Twenty Second Meeting of the
Informal South Pacific ATS Co-ordinating Group (ISPACG/22)

Papeete, Tahiti, 12-14 March 2008

Agenda Item 4: Review Open Action Items
AI 17-5

Australian ADS-B Update

Presented by Airservices Australia

SUMMARY

This working paper provides an update on Australian ADS-B activities.

1. Introduction

1.1 WP/5 presented at ISPACG/21 (Auckland, Feb 2007) provided information on Australian ADS-B implementation. This working paper provides an update on ADS-B related activity since ISPACG/21.

1.2 The last 12 months has seen:

- A doubling of the area of ADS-B coverage within Australia;
- Continued growth in the number of ADS-B approved aircraft;
- An increase in the number of airframes detected which could be eligible for ADS-B services;
- Publication of NFRM and amendments to CAOs;
- The availability of ADS-B coverage across an international FIR boundary.

2. ADS-B Ground Stations

2.1 10 ADS-B ground stations have now been operationally commissioned. Nine of these ground stations still have only single links to the ATC centres and will remain unduplicated until delays associated with the Telecommunications Infrastructure Network Replacement (TINR) project have been resolved.

2.2 Because of the unavailability of a duplicated link, information from these ADS-B ground stations cannot be used to provide a 5NM separation service. However, the following ADS-B-related services are available:

- Identification and altitude verification (full position reporting by voice or CPDLC is not required);

- The use of ADS-B position and altitude information in the application of procedural separation standards between an ADS-B position symbol and other aircraft types;
- ADS-B short term conflict warnings with respect to other ADS-B equipped aircraft;
- ADS-B-based route and altitude conformance monitoring;
- Radar-like assistance to ADS-B equipped aircraft in emergencies;
- Traffic advisory services between ADS-B equipped aircraft;
- Increased situational awareness for non-routine occurrences (e.g. diversions);

2.3 The ADS-B ground station at Bundaberg does have duplicated terrestrial links and in addition to the ATS services listed above, meets the requirements for the provision of a 5NM separation service.

2.4 The new ground stations introduced since ISPACG/21 include:

- Billabong (BLB);
- Karratha (KA);
- Broome (BRM);
- Tennant Creek (TNK);
- Alice Springs (AS);
- Thursday Island (TUD).

2.5 A number of these sites are situated near the YBBB/YMMM FIR boundary, and provide ADS-B coverage in both YBBB and YMMM centres.

2.6 The current Australia-wide ADS-B coverage is shown in Figure 1

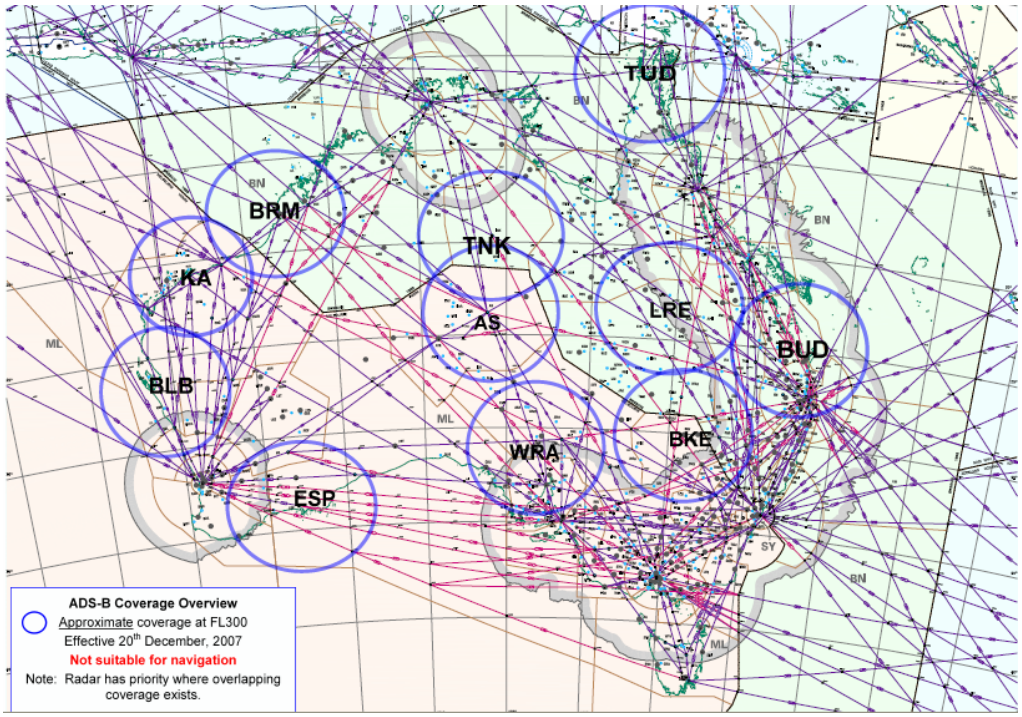

Figure 1. Australian ADS-B coverage effective 20th Dec 2008

2.7 The commissioning of additional ADS-B sites under the Upper Airspace Project is scheduled throughout 2008-2009. The move to Stage 3 of ADS-B implementation under UAP (the provision of a 5NM separation service using ADS-B information) is still reliant on the completion of the TINR project, which will provide duplicated communications links between the ground stations and the ATC centres.

