



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

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**Agenda Item 6: Review States' activities and interregional issues on trials and implementation of ADS-B**

**AUSTRALIAN ADS-B UPDATE**

(Presented by Australia)

**SUMMARY**

The purpose of this IP is to inform SITF of the significant progress achieved in the Australian Surveillance program during the past year.

**1. Introduction**

1.1 This paper provides information on air traffic management surveillance activities in Australia. The paper is an update of the reports provided previously.

**2. Surveillance Projects – Status Update overview**

2.1 Airservices is in the middle of a large capital program to deliver new surveillance infrastructure. The status of these projects has been reported in various details over the past few years. The current status of these projects is:

Mode S Terminal Radar Replacement (AMSTAR)

- 9 Mode S radars are operational in addition to a fully operational transportable Mode S radar. The permanent sites are located at Melbourne, Coolangatta, Adelaide, Cairns, Canberra, Darwin, Perth, Brisbane and Sydney.
- The enroute radar at Brisbane was converted to a AMSTAR Terminal area radar. The existing terminal area radar will become an SSR only sensor.
- Flight ID is not currently provided by these radars to ATC largely because of avionics issues with one aircraft type. The avionics problem will be corrected by end 2013.
- A total of 9 Mode S radars have been delivered to Terminal Areas by this project.

- A transportable P+S radar (previously used to support transition) is planned to be installed at Cecil Park near Sydney next year.

#### En-route Radar Replacement

- A Supplier has been selected and the contract signed.
- This project will deliver new Mode S radars to replace existing en-route Mode A/C radars (SSR only).
- Two radars are already operational; at Paraburdoo in Western Australia, and at Mount Sandon in New South Wales (transportable radar).
- It is intended that these radars will deliver Flight ID and then DAPS

2.2 The Mode S radar related projects are planning to deploy a total of 16 radar installations (new and transportable) over the next few years in addition to the installations deployed since 2008.

2.3 A significant number of deficiencies with Elementary surveillance (Flight ID) have been encountered. An AIC has been issued stressing the need for correct pilot entry. Some aircraft installations also incorrectly transmit Flight ID. We are gradually identifying the relevant aircraft and attempting to initiate corrections. Because of these issues, Flight ID data is not currently being delivered to the ATM system from these radars.

#### ADS-B

- 29 sites currently operational plus ADS-B from operational WAM systems.
- A number of new sites being considered for deployment.

#### WAM

- Tasmanian system (TASWAM) has been operational since early 2010.
- Sydney WAM is operational in the terminal area supporting a 3NM separation standard.
- ADS-B data from SY WAM & TASWAM is now fully operational in the enroute centres.
- Sydney WAM is now operational for the Parallel Runway Monitor (PRM) application.

Australia has no plans to deploy more WAM systems.

#### ASMGCS

- Operational in Melbourne since December 2009 and Sydney since May 2010.
- Brisbane system operational in 2013.
- The Perth system is still in the deployment phase.

### 3. ADS-B Aircraft Approvals and Regulations Update

3.1 ADS-B is used operationally across the Australian continent.

3.2 States are invited to note that post December 2013, ADS-B is mandatory at and above FL290.

3.3 An AIC was issued to further emphasise that this mandate applies to both domestic and foreign aircraft. AIC H09/11 is available at <http://www.airservicesaustralia.com/aip/current/sup/a11-h09.pdf>

3.4 Additionally, an AIP SUP H96/12 was recently issued emphasising the impending mandate and providing specific advice of associated AIP changes. See <http://www.airservicesaustralia.com/wp-content/uploads/s12-h96.pdf>

3.5 Airservices Australia continues to promote the mandate to ensure that all operators are aware – it is only 8 months to go ! The following advertisement is published in aviation journals:

The CASA regulations are available at :

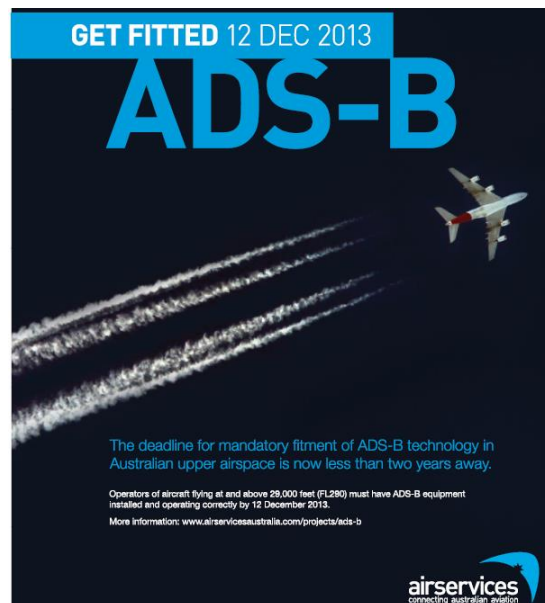
- a) <http://www.comlaw.gov.au/Details/F2012C00572> and
- b) <http://www.comlaw.gov.au/Details/F2012C00103>

