Twenty Fourth Meeting of the
Informal South Pacific ATS Co-ordinating Group (ISPACG/24)

FANS Interoperability Team Meeting (FIT/17)
Brisbane, Australia, 9-10 March 2010

Agenda Item 7: ANSP Monitoring

POST IMPLEMENTATION MONITORING OF RCP AND ADS LATENCY

Presented by Airways New Zealand

SUMMARY

This paper provides an update on post implementation monitoring and observed RCP and ADS latency in NZZO. The paper also provides information on the implementation of the ISPACG CRA website and discusses the usefulness of the website in providing visibility to all stakeholders on the performance of the FANS1/A system. This visibility is required in any performance based system and is a means towards enabling continuous performance improvement. With APANPIRG acceptance of the Global Operational Data Link Manual as a replacement for the FOM, we recommend that the ISPACG FIT develop plans for post implementation monitoring by all ANSP per the guidelines of the GOLD Appendix D.

1. INTRODUCTION

1.1 Airways New Zealand has been developing post implementation monitoring of FANS1/A data link since October 2007 to verify that the Oceanic SPR requirements for the application of reduced separations are being met. This development was previously reported at ISPACG/22 FIT/15 in WP-04 and at ISPACG/23 FIT/16 in WP-04. This development work provided the basis for GOLD Appendix D which now provides guidelines for ANSP post implementation monitoring and corrective action.

1.2 At ISPACG/23 FIT/16 in WP-05 Airways proposed the implementation of a CRA website to enable online problem reporting and tracking and provide a regional repository for observed FANS1/A system performance. The CRA site is now operational for problem reporting and tracking, and limited system performance reporting using NZZO data. Further development of the site is needed if we are to provide a complete regional picture of FANS1/A performance and complete the implementation of a performance based system as envisaged by the ICAO global plan.

2. DISCUSSION

2.1 **FANS1/A Performance – Current Status**. In 2009 overall performance observed in NZZO deteriorated following the introduction of cabin services using Data3 SATCOM. In addition to the Data2/Data3 interaction issue continuing poor performance from the majority of B777 fleets operating in NZZO that continue to be affected by the VHF /SATCOM transition issue saw observed performance from a large number of fleets continue to be below acceptable levels. The application of reduced separations was withdrawn in October 2009 from one A345 fleet significantly impacted by the Data2/Data3 interaction but this was re-instated 4 March following the GES Release 15 software at Santa Paula.

2.2 We have been monitoring FANS1/A performance long enough to know that the system is quite capable of meeting the SPR requirements for both ASP180 and RCP240. Some fleets have always met these requirements on a consistent basis. Figure 1 below illustrates one of these consistent achievers and shows the ASP180 performance for 4th quarter 2008 and 4th quarter 2009 for one B744 fleet that is meeting the performance requirements.

