes that will require ADS-B equipment;
- b. Define the ADS-B performance standard(s) required recognising both EASA AMC 20-24 and CASA CAO 20.18;

- c. The dates for initial implementation and if any upgrades required. These dates and timeline should identify when the ATS ADS-B services becomes available and when full compliance with the requirements become effective; and
- d. Provide appropriate analyses and business case studies that the implementation and upgrades are supported by cost benefit criteria

2.2 Attachment 1 contains a template for an APAC State to issue a regulatory mandate for aircraft ADS-B equipment carriage in defined routes / areas of airspace.

2.3 The PBN Manual ICAO Doc 9613 states that States must manage the operating approvals for each of the navigation specifications. Similarly, an equivalent regime is in place for RVSM. It is therefore appropriate that ADS-B approvals follow the same overall procedures for consistency and global harmonization.

2.4 Under the RVSM approval regime, States are required to register RVSM compliant aircraft with an operating approval with a Regional Monitoring Agency. RASMAG is working towards States registering aircraft with PBN operating approvals with an Enroute Monitoring Agency in the same manner as RVSM. It is therefore recommended that ADS-B OUT and eventually ADS-B IN approvals be registered with a Monitoring Agency using the processes that exist for RVSM and PBN.

2.5 When initially proposed, RVSM and PBN operational approvals would have been registered with different Monitoring Agencies. To reduce overheads and duplication, a proposal was made to RASMAG to have all operational approvals registered with single Asia Pacific Approval Monitoring Agency; that could share / distribute the data to the other similar Regional Approval Monitoring Agencies.

2.6 The State of Registry is responsible for the operational approval of their aircraft in accordance with Annex 6 Chapter 4. In assessing an aircraft and the operator, the following aspects need to be considered:

- 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 are 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 has to be established;
- b. The continuing airworthiness of ADS-B system must be assured. As part of the operational approval process, 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;
- 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 ADS-B operations and their onboard operational equipment. This is typically a demonstration that ADS-B is included in the training process and operational documentation including Flight Dispatch considerations.

2.7 When the airworthiness, continued airworthiness and operational requirements are met, the State of Registry will issue an operational approval to the operator in accordance with their normal procedures. Common methods are Ops Specs revision, Instrument of Authorisation or Letter of Approval. When required, the approval is registered with the relevant Regional Approval Monitoring Agency.

2.8 With an operational approval from the State of Registry, an operator can now be accepted to conduct operations in foreign States.

2.9 If a State Regulator does not have the ability to carry out the operational approval as described above, it is recommended that they seek technical assistance from a State Regulator that has the skills needed.

3. Action by the Meeting

3.1 The meeting is invited to:

- a. Note the recommended practices identified above; and
- b. Follow the procedures when carrying out ADS-B approvals to maintain a harmonised process with other operational approvals such as PBN and RVSM.

ATTACHMENT 1:

Draft Conclusion

Recognising APANPIRG Conclusion 20/54, Asia Pacific States who have not already promulgated Aircraft Equipage Requirements are recommended to utilise the following template when developing their rules

For defined airspace

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

(a) 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; and

(b) the aircraft operator must have the relevant operational approval from the State of Registry.

TF recommends that all Asia Pac states regulate as follows:

After <insert earliest date that ADS-B may be used for any relevant operational purpose> if an aircraft carries ADS-B transmitting equipment which does not comply with 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; and the aircraft must not fly unless the equipment is:

- (a) deactivated; or*
- (b) set to transmit only a value of zero for the NUCp or NIC.*

Note It is considered equivalent to deactivation if NUCp or NIC is set to continually transmit only a value of zero.

2. Regulators should take appropriate action to ensure that such regulations are complied with.

3. ATC systems should discard ADS-B data when NUC or NIC=0

In the implementation of the approval process, the State of Registry should use the following guidance.

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- f. The continuing airworthiness of ADS-B system must be assured. As part of the operational approval process, 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.

- g. The Minimum Equipment List needs to reflect the functional requirements of the ADS-B system.
- h. Appropriate flight operations training programme and operational procedures are established to ensure that pilots are knowledgeable about ADS-B operations and their onboard operational equipment. This is typically a demonstration that ADS-B is included in the training process and operational documentation including Flight Dispatch considerations..

When the airworthiness, continued airworthiness and operational requirements are met, the State of Registry will issue an operational approval to the operator in accordance with their normal procedures. Common methods are Ops Specs revision, Instrument of Authorisation or Letter of Approval. When required, the approval is registered with the relevant Regional Approval Monitoring Agency.