Twenty Third Meeting of the
Informal South Pacific ATS Co-ordinating Group (ISPACG/23)

FANS Interoperability Team Meeting (FIT/16)
Santiago, Chile, 24-25 March 2009

Agenda Item 12: Any Other Business

IDENTIFYING "BAD TAILS" BY MONITORING ADS-C PERFORMANCE

(Presented by Airservices Australia)

SUMMARY

ADS-C performance analysis has identified a number of airframes that exhibit poor performance. A means for this deficiency to be corrected is required.

1. INTRODUCTION

1.1 As ATSUs have developed performance measuring tools, a number of factors affecting data link performance have been identified. These include:

- Transitions from VHF to satellite data link;
- Duplicate ADS-C reports (sent to the same unit);
- Duplicate ADS-C reports (sent to multiple units);
- Different aircraft types;
- Different data link service provider;
- Same aircraft types operated by different companies;
- Same aircraft types operated by the same company.

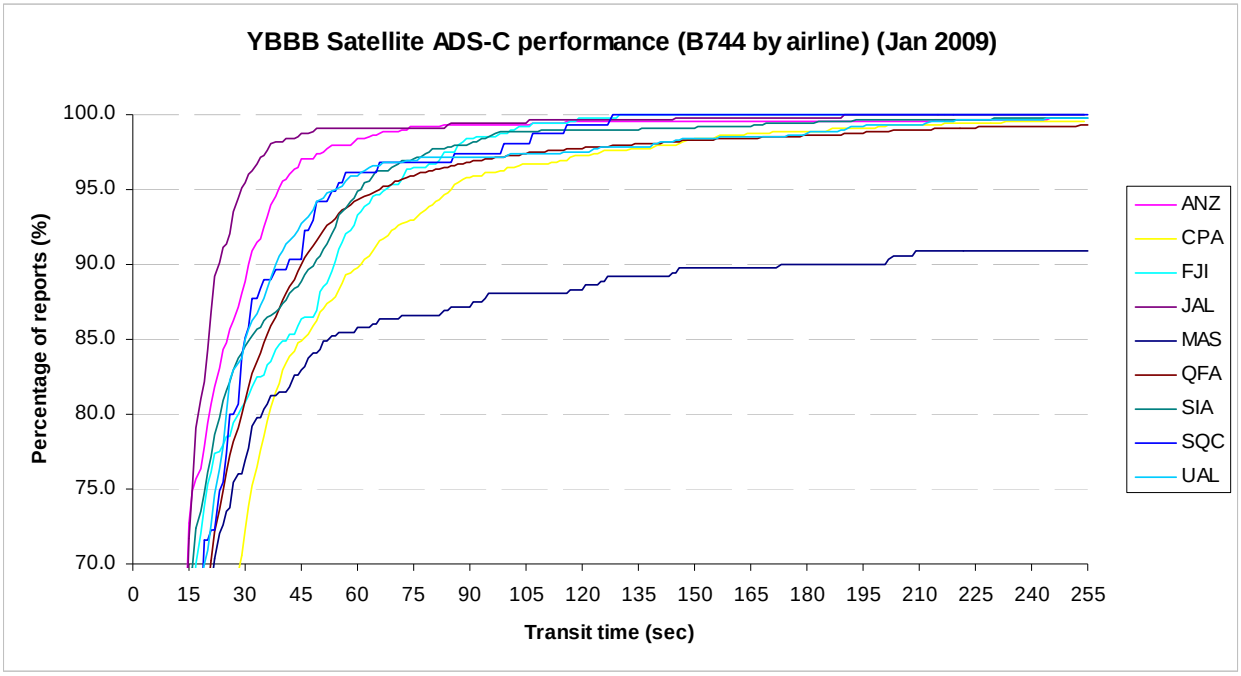
1.2 Many of these factors interact, which can adversely affect results making it difficult to identify a specific problem. For example, an analysis concluding that a particular aircraft type exhibits poor performance may have been biased due to poor performance from a single aircraft.