3. Thursday Island

3.1 An ADS-B ground station has been installed at Thursday Island and was operationally commissioned on 20th December, 2007. ADS-B data being received from the ground station provides coverage across the FIR boundary into Indonesia and Papua New Guinea and overlaps with the existing Cairns radar coverage.

3.2 This site provides the first Australian surveillance coverage across an international boundary.

4. Lord Howe Island

4.1 A Development Application has been lodged for the construction of a new ATC Facility at Lord Howe Island (LHI) which will accommodate NDB, DME, ADS-B, VHF, SGS and Remote Control Monitoring System. Commissioning of the NDB and DME is scheduled for May/June 2008 with an effective date of 20 Nov 2008 for the commencement of ADS-B services in accordance with the AIRAC cycle.

4.2 An ADS-B site on Lord Howe Island will provide an expansion of surveillance coverage to the New Zealand and Nadi FIR boundaries east of LHI, and permit a 5NM separation service to be applied between ADS-B equipped aircraft. Other ATS surveillance services associated with ADS-B will also be available to ADS-B equipped/approved aircraft.

4.3 The availability of VHF on LHI also has the potential to improve services for non-ADS-B aircraft, because it will provide direct communications with ATC within 250NM of LHI.

5. No. of Approved Airframes

5.1 The number of approved ADS-B-equipped airframes has been steadily increasing as shown below.

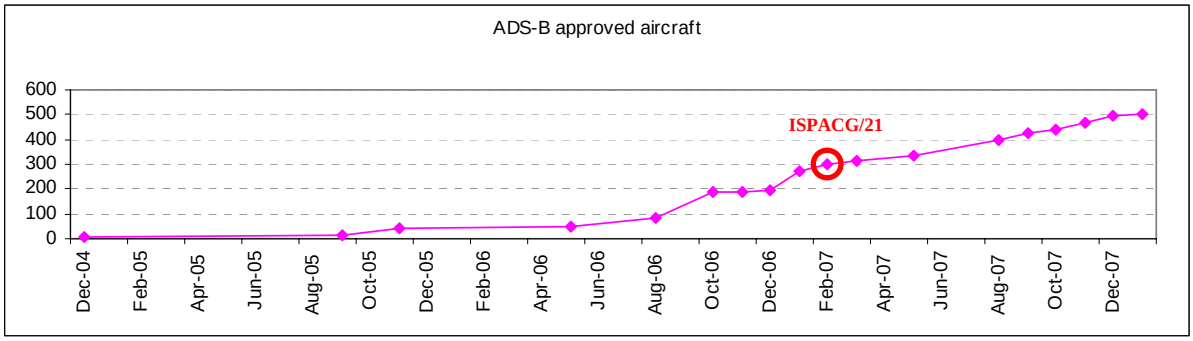

Figure 2. Graph showing the increasing numbers of ADS-B approved aircraft

5.2 The graph shows that there has been approximately a 60% increase in ADS-B approved aircraft since ISPACG/21.

6. Publication of Notice of Final Rule Making

6.1 An NFRM was published in March 2007 which effectively prohibits ADS-B transmissions that provide potentially misleading data. The subsequent amendments to the Civil Aviation Orders became effective in April 2007. Aircraft operators transmitting ADS-B data in Australia are now required to be either compliant with the CAOs, seek an exemption from CASA, or disable non-compliant ADS-B transmissions.

6.2 Airservices Australia will continue to maintain the current ADS-B approval process and only ADS-B information from approved airframes is used to update the ATS Flight plan, and displayed to controllers.

6.3 It is anticipated that this filtering based on individual airframe approval will continue for some time. In the future, when the majority of aircraft are compliant, the filtering will be reversed, and will only contain "black listed" aircraft – i.e. aircraft that are known to be operating non-compliant avionics.

7. Problems

7.1 From an operational perspective, the main ADS-B-related problem encountered to date has been the transmission of incorrect Flight Identification in ADS-B reports.

7.2 74 occurrences of incorrect Flight Id were reported in the last 12 months, and there are probably a number of unreported events. Common problems observed include the use of leading zeros, and the use of the 2 character IATA airline designator rather than the 3 character ICAO designator – these are similar to problems encountered with FANS logons. Operators are reminded that the Flight Identification must be the same as the Aircraft Identification in the ATS flight plan.

7.3 There have also been a few minor comments concerning aircraft transmitting ADS-B reports while the aircraft is on the ground, creating label clutter on the situation display. Initial investigations indicate that this is probably caused by incorrect operation of transponders.

8. ACTION BY THE MEETING

8.1 The meeting is invited to note the ongoing ADS-B implementation in Australia