International Civil Aviation Organization
Asia and Pacific Office

GUIDANCE MATERIAL ON REPORTING ADS-B AVIONICS FITMENT

Adopted by APANPIRG/19 – September 2008

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1 Purpose

1.1 States often discuss the percentage of flights or percentage of a fleet that is equipped with ADS-B. Whilst safety benefits can be delivered in environments with low equipage rates, the delivery of efficiency benefits to airspace users requires a high percentage of fitment.

1.2 A common method of reporting equipage rate is desirable. It has been noted that States currently use different criteria for reporting.

2 Acceptable Avionics

2.1 For ADS-B to be useful it is necessary that the avionics are transmitting "good" positional data integrity values. Therefore before an aircraft can be considered equipped it must be able to generate appropriate NUC (or NIC) values.

2.2 It may not be possible for all States reporting ADS-B detections to know definitively whether the transmitted integrity value from each detected airframe is generated correctly. In some cases this determination can only be made in consultation with the aircraft operator and avionics and/or airframe manufacturer. It is not proposed that all States undertake this determination.

2.3 Therefore, it is proposed that States report on the number of airframes reporting NUC or NIC acceptable for delivery of separation services, i.e. NUC>4. They may also report on the number of aircraft transmitting NIC or NUC indicating that ADS-B data cannot by used for separation services. No determination about the source or acceptability of NUC or NIC needs to be made in the reporting.

3 Reporting by Flight or Airframe

It is useful to report the number of ADS-B airframes detected as well as the number of ADS-B equipped flights.

3.1 By airframe reporting

Each ADS-B capable airframe is identified by its 24 bit address. Therefore it is relatively easy to maintain tables of individual airframes that have been detected transmitting acceptable ADS-B position and integrity data.

This report will include all aircraft that have been detected, regardless of whether they operated with and without a flight plan.

It is useful to understand the equipage rate for both foreign aircraft and local registered aircraft. Hence it is proposed that these are reported separately.

- Local [aircraft] – registered in the reporting State.
- Foreign [aircraft] – registered in any State other than the reporting State.

Splitting local aircraft into above and below 5700Kg also gives some indication of the type of aircraft equipped.

It would also be useful to indicate in the report the number of aircraft on the local aircraft register so that a percentage of equipage can be reported as well as the raw number of airframes detected.

This report may not be indicative of the impact of ADS-B because some equipped aircraft may operate very infrequently, others may operate many sectors a day and some may be either rare or frequent users of the State's airspace.

3.2 By Flight reporting

It may be possible for States to determine which individual flights are ADS-B equipped by using:

- Flight plan indicators
- Registration numbers of equipped aircraft matched to flight plans
- Date/ time and ADS-B transmitted flight ID matched to flight plans

From an air traffic management perspective, reporting by flight is more useful than reporting by airframe, because it gives an indication of the potential to provide services to airspace users. This report is more indicative of the impact of ADS-B because some equipped aircraft may operate very infrequently and others may operate many sectors a day.

This report will only include flights that have been operated with a flight plan.

If reporting by flight, assuming that flight plan data is available, it would be useful to categorise the flights into a number of categories. The following are proposed:

- International Scheduled flights
- Domestic Scheduled flights
- Domestic flights

where

- Domestic means a flight departing from and arriving in the reporting State (operation entirely within the reporting State).
- International means a flight departing from OR arriving in the reporting State (operation only partly within the reporting State).

4 Reporting forms and charts are shown in the Appendices

APPENDIX A

Report for year: ……

Percentage of flight planned **FLIGHTS** (per segment of operation) made by airframes with good integrity data for ADS-B service

	Scheduled International flights	**Unscheduled International flights**	**Scheduled Domestic flights**	**Unscheduled Domestic flights**
January				
February				
March				
April				
May				
June				
July				
August				
Sept				
October				
November				
December				

Number of ADS-B Equipped **AIRFRAMES** detected

	Foreign registered airframes	**Local registered airframes**
January		
February		
March		
April		
May		
June		
July		
August		
Sept		
October		
November		
December		

Percentage of ADS-B Equipped Local Airframes detected (based on local aircraft register for each month)

