



International Civil Aviation Organization

**AUTOMATIC DEPENDENT SURVEILLANCE –
BROADCAST SEMINAR AND TWELFTH MEETING
OF AUTOMATIC DEPENDENT SURVEILLANCE –
BROADCAST (ADS-B) STUDY AND
IMPLEMENTATION TASK FORCE (ADS-B SITF/12)**



Kolkata, India, 15-18 April 2013

Agenda Item 4: Review Subject/Tasks List and action items including:

- Blacklist discussion

AUSTRALIA’S TRANSITION TO AN ADS-B BLACK LIST

(Presented by Australia)

SUMMARY

Australia has successfully transitioned to an ADS-B Black list. The paper also provides the reasons for Australia’s decision to NOT support a regional “Blacklist database”.

1. Background

Airservices Australia currently delivers ADS-B based services to the Industry.

The safety case for ADS-B use was prepared in May 2005. Naturally, the approach by Airservices at that time was conservative. Airservices proposed that ADS-B only be used when the data was received from pre-approved airframes and their operators (a “white list”).

This approach was developed in an environment where there was no regulatory basis for ADS-B avionics approval. Since that time the world community has embraced ADS-B technology.

2. Mandate that non compliant transmissions be disabled

A critical factor allowing a move away from the white list was the publication in 2007 of CASA regulations which require domestic & foreign aircraft to disable ADS-B transmissions before flight, if the avionics is not compliant with the CASA regulations.

Refer http://www.comlaw.gov.au/Details/F2012C00572/Html/Text#_Toc333481411

9B.6 If an aircraft carries ADS-B transmitting equipment which does not comply with an approved equipment configuration, the aircraft must not fly in Australian territory 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.

In addition, APANPIRG is providing further support, having agreed to a 7030 Regional procedure that also requires aircraft to disable ADS-B transmissions before flight, if the avionics is not compliant with the standards. This procedure is currently being processed by ICAO Montreal.

3. ADS-B Filtering today

In September 2012 Airservices removed the white list and hence removed all involvement by the ANSP in ADS-B fitment. ADS-B is treated by Airservices in the same way as ATC transponder fitment.

AIP SUP H47/12 gave advance warning of the removal.

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**REMOVAL OF APPROVAL
REQUIREMENTS FOR PROVISION OF
ADS-B SERVICES**

1. INTRODUCTION

1.1 When ADS-B was implemented in 2006 some of the early ADS-B equipment combinations were found to have design faults. This led to an individual aircraft approval process to assure the integrity of data transmissions used by ATC for separation services.

1.2 Regulatory changes now mean that avionics meet a required standard and so Airservices Australia is transitioning to an environment where all aircraft transmitting ADS-B data will be eligible for ADS-B surveillance services.

1.3 This change brings ADS-B processes into alignment with

All ADS-B data with acceptable quality indicators is now presented to ATC, except for a small number of aircraft which are listed in a “blacklist”. The default assumption is that all operators have complied with the regulations and have disabled any non compliant ADS-B transmissions.

An assumption of compliance is necessary for Industry to be able to use ADS-B IN because cockpit display systems do not have access to approved aircraft/avionics lists.

This change brings ADS-B processes into alignment with Industry standard practices for avionics approval. It also aligns with standard practices in ATC today, whereby we use data from existing surveillance avionics without maintenance of an approved list.

A transition to black list is considered as a “normalisation” of the avionics approval process. The change was supported by CASA and IATA.

Airservices no longer requires or accepts applications for ADS-B approval. Such approval no longer applies. Normal CASA requirements for avionics installation and operation do apply.

4. Transition Strategy & Commissioning

A transition strategy was developed and presented to Industry. In the first phase, the white list was maintained, and the “black list” was introduced in parallel.

On September 4 the removal of the white list took place. At this time, a blacklist of 62 aircraft was used. Considerable effort was made in the weeks before the transition to reduce the size of the blacklist. Eg: The number of “Floating U” problems was reduced from 15 to 3 in the 2 months before transition.

