



International Civil Aviation Organization

**The Third Meeting of Automatic Dependent Surveillance – Broadcast (ADS-B)
Study and Implementation Task Force (ADS-B TF/3)**

Bangkok, 23-25 March 2005

Agenda Item 4: Review States' activities on trials and demonstration of ADS-B

AIRCRAFT EQUIPAGE UPDATE

(Prepared by Greg Dunstone, Airservices Australia)

(Presented by Greg Dunstone, Airservices Australia)

SUMMARY

An update on Aircraft equipage

1 Background

1. This paper is a brief update on aircraft equipage

2 Airlines detected

- 2.1 The following Aircraft Operators have been detected by Australian ADS-B ground stations:

QANTAS, Virgin Blue, Jetstar, Emirates, Air New Zealand, Pacific Blue
Eva Air, Virgin Atlantic, Asiana, Vietnam, Malaysian, British Airways
Singapore Airlines Cargo, Thai, Korean, 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

3 Aircraft types detected

- 3.1 The following aircraft types have been detected:

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

4 Statement by Cathay Pacific Airlines

- 4.1 Cathay Pacific Airlines advised Airservices Australia, and authorised the release of the following:

"I can confirm that CX has a program in place to equip all its aircraft with ADS-B before the end of 2005. This is obviously subject to the usual engineering constraints, but so far we are on target to meet the year end deadline for completion. We are quite happy that this information be published
"

5 Statement by United Airlines

- 5.1 As the ISPACG meeting in Brisbane, United Airlines advised that they would equip all their international aircraft with ADS-B out.

6 Equipage in United Kingdom

6.1 [The following information was kindly provided by Mark Watson, UK National Air Traffic Services - Corporate & Technical Centre, Technology & Programmes Division, CNS Research]

6.2 UK NATS has been monitoring 1090 Extended Squitter ADS-B equipage and capability. The 1090 equipment was taken to Burrington in September and December for 5 days on each occasion (Thurs pm to Tues am) and left to record. Each recording is based on about 116 hours of data. The December 2004 data capture and analysis is showing a leap in ADS-B equipage in the 3 months from September.

6.3 The preliminary numbers for the three main ADS-B data types:

September 2004 (2689 Mode-S addresses seen)

<i>ADS-B Data</i>	# aircraft	% All ADS-B	% All Mode-S
Aircraft ID & Type	353	88.5%	13.1%
Airborne Position	219	54.9%	8.1%
Airborne Velocity	306	76.7%	11.4%
Any ADS-B	399		14.8%

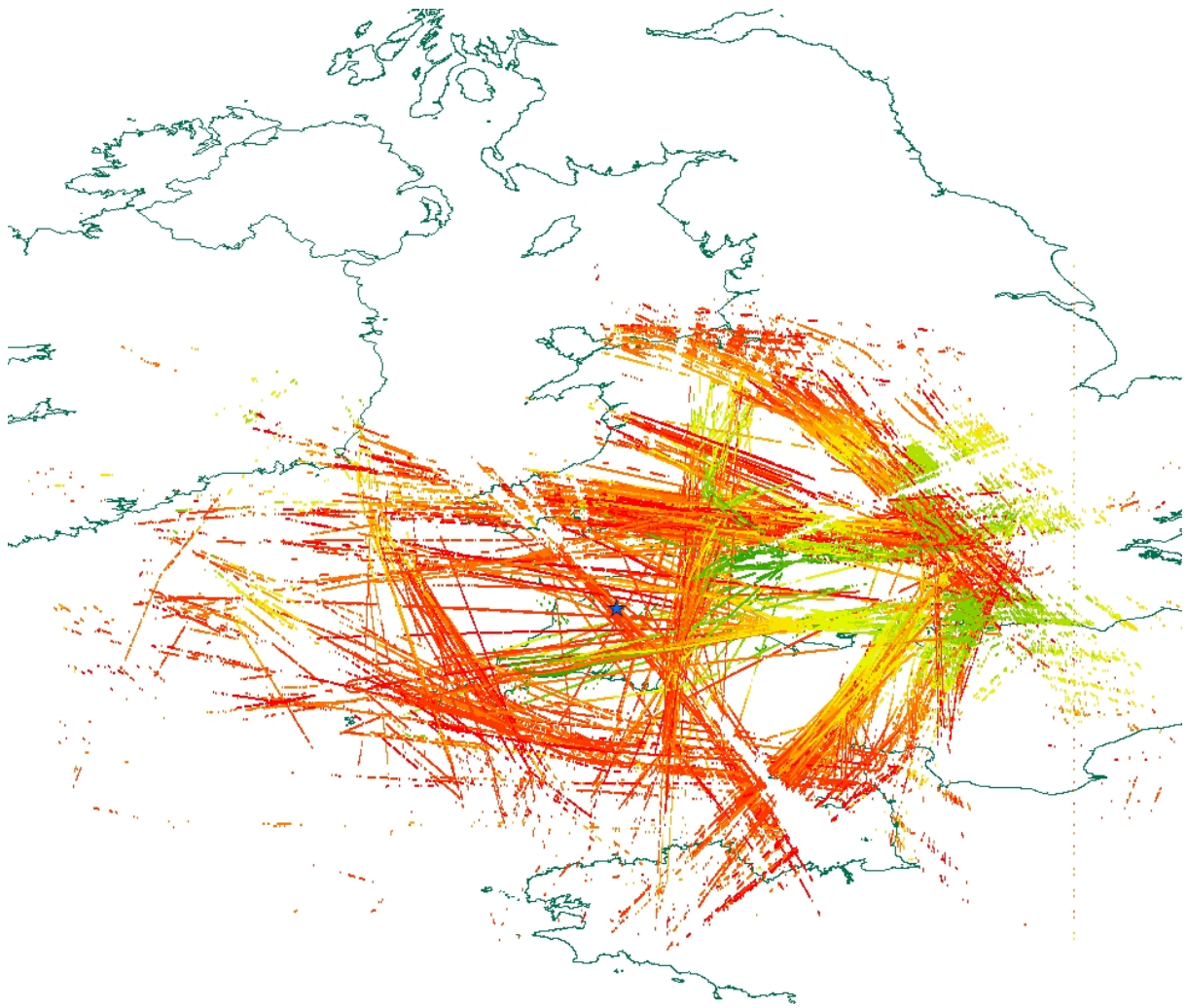
December 2004 (2603 Mode-S addresses seen)

<i>ADS-B Data</i>	# aircraft	% All ADS-B	% All Mode-S
Aircraft ID & Type	682	89.9%	26.2%
Airborne Position	357	47.0%	13.7%
Airborne Velocity	613	80.8%	23.5%
Any ADS-B	759		29.2%

6.4 Number of aircraft capable of some form of 1090 Extended Squitter ADS-B Out has risen from 399 to 759 (increase of 90% in 3 months). The proportion of the Mode-S aircraft fleet capable of some form of ADS-B Out has risen from 14.8% to 29.2%. The number of aircraft capable of squittering positions has risen from 219 to 357 (increase of 63% in 3 months).

6.5 The increase in ADS-B availability appears to be coming from an increase in equipage of European registered aircraft.

6.6 The diagram below shows the December airborne reported position data. This is just the raw data received, no tracking or tampering. The data is coded for height (red=high through to green=low). There are some gaps in coverage in three azimuth ranges. This is probably due to the Burrington SSRs and the PSR blocking the line of sight.



7 Conclusion

7.1 The meeting is invited to note the increasing equipage rates, and plans by Airlines to equip.