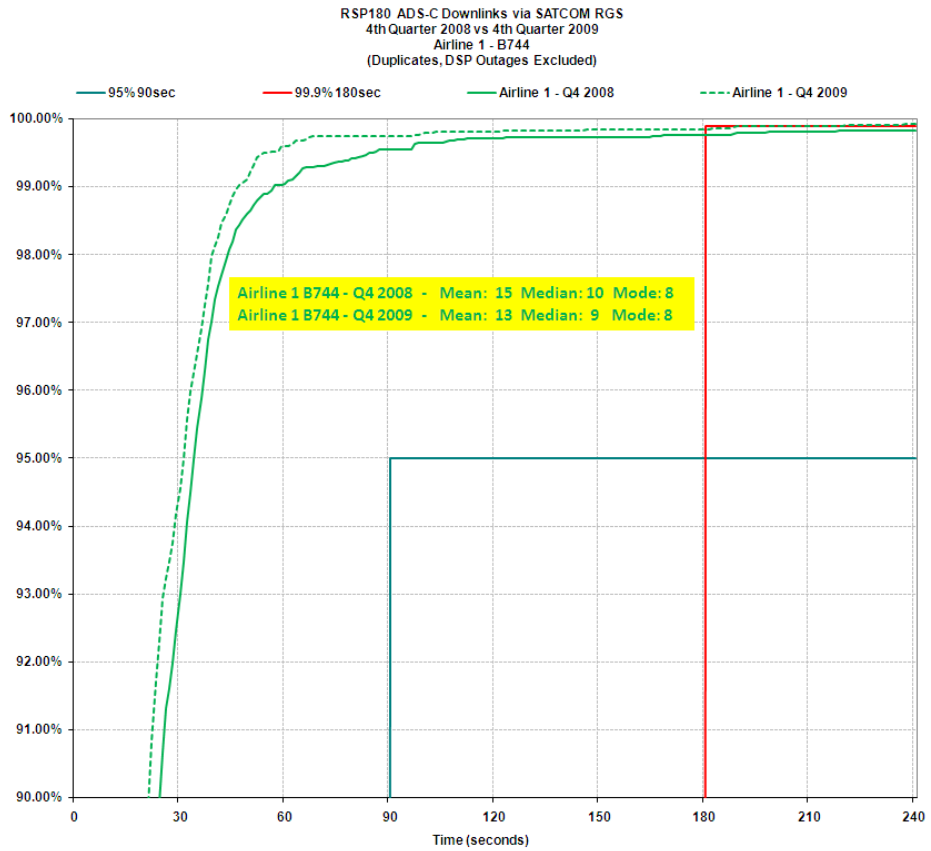

Figure 1: Comparison between Q4 2008 and Q4 2009 for a B744 fleet meeting SPR RSP180 requirements

2.3 Figure 1 also illustrates typical measures of central tendency for FANS1/A ADS-C latency measurements with both the median and mode of the distributions for those fleets using high speed data channels observed around 10 seconds well below the 95% requirement of 90 seconds.

2.4 ISPACG has demonstrated that continuous performance improvement is achievable though post implementation monitoring. Monitoring since 2007 has identified a number of significant problems causing degraded performance. These include: fleets using low speed speed ACARS data channels; the B777 VHF/SATCOM transition issue; and the Data2/Data3 interaction observed with the implementation of new cabin services. Performance improvement has been achieved by identifying fleets using low speed channels and changing them to high speed channel use, fixing the Data2/Data3 issue at ARINC GES by implementing Release 15 software, and fixing the B777 VHF/SATCOM issue by the installation of AIMS BP14 on the aircraft. Figure 2 below demonstrates the performance improvement observed on one B777 fleet using Data3 cabin services that had just completed the AIMS BP14 upgrade before the installation of GES Release15 at Santa Paula on 16 February 2010. Performance post Release 15 is now meeting the SPR requirements and closely matches that seen on the B744 fleet depicted in Figure 1.