In addition, commencing 6 February 2014 (some weeks after the 2013 FL290 mandate)

- all new IFR aircraft registered in Australia must have ADS-B and appropriate GNSS equipment.

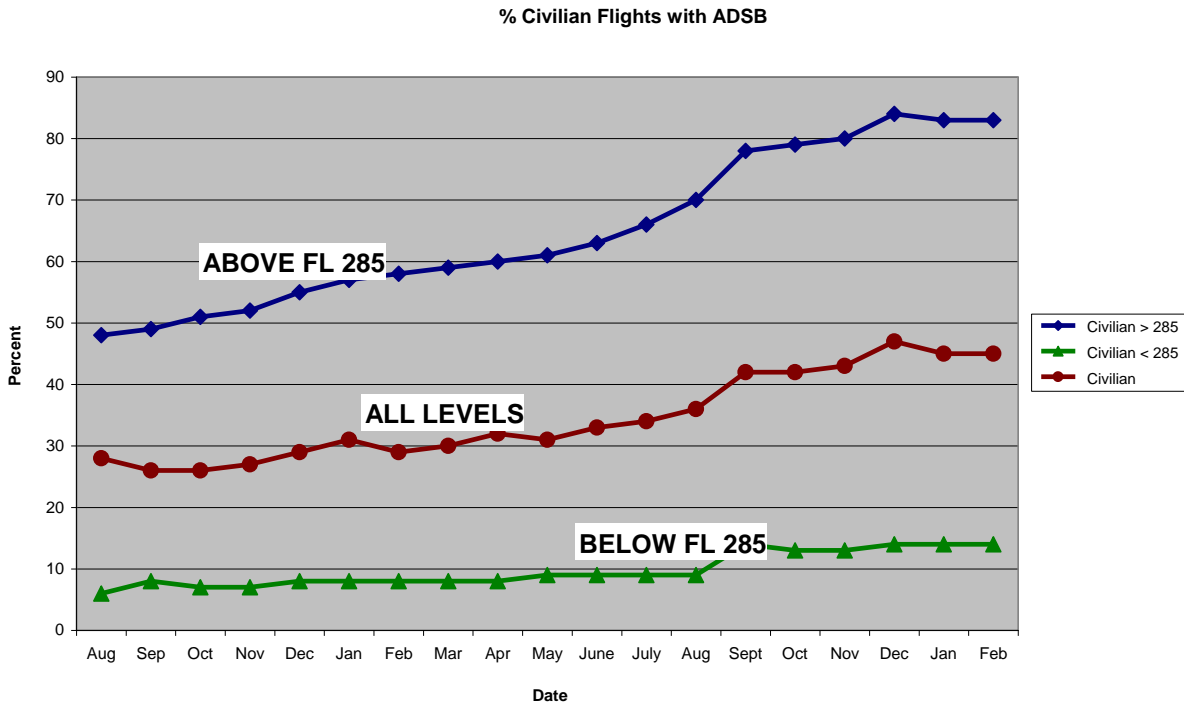
- all new transponders installed after 6 February 2014 must be Mode S and ADS-B capable.

Commencing 2 February 2017 all IFR aircraft at all flight levels must have ADS-B.



**4. ADS-B statistics**

4.1 During the last year, the percentage of equipped flights has climbed steadily as shown below :



**International airlines :** There is a high level of equipage already. However, a small number of airlines have been slow to commence equipping. In particular, those with Litton GPS will need expensive retrofit.

**Domestic Aircraft :**

A stark contrast exists between the Airlines and the Business Jet community when examining the work to be done in the next 8 months as we approach the 2013 mandate.

