



International Civil Aviation Organization

**THE NINTH MEETING OF THE SOUTHEAST ASIA AND BAY OF BENGAL
SUB-REGIONAL ADS-B IMPLEMENTATION WORKING GROUP
(SEA/BOB ADS-B WG/9)**

Beijing, China, 30 October - 1 November 2013

Agenda Item 5: Review of sub-regional implementation plans

5.4) Harmonization of ADS-B Regulations, rules & procedures

THE NEED FOR “STATE OF REGISTRY” OPERATIONAL APPROVAL

(Presented by Australia)

SUMMARY

This paper discusses the need for “Operational Approvals” by the aircraft State of Registry. The experience of Australia in the provision of ADS-B services is that a requirement for prior approvals will restrict the safety and efficiency benefits and traffic separation by ATC is better served by accepting all aircraft having compliant ADS-B transmissions.

1. BACKGROUND

1.1 Initially in the provision of ADS-B services almost 10 years ago, Australia required an Ops Specification or Letter of Approval be provided by the aircraft operator before ADS-B data from the operator’s aircraft could be used for air traffic surveillance by the ANSP. That requirement was based on assuring that the aircraft ADS-B equipment was compliant with the relevant technical and operational standards published by the Australian regulator in 2007 and that there was attestation that the air crew were competent to operate in ADS-B based surveillance airspace.

1.2 During this introductory period, many airline operators had difficulty or could not obtain the authorizing documents from their regulators, not because the aircraft equipment was non-compliant or the crew not trained, but because State regulators did not have an ADS-B approval system in place or did not understand what an approval entailed. As a consequence, many aircraft transmitting high performance surveillance data were not provided to ATC and such aircraft were not receiving the advantages of an ADS-B based traffic surveillance service.

1.3 APANPIRG conclusion for operational approval

1.3.1 The requirement for aircraft operators to have an operational approval from their State stemmed from APANPIRG Conclusion 21/39 which was made in 2010. That Conclusion included a template for the guidance of Asia-Pacific States intending to regulate for introduction of an ADS-B surveillance service. The text of that template included the requirement that “the aircraft

operator must have the relevant operational approval from the State of Registry". Subsequently, Australia examined the performance of ADS-B transmitted by aircraft that were not approved by their State of Registry – and found that in nearly all cases the data was as good as approved data. Those aircraft that were not transmitting compliant ADS-B were clearly detected by the ANSP mainly because of low or zero integrity (NUCp) or large track-jumps.

1.3.2 Australia consequently decided that the requirement for operational and technical approval from State of Registry was more of a hindrance than a help to both safety & efficiency. It was noted that the operational requirements on aircrew to operate in an ADS-B surveillance environment were closely similar (relevant to operation of the transponder and air/ground communications/phraseology) with those for operation in SSR based airspace, and that no separate approval process has been required for air crew or the transponders for aircraft operating in SSR surveillance airspace.

2. BLACK LIST

2.1 In September 2012, with Regulator oversight and subsequent approval of the supporting Safety Case, the Australian ANSP changed its system from the so called 'white list' of approved aircraft to a 'black-list' of aircraft that were detected as having non-compliant transmissions.

2.2 Aircraft first detected with non-compliant transmissions can be quickly placed on the black list which then removes them from ATS displays for all further flights. Black-listed aircraft operators and their state regulator (for the foreign registered aircraft) are contacted and requested to take corrective action. They then remain on the black list until the operator advises that the problem has been fixed. (In some cases that may take some considerable time). This process allows the ANSP to remove the need for a state of operator approval based process for ADS-B equipment.

2.3 The Australian Regulator believes that a white list approval process for either operational or equipment installation approvals is onerous, too restrictive and achieves little (if anything) for safety assurance that cannot otherwise be satisfied. The Regulator did not see that the non-existence of a State of Registry operational approval should override the safety advantages of the use of compliant ADS-B transmissions for traffic management by the ANSP. Australia's experience with more than 1 year of operation without a white list of State of Registry approved aircraft, has confirmed that safety has been enhanced by the removal of the approval process. Many more aircraft are receiving and operating successfully in an ADS-B based service where they would otherwise be separated procedurally, or after 12 December 2013 they would not be cleared to operate at or above FL290 and would be separated procedurally.

3. ISSUES WITH STATE OF REGISTRY APPROVAL

3.1 There is no certainty that a state of operator approval gives assurance that the installed equipment does not have misleading transmissions - for example, the TPR901 transponders which have been installed in many hundreds of Boeing and Airbus aircraft were approved by some state authorities, with the track-jump bug included.

3.2 Using a State of registry operational approval process disqualifies many fully compliant aircraft/crews that are clearly compliant/capable of operation in surveillance airspace from the advantages of ATC surveillance and its safety and efficiency benefits.

4. OPS SPECIFICATION

4.1 The operational specification process (as called for by the APANPIRG Conclusion), while at the time possibly warranted, is now seen as being a further hindrance to operational use of ADS-B with minimal benefit. There is little (if anything) for the pilot to do when ADS-B equipped compared to when not equipped.

5. CANADA

5.1 One state (Canada) has required an Operational specification and certification to ensure that crews are adequately trained. After four years of operational use, NAVCANADA has revised their Safety Case Analysis and proposed to Transport Canada that this requirement be removed. They are working cooperatively to enable ATC to utilize all valid ADS-B messages for the purposes of aircraft separation. A regulatory change removing the requirement for NAV CANADA to filter non-registered aircraft from ATC surveillance systems is expected to be in place by December 2013.

6. ASIA-PACIFIC

6.1 It is noted that a number of Asia Pacific States have required State of Registry operational approvals for their intended introduction of ADS-B airspace in December 2013. Their requirement possibly stems from conformance with the APANPIRG Conclusion/template. It is not clear whether those States will maintain a “white-list” of aircraft which have prior approval notified by their State to identify aircraft that will receive an ADS-B service or not be cleared above FL290. Australia considers that the establishment and maintenance of a “white list” does not obviate the need to also maintain a “black-list”. However the maintenance of a black-list does obviate the much more onerous need for a “white list”.

6.2 This paper suggests that States could reconsider the necessity of the requirement for operational and technical approvals of aircraft by the State of Registry on the basis of the above discussion.

7. ACTION BY THE MEETING

7.1 The meeting is invited to:

- a) note the information contained in this paper; and
- b) discuss the necessity for Asia-Pacific States to continue with a requirement for aircraft to have State of Registry approval to receive an ADS-B based service.