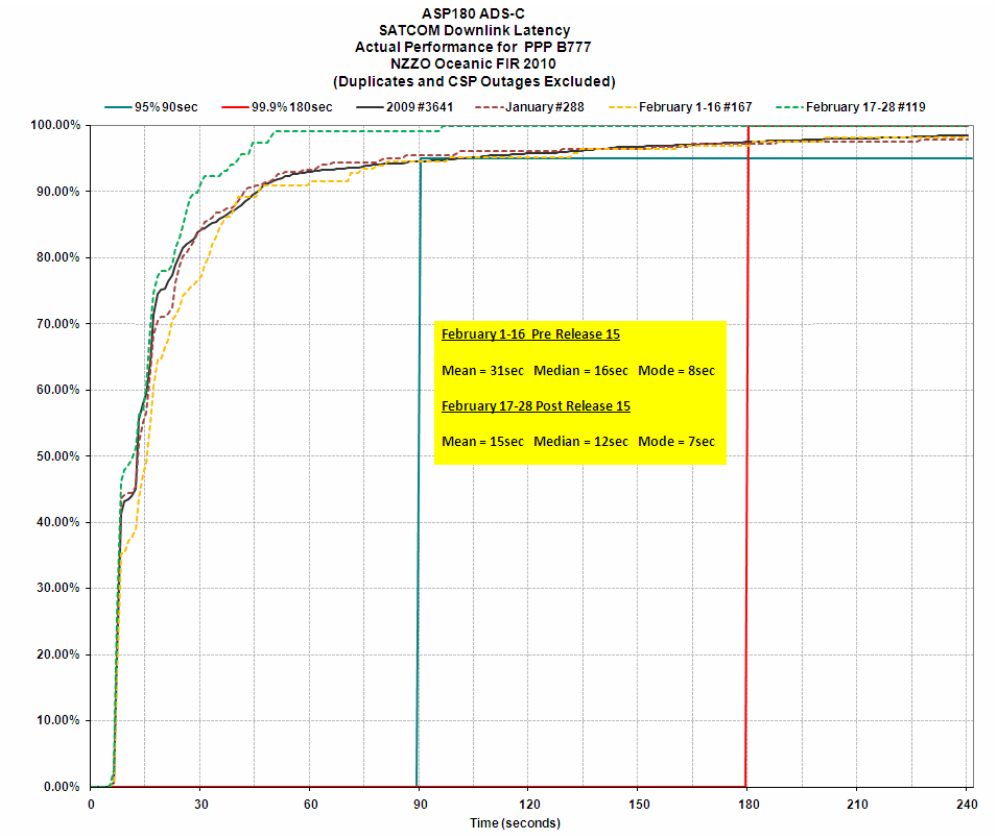

Figure 2: Performance improvement from AIMS BP14 and GES R15 software upgrades

2.5 NZZO is still observing some fleets using low speed ACARS channels, and the majority of the B777 fleets operating in NZZO have not yet upgraded to AIMS BP14. While the ARINC GES at Eik and Santa Paula have been upgraded with Release 15 the SITA GES at Perth and Aussaguel have not been upgraded and we are advised SITA have no current plans to do so.

2.6 Airways will continue to seek fleet upgrades to the ACARS high speed channels, with those users still operating on low speed channels. Airways would also like to determine AIMS BP14 upgrade plans for the regions B777 fleets simply because AIMS BP14 is expected to give a significant performance improvement in our area. We would like support from other ANSP and the CRA to achieve this.

2.7 Since the implementation of Release 15 at Santa Paula GES we have observed significant performance improvements in two B77W, one A388, and one A345 fleet. One of the B77W fleets was not known to be a user of data 3 and feedback received from our CSP is that for some of the issues addressed by Release 15 it is not so much the quantum of activity via Data 3 that is the issue more the fact that it is in use and randomly clashing with Data 2. NZZO is observing continuing unexplained performance below SPR requirements from an A388 fleet that is a SITA customer. This will be followed up through a FANS problem report to determine if the issue could be resolved by Release 15 software. We are of the opinion that a stakeholder review as to whether Release 15 should be installed at all GES is needed. The performance improvement on the A388 fleet using ARINC since Release 15 was installed at Santa Paula is illustrated below in Figure 3.

