International Civil Aviation Organization

REGULATOR'S WORKSHOP ON ADS-B AVIONICS EQUIPAGE REQUIREMENTS

Jakarta, Indonesia, 16 – 17 August 2010

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

AUSTRALIAN ADS-B UPDATE

(Presented by Airservices Australia)

SUMMARY

The purpose of this IP is to inform ADS-B Task Force of the significant progress achieved in the Australian ADS-B program during the past months.

1 UAP Status

1.1 The ADS-B Upper Airspace Project (UAP) has been operationally commissioned and air traffic controllers are now authorised to provide 5 NM separation services using ADS-B data from all operational sites. Operational coverage is currently provided across the whole continent from 29 sites ADS-B sites and one WAM system comprising 14 sites.

1.2 The transition to this final stage was completed on 19 December 2009. The following NOTAM was issued :

C8395/09 NOTAMN
Q) YUXX/QXXXX/IV/BO/E/000/999/
A) YMMM/YBBB
B) 0912181400 C) 1001310600 EST
E) SURVEILLANCE SEPARATION AVBL OUTSIDE RADAR COVERAGE IN BRISBANE AND MELBOURNE FIR DUE ADS-B UPPER AIRSPACE PROGRAM STAGE 3 IMPLEMENTATION
COVERAGE DETAILS AVAILABLE AT
WWW.AIRSERVICESAUSTRALIA.COM/PROJECTSSERVICES/PROJECTS/ADSB/UAP.ASP

1.3 The last ADS-B ground station of UAP Phase 1 at Broken Hill was commissioned in February 2010.

1.4 An additional 18 sites are planned to be installed as part of UAP Phase 2 to provide ADS-B additional coverage. The site selection is not yet final but will include :

- Within existing SSR coverage to provide a backup and to improve tracking performance
- In areas to increase enroute coverage at flight levels above FL200
- In areas to increase coverage below radar coverage.
- Possibly in additional oceanic areas.

1.5 Aircraft avionics are still being assessed and approved for operational use. ADS-B data from non-approved aircraft is filtered out at each site. Currently over 1300 airframes are approved and receiving the operational and safety benefits of ADS-B services in Australia. The statistics for April 2010 are :

– 73.17 % of all scheduled international flights in Australia were by ADS-B approved aircraft.

– 26.51% of all domestic scheduled flights were by ADS-B approved aircraft.

– 23.22% of ALL FLIGHTS, with a flight plan, in Australia were by ADS-B approved aircraft.

1.6 The following diagram shows all sites of UAP Phase 1 together with radar coverage. All sites are now operational delivering data suitable for ADS-B separation.

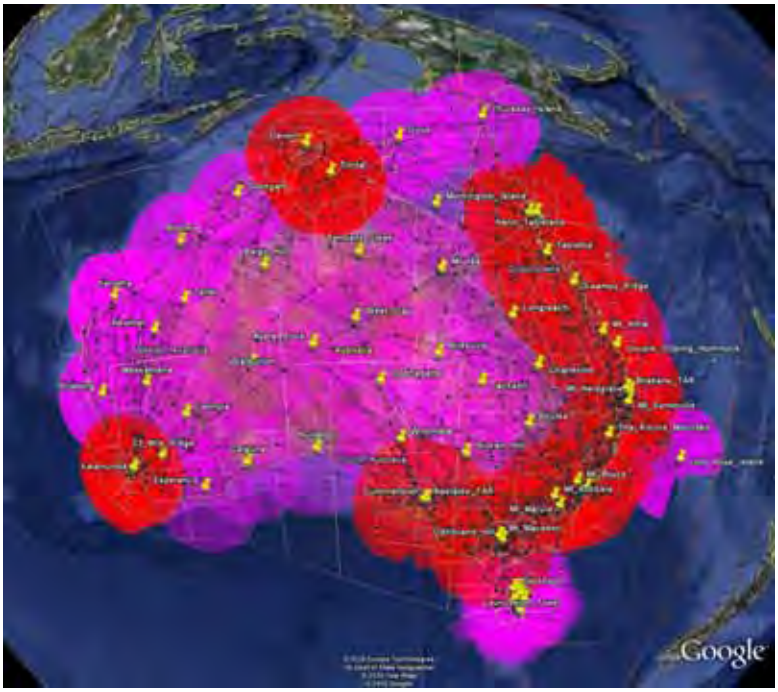

Figure 1 : ADS-B predicted coverage at FL300 from 29 ADS-B Ground stations and 14 TAS WAM (Ground stations. Radar coverage in Red)

1.7 The following diagram shows ADS-B data recorded from UAP sites during one day in April 2010 overlaid with ADS-B data from the TASWAM system in Tasmania and including data from Lord Howe Island.