	Percentage of local registrations (>5700 MTOW)	**Percentage of local registrations (< 5700 MTOW)**
January		
February		
March		
April		
May		
June		
July		
August		
Sept		
October		
November		
December		

APPENDIX B: SAMPLE REPORTING GRAPHS

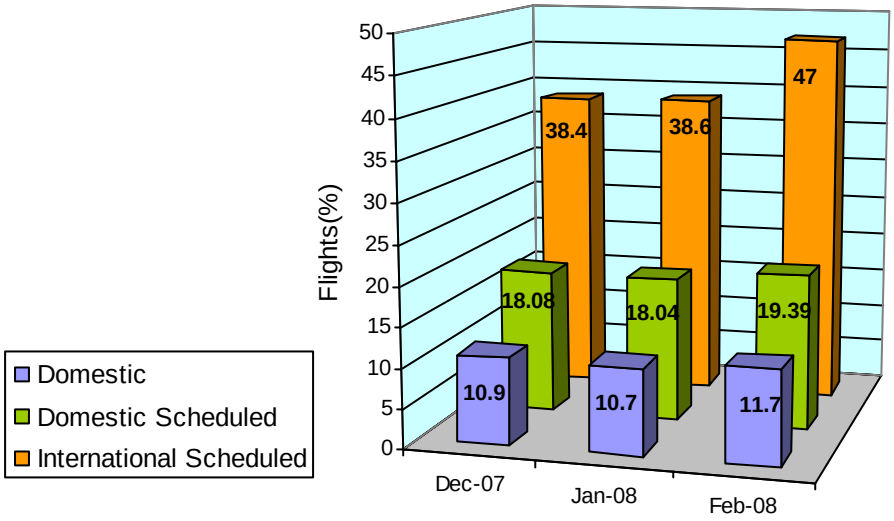

Figure 1 ADS-B **Flights** Detected since December 2007

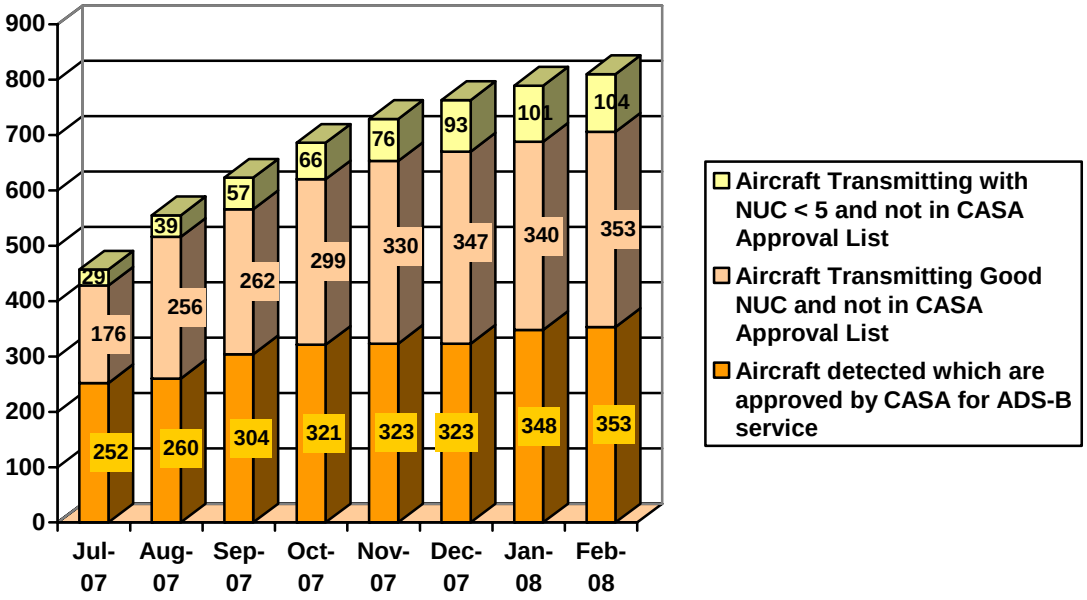

Figure 2 ADS-B **Airframes** Detected since July 2007