Technical issue	Number of Airframes	Affected Aircraft types
TPR901 Jump issue	21	Airbus
TDR94 incorrect format	22	Mostly Gulfstream
Litton GPS	14	Airbus
Floating U problem	3	Boeing
	60	

A number of other deficiencies were not included in the blacklist and are being managed event by event :

- a) Incorrect Flight ID entry
- b) Incorrect SIL programming – makes ADS-B not visible to ATC

5. Training issue

One airline requested that ADS-B services not be delivered because they had not completed their training. Airservices Australia conducted analysis and a Hazid activity and decided as a result that safety was better served if the ADS-B services were provided, notwithstanding the purported lack of pilot training. The regulator CASA was consulted and concurred. The airline had already demonstrated good Flight ID entry as evidenced in their replies to Mode S radar interrogations. No subsequent issues have been identified.

CASA expectation is that pilots are appropriately trained on all operating equipment in their aircraft.

6. Flight planning

Some issues were experienced getting operators to correctly flight plan with RMK/ADSB. This has been complicated by the transition in November to the 2012 ICAO flight plan.

Some operators incorrectly believed that they control whether ADS-B services can be delivered by marking the flight plan accordingly. In a number of cases it was necessary to explain that :

- a) Operators/Airlines decide to participate in ADS-B when they choose to transmit ADS-B data. Like ATC transponders, there is no “opt out” capability.
- b) The flight planning has NO impact on what is or what is not displayed to ATC.
- c) The purpose of flight planning is to provide information to ATC to support planning – and whether the controller can anticipate ADS-B data at a time before the aircraft is visible as a surveillance target.
- d) For ADS-B air-air operations, other pilots cannot “see” the flight plan

7. Subsequent actions

Since September 2012, the size of the blacklist has been reduced to 33 airframes as the result of :

- Letters and/or email to all blacklisted operators
- Discussions with Gulfstream resulted in Gulfstream alerting their customers and many operators fixed their aircraft. Operators expressed a desire to be removed from a blacklist. We are grateful to Gulfstream for their support.
- Retrofit of new software to solve “Floating U” and “TPR901 jumps” in the fleets

The blacklist now has been reduced to 33 aircraft :

Technical issue	Number of Airframes	Affected Aircraft types	Comment
TPR901 Jump issue	6	Airbus	
TDR94 incorrect format	13	Business jets	Almost all are Gulfstream aircraft that visit Australia infrequently
Litton GPS	14	Airbus	
Total	33		

Some of the operators of these aircraft have been granted a time limited exemption by CASA. It is anticipated that the majority of these entries will be removed by late 2012 following the implementation of manufacturer provided Service Bulletins for equipment modification or replacement.

8. ATC reaction

ATC reaction has been very positive because a significant number of previously equipped (but not approved) aircraft are now visible to ATC.

No negative impacts have been observed.

9. APAC State letter

Australia has reviewed the above APAC State letter AP-CNS0159/12 titled “Establishment of Database for Black List of Airframe broadcasting misleading ADS-B Data.” This letter requested that Australia establish and share “Blacklist” data :

A single database could be established and maintained in order to share blacklist information between Administrations and ANSPs in the Asia/Pacific Region. Therefore, please confirm if Australia is willing to establish and maintain such a database to meet the need identified by APANPIRG so as to allow ICAO Regional Office to coordinate with other Administrations in the Region to provide reported occurrences of airframe broadcasting misleading data.

Following some consideration, Australia has decided that we do not support the proposal, for the following reasons :

- a) Blacklists do NOT protect other aircraft using ADS-B IN from misleading transmissions. The major focus of activity should be on disabling the misleading ADS-B OUT transmissions without affecting the transponder capability for Mode S transmissions.
- b) The purpose of the “Black list” is to protect the ATC system in the short period between detection of erroneous transmissions and the rectification.
- c) Australian regulations require that operators disable ADS-B before flight if it is not compliant.
- d) The proposed synchronization of blacklists from different states is likely to be problematic due to timeliness of both entry and exit from such a list.

Eg: An airline could quickly rectify (or disable) misleading ADS-B data. If there was a delay in removal of the aircraft from the Blacklist in other states, safety benefits could be unnecessarily denied to the aircraft.

- e) All States need to have procedures to detect and manage (in the short term) non compliant transmissions.
- f) Regulatory action should be initiated for all misleading transmissions
- g) Australia would be undertaking a significant burden to keep such a database up to date for all operations throughout Asia Pacific – far beyond the scope desired by our customers.

10. Conclusion

The meeting is invited to

- a) note the successful transition to blacklist; and
- b) note the reasons for Australia's decision to not provide a consolidated Blacklist database for the region.