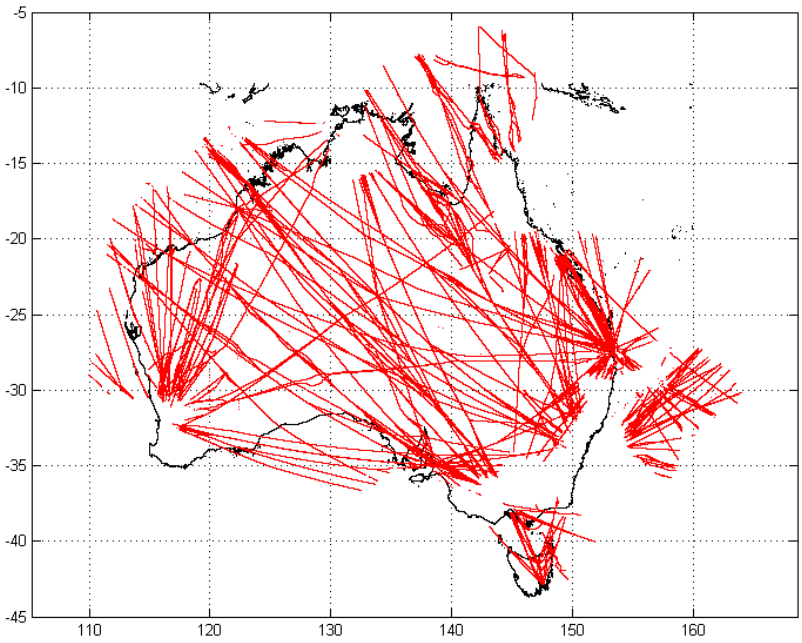

Figure 2 : ADS-B data captured in April 2010 29 ADS-B Ground stations plus TASWAM

1.8 Operational feedback since commissioning has been extremely positive.

2 TAS WAM

2.1 The testing of the Tasmanian Wide Area Multilateration system was completed and approved. The system was operationally commissioned in February 2010 and now provides both SSR and ADS-B coverage to ATC consoles in Melbourne centre. This system includes 14 receivers each of which is ADS-B capable.

3. Lord Howe Island (Oceanic ADS-B)

3.1 In March Airservices Australia commissioned the Lord Howe Island ADS-B ground station in the Tasman Sea. The ADS-B antenna's are installed on an NDB tower. Dual satellite communications are used to connect to ATC.

3.2 Lord Howe Island is a spectacular volcanic island that was inscribed on the World Heritage List in 1982. The site available is sub-optimal with coverage gaps to the north west and south east. However it still provides very useful surveillance coverage in the Tasman sea.

3 Correct entry of Flight ID

4.1 ADS-B approval in Australia requires the flight crewto be aware of the importance of correct Flight ID (Callsign) entry into the avionics.

4.2 Australia has introduced Mode S radars with the ability to obtain callsign from aircraft with Mode S Elementary surveillance (ELS), and has also modified the ATC system to use Flight ID. As a result correct entry of flight ID is now important for all Mode S aircraft with ELS capability, even those without ADS-B capability. Australia has issued an AIP SUP which is attached at **Appendix A**

4 RVSM monitoring and ADS-B

5.1 Research continues between Australia and the FAA in the use of ADS-B data for RVSM Monitoring. Whilst the work is not yet complete, initial results are very promising.

5 Conclusions

5.1 The meeting is invited to consider the UAP progress.

5.2 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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APPENDIX A
AIP SUP

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H34/10

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DATE: 03 JUN 10

MODE S TRANSPONDER REQUIREMENTS FOR AIRCRAFT IDENTIFICATION TRANSMISSION

1. INTRODUCTION

1.1 This AIP SUP describes requirements for correct transmission of Mode S Aircraft Identification.

2. BACKGROUND

2.1 Mode S transponders (either stand alone or associated with ADS-B transmitters) may include the capability for transmitting a preset, or pilot input Aircraft Identification.

2.2 Aircraft approved for ADS-B operations currently ensure the transmitted Aircraft Identification matches the aircraft identification as specified in Item 7 of the flight notification, or the aircraft registration (AIP 1.1 Para 57 refers).

2.3 Airservices Australia is progressively deploying Mode S capable radars, which interrogate the aircraft identification stored in the transponder, consequently aircraft transponder procedures must be updated to ensure valid data is provided by Mode S transponders to ATC.

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2.3 Airservices Australia is progressively deploying Mode S capable radars, which interrogate the aircraft identification stored in the transponder, consequently aircraft transponder procedures must be updated to ensure valid data is provided by Mode S transponders to ATC.

3. PROCEDURES

3.1 Aircraft equipped with a Mode S transponder having an aircraft identification feature shall transmit the aircraft identification as specified in Item 7 of the flight notification or, when no flight notification has been filed, the aircraft registration.

3.2 If, due to equipment or operational limitations, transmitted Aircraft Identification cannot exactly match the Aircraft Identification shown in Item 7 of the filed Flight Notification, operators of Mode S equipped aircraft, should insert CODE/followed by the aircraft's ICAO 24-bit Aircraft Address, expressed in hexadecimal format, in Item 18 of the flight notification form.

4. CANCELLATION

4.1 This AIP SUP will be cancelled when the new procedure is incorporated into AIP. This is expected to be 26th August 2010.

5. DISTRIBUTION

5.1 By AVFAX and Airservices Australia website only.