The status of the Australian registered fleet that operate at/above FL290 is as follows:

Equipped aircraft	357	
Non equipped Major Airlines	58	Domestic airlines have plans to be fully equipped before the deadline. No significant problems are foreseen. Programs are in place to retire or equip these aircraft
Non equipped Biz jets	114	Bizjets are proving to be somewhat of a problem, in part, because some OEMs have not acted early enough on the mandate and are waiting for DO260B products. Only 10% are equipped. It may be necessary for these operators to use non OEM processes to become ADS-B fitted. GPS receivers and ADS-B capable transponders are generally available for this class of aircraft.
Turboprop	115	May choose to operate below FL290

**6. ADS-B Data Sharing – Australia and Indonesia**

6.1 Data sharing with Indonesia continues. Data from 4 sites is sent to Indonesia and data from 4 Indonesian sites is sent to Australia. This has been very well received, and is increasing safety & efficiency at the FIR boundary.

Unfortunately, one site in Indonesia has been off-line for some time due to lightening damage.

**7. ADS-B Integrity values used for delivery of 5NM Separation Service**

a) During 2010 Airservices prepared a Safety Case arguing that 5 NM separation services can be delivered when the ADS-B integrity parameter HPL is less than 2.0 NM instead of the previously conservative value of 0.5 NM.

CASA provided Airservices with authorization to use ADS-B data with the following quality factors and this is now operational.

	<b>DO260</b>	<b>DO260A/B</b>
<b>5 NM separation</b>	NUC $\geq$ 4 (HPL<1.0 NM)	NIC $\geq$ 4; NAC $\leq$ 5 (HPL<2.0NM; HFOM $\leq$ 0.5NM)

The new values were successfully brought into operation in February 2011 and have reduced the number of ADS-B outages due to GPS satellite geometry issues.

b) CASA previously advised Airservices that it anticipates acceptance of the argument for a change for DO260 avionics to NUC $\geq$ 3 (HPL<2.0NM) pending further analysis and evidence of the position accuracy of NUC=3 data. Analysis of 12 months of data (1200Gb) has been provided to CASA and was presented to SASP last year as SASP-WG/WHL/19 WP/12. Subsequently, CASA has been requested to modify the Manual of Standards to allow the following. The Manual of Standards has not yet been modified and these values have not yet been put into service.

	<b>DO260</b>	<b>DO260A/B</b>
<b>5 NM separation</b>	NUC $\geq$ 3 (HPL<2.0 NM)	NIC $\geq$ 4 NAC $\leq$ 5 (HPL <2.0NM)
<b>3 NM separation</b>	NUC $\geq$ 4 (HPL<1.0 NM)	NIC $\geq$ 5 NAC $\leq$ 6 (HPL <1.0NM)

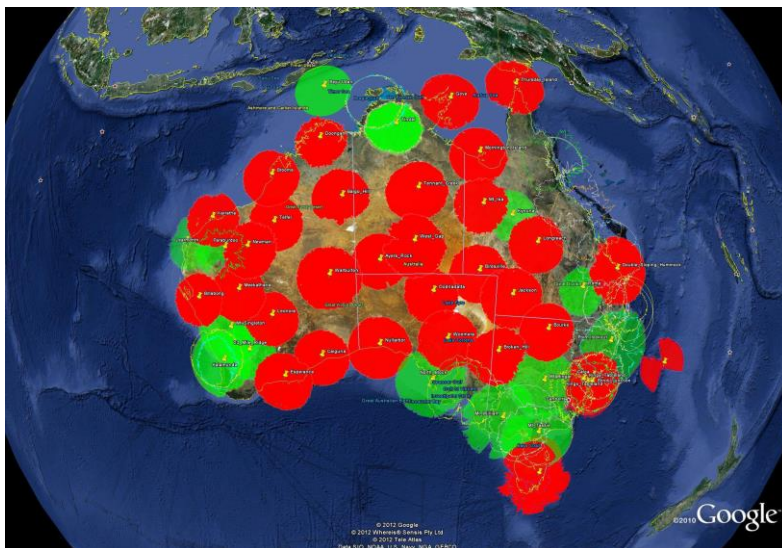
**8. RVSM**

8.1 Australia now uses ADS-B to provide monitoring of RVSM.

8.2 Further details on the implementation of ADS-B height keeping monitoring are available on the AAMA web site at <http://airservicesaustralia.com/organisations/aama/> and <http://airservicesaustralia.com/aama/ads-b-height-keeping-monitoring/>

**9. ACME Project**

9.1 “Seed funding” for the proposed project to deploy additional ADS-B ground stations has been approved. This project will deploy additional ADS-B ground stations shown below in green.



**10. Conclusion**

10.1 The meeting is invited to note the information presented in this paper providing an update of ATC surveillance activities in Australia.

10.2 The meeting is invited to note that the continued progress of ADS-B implementation in Australia is being well received by both ATC and approved Aircraft Operators.

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