2. DISCUSSION

2.1 Over the years a number of tools have been developed to analyze data link information. Most of them however, still require some level of manual processing, making them a time consuming process. The sheer amount of data and the numerous combinations of what can be measured adds significantly to the complexity of the analysis.

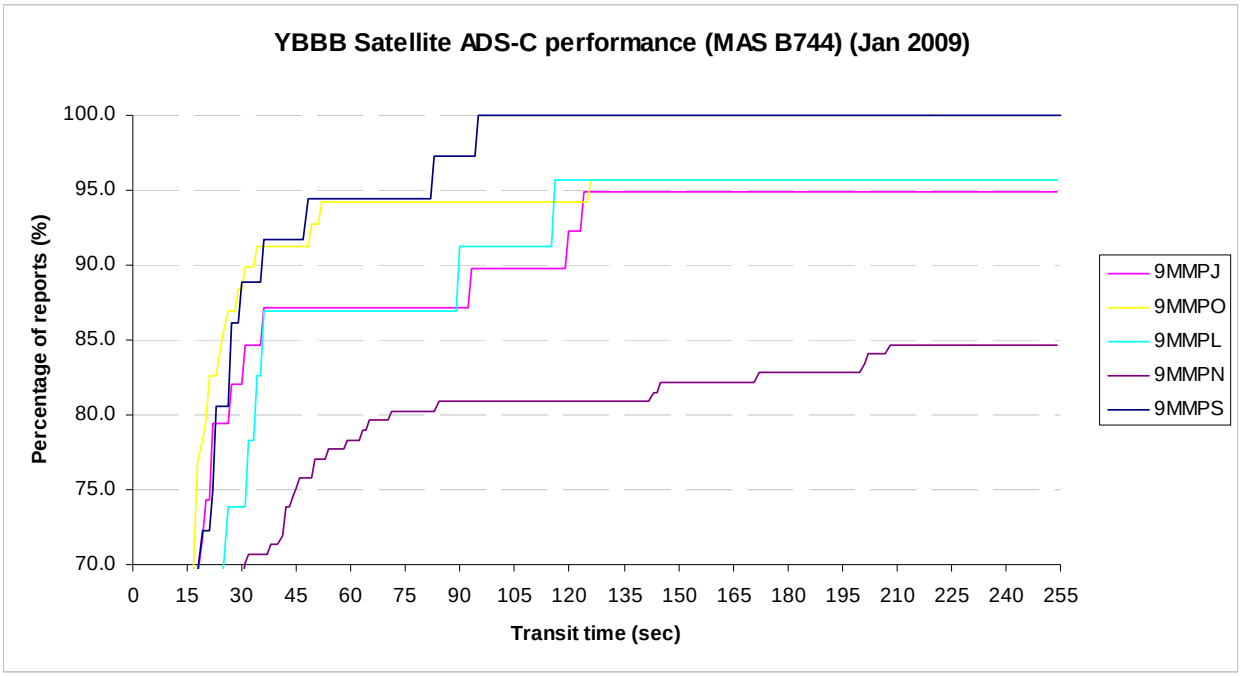
2.2 During a recent analysis of satellite ADS-C performance, an anomaly was detected. Further investigation identified a number of airframes that appear to have consistently poor ADS-C performance.

2.3 Graph 1 shows the B744 ADS-C performance for a number of operators based on ADS-C reports received by Brisbane (YBBB) for January 2009. The range of varying performances is of interest, but the main focus is on the performance of the Malaysian Airlines (MAS) B744, which is clearly significantly below that of other operators.



