



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 13: Discuss issues observed during the trial and implementation of
ADS-B**

DETECTED AIRCRAFT

(Prepared and Presented by Greg Dunstone, Airservices Australia)

SUMMARY

This describes the number of aircraft detected by two UAP ground stations in Australia.

1. BACKGROUND

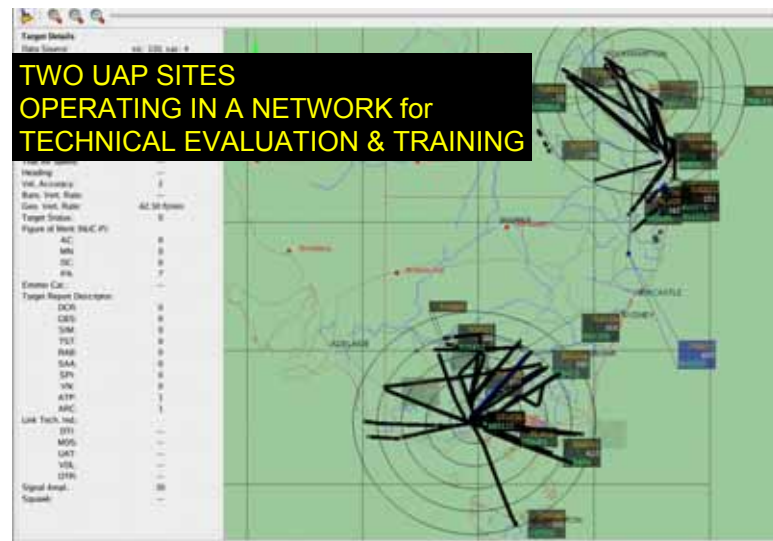
1.1 Two UAP ADS-B Ground stations have been installed. The ground stations are located at Melbourne Airport and at the Bundaberg site. They are being used for technical training and test purposes, but also provide a useful source of data which is being analysed.

2 DATA COLLECTION AND DATA REDUCTION

2.1 Raw ADS-B reports from aircraft are recorded in the UAP ground station since May this year. These reports were collected and lumped into one large file per calendar month.

2.2 No data was obtained for April since there were many interruptions to the system due to software upgrades, site acceptance testing, and technical training.

2.3 The collected data is processed to determine the information being broadcast by aircraft.



2.4 The data was then processed to identify new airframes that were received each month. The first time that the airframe was detected, details about the aircraft capabilities were recorded. If an airframe was “updated” after the first time it was detected, these printouts will not show the updated capabilities

The characteristics noted were :

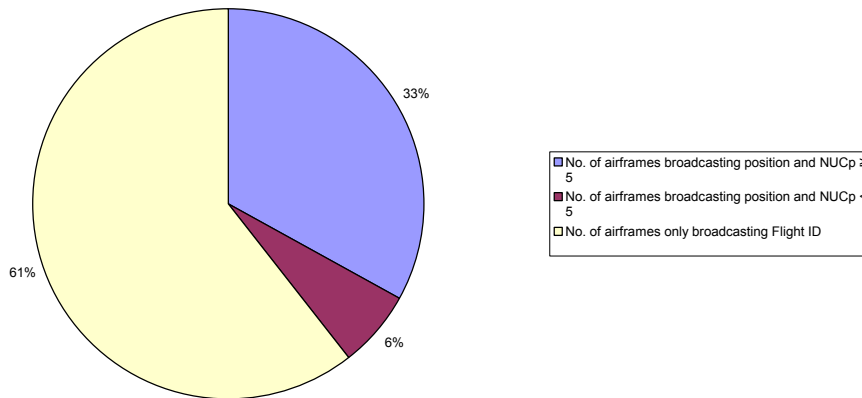
- 24 bit ICAO address
- Aircraft model – extracted from Australian register (not available if not Australian)
- Flight ID received in first detected flight
- DF : Whether the aircraft is transmitting DF17 or DF18
- NUC: Navigational Uncertainty category. If the value is greater than 4, then the data will be acceptable for provision of separation services.
- BARO : Barometric altitude is available;
- GEO Geometric altitude is available; If not, probably
- Velocity : Velocity vector information is available
- Site : Where the aircraft was first detected
- When first detected

