



International Civil Aviation Organization

**THE FOURTH MEETING OF ADS-B STUDY AND
IMPLEMENTATION TASK FORCE (ADS-B SITF/4)**

Nadi, Fiji, 26-28 October 2005

Agenda Item 6: Review States' activities on implementation of ADS-B

**b) States to present WP of any significant progress in ADS-B
planning or deployment.**

AUSTRALIA'S ADS-B PROGRAM

(Presented by Greg Dunstone, Airservices Australia)

SUMMARY

The Australian ADS-B Program continues to move forward.

1. INTRODUCTION

1.1 This information paper presents a review of the ADS-B activities currently in progress in Australia.

2. ADS-B OPERATIONAL TRIAL – BUNDABERG REGION

2.1 The ADS-B trial at Bundaberg comprises a single duplicated ADS-B ground station that receives ADS-B transmissions from aircraft in which ADS-B avionics have been installed. The system presents ADS-B data on Australian ATC displays and is in full operational use. Following regulator approval, 5 Nm ATC separation services were introduced earlier this year.

3. ADS-B GROUND STATION DEPLOYMENT

3.1 The ADS-B Upper Airspace (UAP) project will install 28 duplicated ADS-B ground stations across the continent. The ground stations have been purchased and delivered. Installation is to occur progressively during the next 6 months.

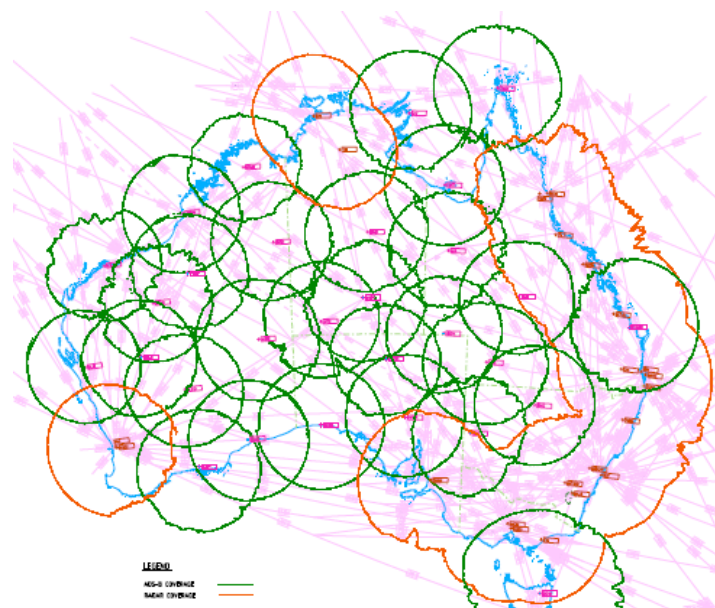


Figure 1 - Expected radar and ADS-B coverage at 30,000 feet

Two UAP ground have already been installed for evaluation and testing at

- Melbourne airport – as the Airservices Australia Test & Evaluation unit
- Bundaberg – to replace the Bundaberg system in due course

Results from these ground stations have been excellent.

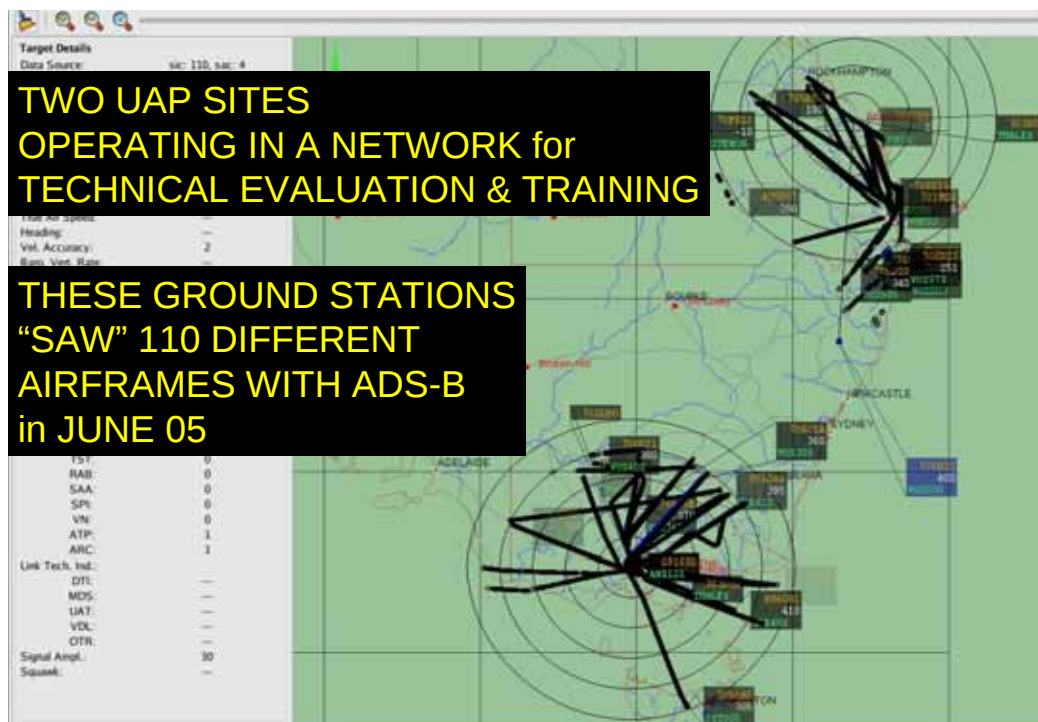


Figure 2 – Recorded ADS-B traffic at Bundaberg and Melbourne (250 Nm circles)