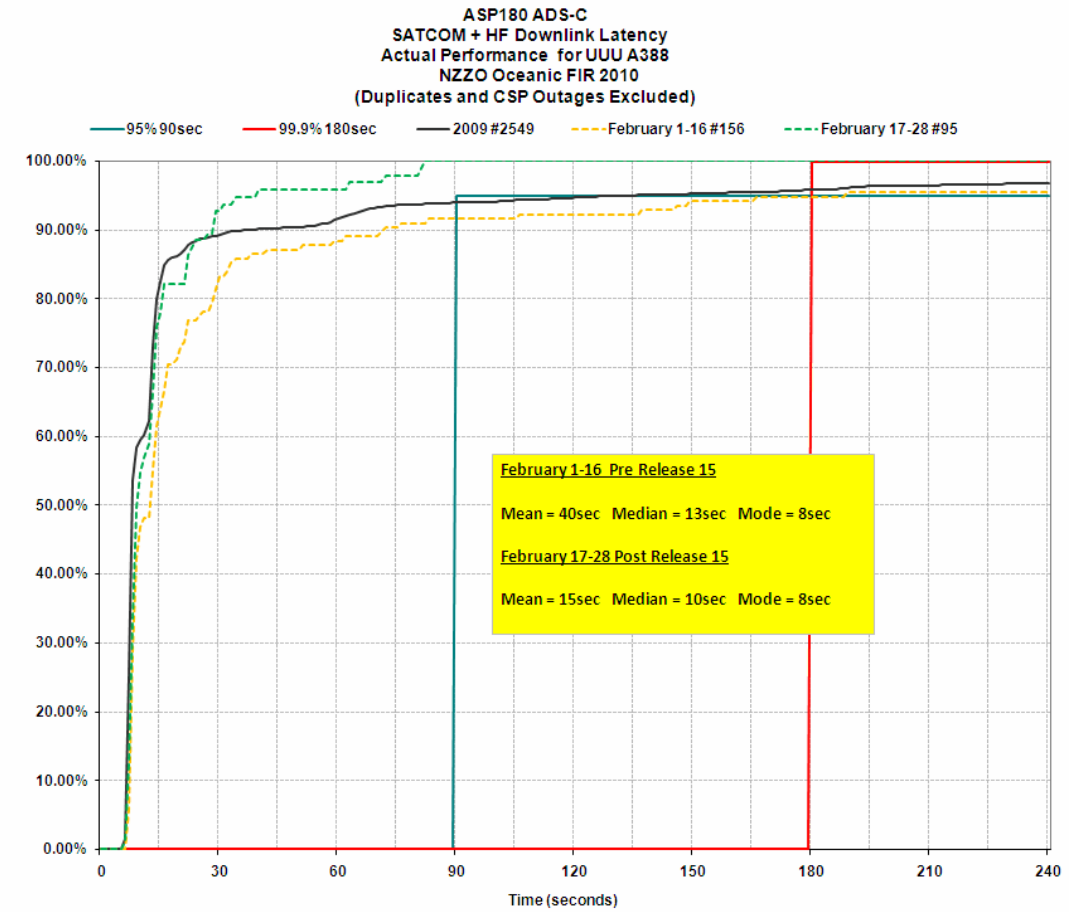

Figure 3: Performance improvement on A388 after GES R15 installation

The performance improvement on the B77W fleet not known to be a high Data 3 user is illustrated below in Figure 4. We are advised this fleet is also fitted with AIMS BP 14.