3. RESULTS

3.1 The table below provides some details of the detected aircraft.

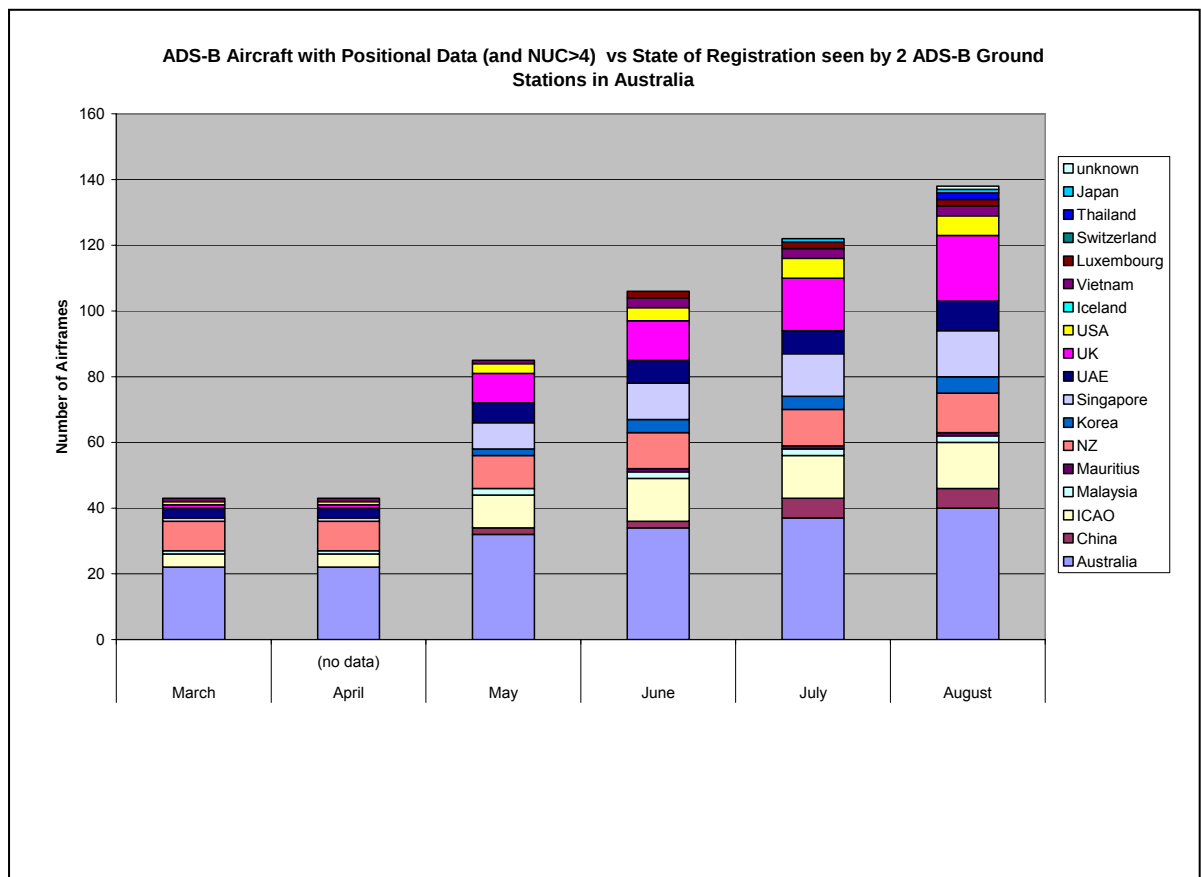
Total number of airframes detected	417
No. of airframes broadcasting position	164
No. of airframes broadcasting position and NUCp ≥ 5	138
No. of airframes broadcasting position and NUCp < 5	26
No. of airframes only broadcasting Flight ID	253

ADS-B Characteristics



- a) It is considered that only position data with NUCp ≥ 5 is suitable for use for aircraft separation.
- b) Most of the aircraft broadcasting position with NUCp < 5 (22 of 26) were broadcasting NUCp=0. These are aircraft where the transponder receives position but is not connected to the GNSS or MMR and therefore cannot determine NUCp.
- c) The aircraft broadcasting only Flight ID are most likely those upgraded for Elementary Surveillance.
- d) Numbers of equipped airframes detected each month

The following graph shows the number of aircraft that have ever been detected at the end of each month sorted by the “State” determined from the allocated 24 bit address. This graphic only includes aircraft which have transmitted positional data and with a NUC > 4 .



4. CONCLUSION

4.1 The Task Force is invited to note the information presented in this paper describing the extended squitter ADS-B data monitoring in Australia.