These two Australian ADS-B ground stations have detected over 140 different airframes, including aircraft operated by the following airlines or operators:

Qantas Airways, Virgin Blue, Jetstar Airways, Emirates, Air New Zealand, Pacific Blue, Eva Air, Virgin Atlantic, Asiana, Vietnam Airlines, Malaysia Airlines, British Airways, Singapore Airlines Cargo, Thai Airways, Korean Air, Air Mauritius, Air China, Cathay Pacific, China Airlines, UPS Airlines, QantasLink (Sunstate), Sunshine Express, Royal Flying Doctor Service, Bundy Flying School, Sunshine Coast Rescue Helicopters

The following aircraft types have been detected:

B747, B767, B737, B777, A320, A330, A340, B200, SH36, DHC8, BK17, B206, J200

In addition a number of ancillary systems have been provided or upgraded as follows:

- A RAIM prediction system has been developed to deliver predictions of possible ADS-B outages due to GPS satellite geometry, outages, etc to ATC controller screens. This system is in the final stages of testing prior to commissioning.
- Enhancements to the ATC automation system to support 1,000 ADS-B aircraft, revised rules for matching ADS-B data to flight plans and a number of other changes are being provided. Formal testing of these changes is almost complete. Commissioning is expected in the November 2005 timeframe.
- An ADS-B Bypass system has been developed which takes ADS-B data from the ADS-B ground stations and presents it to the controller workstation directly without centralised processing. Commissioning is expected in the October/November 2005 timeframe.
- An Ultimate Fallback system provides controllers with a “secondary” controller workstation processor which can be used in the event of common mode workstation failure. This “secondary system” has been adapted to provide ADS-B and flight plan data independent from the main ATC system.

3.2 ATC procedure development and ATC training development has commenced for this project. It is envisaged that the Bundaberg UAP ground station will be commissioned first as a one-for-one replacement of the existing commissioned system. Then as other sites come on line, and as ATC training is completed, the new sites will provide a situational awareness service.

3.3 Some time later, following CASA approval, Airservices Australia anticipate authorisation to use a 5NM separation standard across the complete continent.

4. ATLAS PROJECT (FORMERLY THE LOWER AIRSPACE PROJECT)

4.1 The Australian aviation community is currently considering a project called ATLAS which envisages the fitment of ADS-B out avionics and GNSS receivers to a large number of aircraft. The project also envisages replacement of enroute radars with ADS-B ground stations and also the removal of a large number of NDBs and VORs. A cross industry funding package and a fitment mandate are also being considered to expedite fitment and transition to the new technologies. An industry commitment to ATLAS is expected in the first quarter 2006.

4.2 In support of the ATLAS project, Airservices Australia has been encouraging the development of Mode S extended squitter ADS-B transmitters and has recently issued a Request for Proposal for the purchase of up to 1,500 avionics units for general aviation aircraft http://www.airservicesaustralia.com/tenders/rfp_adsbavionics/default.asp

5. ADS-B RESEARCH AND DEVELOPMENT PROGRAMS

5.1 Airservices has begun testing two cockpit display systems that are designed to provide pilots with accurate position and altitude information on proximate traffic. The two systems, supplied by Eurotelematik of Ulm, Germany, use GPS and extended squitter ADS-B technology to provide pilots with navigation, terrain and traffic information on a moving map display. The information can be shown on Eurotelematik's certified CDTI 2000 multifunction display or, as a lower cost alternative, on a pocket PC. A short video clip of the avionics is available with the presentation material.

5.2 Figure 3 is a picture of the CDTI-2000 showing VOZ721, a Virgin Blue 737-800, on approach to Canberra Airport. The aircraft symbol in the centre of the display is fixed and represents "own-aircraft". The blue circles with the bisecting lines represent airports. Figure 4 shows Qantas flight QF187 (an Airbus A330) en route from Melbourne to Sydney on the pocket PC display.

5.3 The target label for other aircraft (arrowhead symbol) consists of three lines showing Flight Level; Aircraft Identification; and Ground Speed.



Figure 3 – VOZ721 on approach to Canberra Airport pictured on CDTI-2000



Figure 4 – Qantas flight QF187 depicted on Pocket PC Display

5.4 The display background is colour coded to provide an indication of the terrain height in relation to "own-aircraft", using the same green, yellow and red colour scales used for Enhanced Ground Proximity Warning (EGPWS) displays.

6. ACTION BY THE MEETING

6.1 The meeting is invited to note the progress of ADS-B deployment in Australia