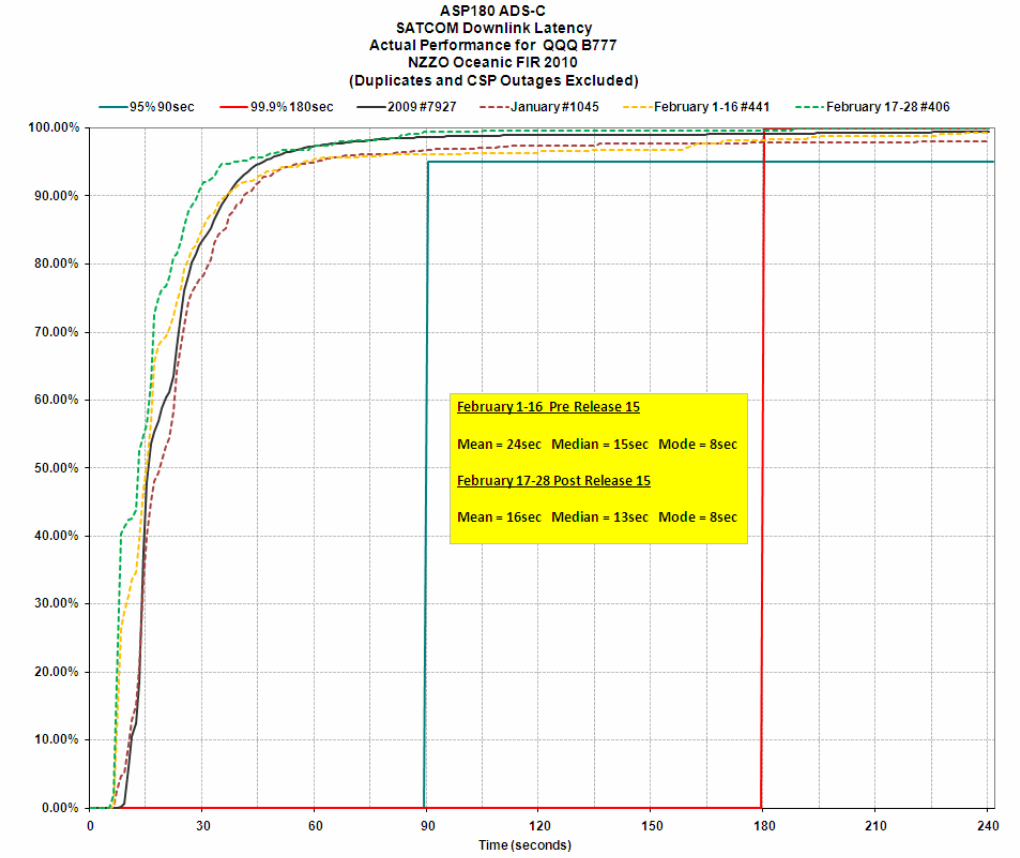

Figure 4: Performance improvement on B77W after GES R15 upgrade

2.8 Measured availability continues to be below the SPR requirements. For normal operations in NZZO airspace we consider that the SPR availability of 99.9% is adequate for our traffic levels. This equates to a target of no more than 500 minutes of outage per year. In 2008 we observed 235 minutes of outage and in 2009 we observed 627 minutes of outage. The 2009 figure was badly skewed by one outage lasting 292 minutes. In 2010 we have seen 61 minutes of outage time to date.

2.9 In high traffic areas we are requiring an availability of 99.99% for traffic efficiency which equates to 50 minutes of outage time. Current observed system performance is still well below these levels.

2.10 The type of outages we are seeing seem related to the CSP networks and we are not seeing the GES instability that was prevalent a few years ago. We expect to be moving services to the I4 constellation and new I4 GES in a few years as the I3 constellation reaches the end of service life. It is expected that the new I4 GES will provide higher availability than the existing I3 GES. The CSP's have briefed in a number of forums on their plans to improve the availability at the network level.

2.11 **CRA Website – Current Status.** The website at http://www.ispacg-cra.com/ is being used for ISPACG CRA problem reporting. Reporting has mainly been from Air Services Australia and Airways New Zealand. However, the FAA now has a group logon. It is also being used by the NAT DLMA although no NAT problem reports have been raised on line. Any FANS1/A stakeholder requiring access to the problem reporting section can use the registration form available on the website under the **About** menu.

2.12 The website is also used for performance reporting on both ADS-C RSP and CPDLC RCP. The website also reports on FANS1/A system availability, current system issues, maintains a register of monthly performance reports, and a register of ANSP compliance with the Oceanic SPR safety requirements. The performance data currently captured is per Appendix D of the GOLD and is sourced entirely from Airways New Zealand. Visibility of the observed FANS1/A performance by other ISPACG ANSP would assist in moving us towards the regional performance based system envisaged by ICAO.

2.13 The problem reporting and resolution process is based on that in the GOLD Appendix D which was itself based on existing regional guidance material. One of the important aspects of the problem reporting and resolution process is the feedback loop to the originator of the problem and the speed at which this feedback occurs to ensure users are confident in the system. The automation of this feedback notification on the website assists in this feedback and we have put required response times in the email notification to stakeholders assigned to investigate the problems. As we move forward we need to focus on the efficiency of the current process and ensure that problems are actioned in a timely manner. A review of the current process is recommended.

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

a) Seek further performance improvements by:
   a. Facilitating more upgrades to high speed channel use.
   b. Seeking prompt installation of AIMS BP14 on B777 fleets and obtaining upgrade schedules for this work.
   c. Continuing to monitor the performance benefits of Release 15 and review the need for this software at all GES.
   d. Ongoing performance monitoring.

b) Further the development of the CRA website by:
   a. Facilitating the provision of performance data from other regional ANSP and develop time lines as to when this will occur.
   b. A review of the existing PR process to ensure timely processing and feedback.