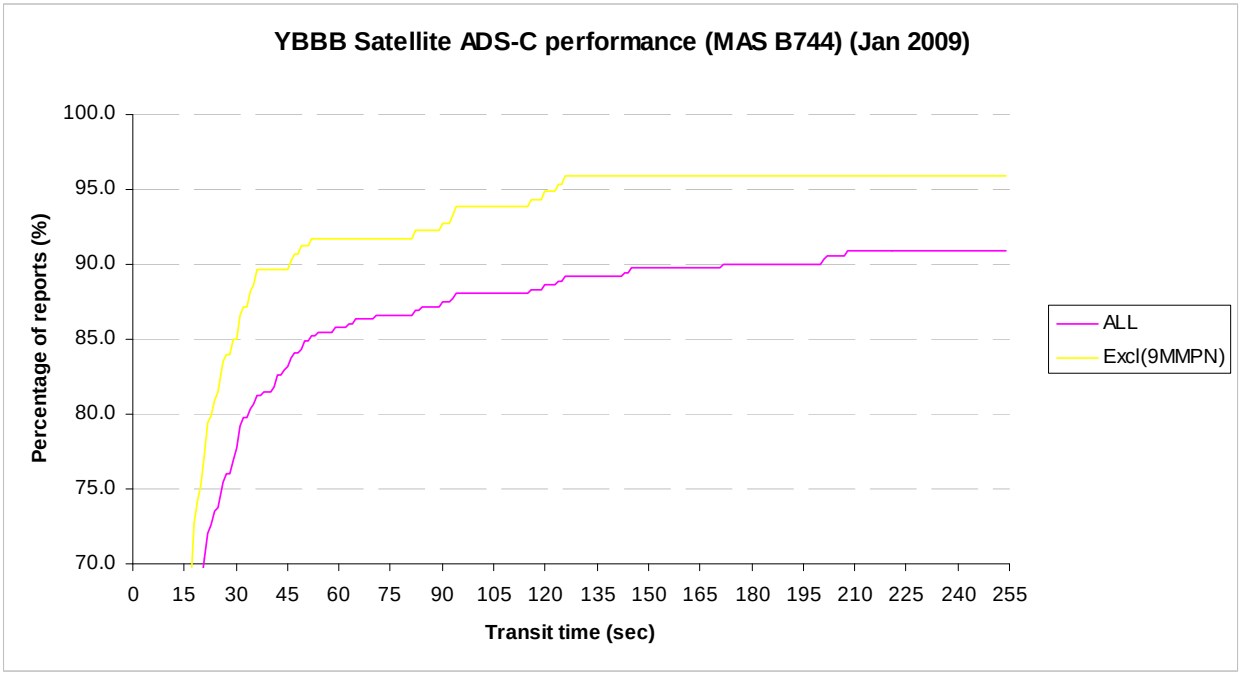
Graph 1. B744 satellite ADS-C performance

2.4 As a result of identifying the MAS B744 as being a “poor performer”, a closer inspection was made of the individual airframes in the MAS B744 fleet. The results of this analysis are displayed in Graph 2. Once again, there is a range of values, but the performance of 9M-MPN is significantly below that of the other airframes. This airframe is the subject of ASA FIT PR 2009-09.



Graph 2. B744 satellite ADS-C performance for individual MAS aircraft

2.5 Having identified an individual airframe, a comparison was made of ADS-C performance of all MAS B744 with the performance excluding 9M-MPN. The results are shown in Graph 3.



Graph 3. Comparison of ADS-C performance, excluding 9M-MPN

2.6 Using a similar methodology, a number of other airframes were also identified:

- Qantas B444 (VH-OJB) (ASA FIT PR 2009-08 refers)
- Thai Airways B772 (HS-TJR) (ASA FIT PR 2008-20 refers)

2.7 Identifying the airframes is only a part of the problem. When conducting data analysis, it is easy to forget what the overall aim actually is. We can draw graphs, filtering out rogue tails to get a better idea of what the true overall performance is, but the fact remains that these airframes are flying on a daily basis, using this faulty(?) equipment. As well as possibly compromising any ADS-C separation standard that may be in effect, this increases ATC workload chasing up overdue ADS-C reports, unanswered CPDLC messages and failed data link transfers.

A process that results in the problem **being fixed** is required.

3. ACTION BY THE MEETING

3.1 The meeting is invited to determine an appropriate course of reporting to ensure that problems with specific airframes are rectified as soon as possible.