

## **FANS Interoperability Team Meeting (FIT/20)**

**Auckland New Zealand, 26-27 February 2013**

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### **Agenda Item 5 – System Performance Review**

#### **FANS1/A Performance Update NZZO**

**Presented by Airways New Zealand**

#### **SUMMARY**

This paper reviews the current performance of FANS1/A operations in the NZZO oceanic FIR, comments on the current monitoring and improvement processes in the ISPACG region, and requests participation by ISPACG stakeholders in the continuous improvement of FANS1/A operations in the SOPAC.

## **1. INTRODUCTION**

- 1.1. Data obtained from post implementation monitoring is used to measure FANS1/A system performance against Required Communications Performance (RCP) and Required Surveillance Performance (RSP). Data is presented using guidance from GOLD Appendix D. System availability measurement is based on reported outages by the CSP and observed outages in the FANS1/A application data records
- 1.2. Overall performance is steady and shows improvements in some areas as issues are identified and corrected through the regional Central Reporting Agency. As noted at FIT/19 participation in the CRA process could be improved as currently few stakeholders actually participate.
- 1.3. Detailed performance analysis is available on the CRA website at <http://www.ispacg-cra.com/>.

## **2. DISCUSSION**

- 2.1 ADS-C Performance. The observed performance of ADS-C downlinks in 2012 shows little change from 2011. The RSP180 requirement is for 99.9% of downlinks to be received within 180 seconds, and for 95% of downlinks to be received within 90 seconds. We observed 99.7% within 180 seconds and 99.12% within 90 seconds in 2012. All of the 26 fleets monitored meet the 95% 90 seconds normal operations requirement. 11 fleets meet the 99.9% 180 second requirement, and a further 5 were above 99.5%. ADS-C performance data in tabular and graphical form is attached at Appendix A.

- 2.2 CPDLC Performance (RCTP). Performance is steady. For RCP240 Required Communications Technical Performance (RCTP) the requirement is for 99.9% of transactions to be completed within 150 seconds and 95% to be completed within 120 seconds. Actual Communication Technical Performance data in graphical and tabular form is attached at Appendix A.
- 2.3 CPDLC Performance (RCP). Performance is steady. For RCP240 Required Communications Performance (RCP) the requirement is for 99.9% of transactions to be completed within 210 seconds and 95% to be completed within 180 seconds. The intervention message set used for RCP analysis was changed for the 2012 analysis and route and communications transfer transactions were removed. Actual Communication Performance data in graphical and tabular form is attached at Appendix A.
- 2.4 CPDLC Performance – Summary. Nearly all fleets are meeting the 95% normal operations requirements and for those not meeting the 99.9% requirements most are close. For those individual aircraft or fleets that are below the standard then we use the ISPACCG Central Reporting agency (CRA) to investigate and hopefully resolve the issues. We have had some success at continuous performance improvement over the years and it is an on-going process. Performance data in graphical form is attached that illustrates the performance improvement since 2009.
- 2.5 Post Implementation Monitoring. ICAO mandates post implementation monitoring to ensure that the required communications and surveillance performance is met. Post implementation monitoring will drive further performance improvement. A mature problem reporting system, and the investigation and resolution of identified issues is essential in today's data-link environment. The observations made in our 2011 performance update regarding stakeholder participation to obtain continuous performance improvement remain valid.
- 2.7 Availability. Availability of the Inmarsat I3 constellation has been recovering from the failure of the POR satellite during 2010 that was reported and discussed at the FIT/19. An unreported outage of a CSP in 3rd quarter 2012 for 220 minutes (UPS maintenance) and another CSP outage in early February 2013 of 48 minutes has affected the recovery. There have been no issues with RGS stability during 2012. The upgrade of the I3 satellite RGS to I4 standard commencing 26 February at Perth is expected to further enhance reliability.
- 2.9 We have little Iridium traffic in NZZO but the Iridium network does suffer from only having a single GES which is significantly affected by weather outages. There have also been a number of technical outages during 2012. We understand that Iridium have included additional GES in their Iridium-Next architecture. Airways have started monitoring Iridium availability in 2012 as more aircraft are equipped in our area of interest. We are currently struggling with the clarity of some of the Iridium reports. The use of the wording “degraded performance” and whether any reported “degraded performance” actually affects FANS1/A means we are not sure if an outage is occurred or not. Currently, we will record any degraded performance as an outage. Iridium availability is well below the requirements. Both the duration and frequency of outages would have a significant impact on controller workload if these aircraft were having reduced separations applied on any regular basis.

2.10 We have had no reported outages from MTSAT.

2.11 Availability data is attached at Appendix A.

2.12 Data Sharing. Annex 11 requires that agreements shall be put in place to share information from monitoring programs between regions. The implication is that ATSP within a region will aggregate their data to enable this requirement. If we are to progress this it will require ISPACG ATSP to agree to both data gathering and aggregation and the meeting may like to consider how this may be progressed at an ICAO regional level.

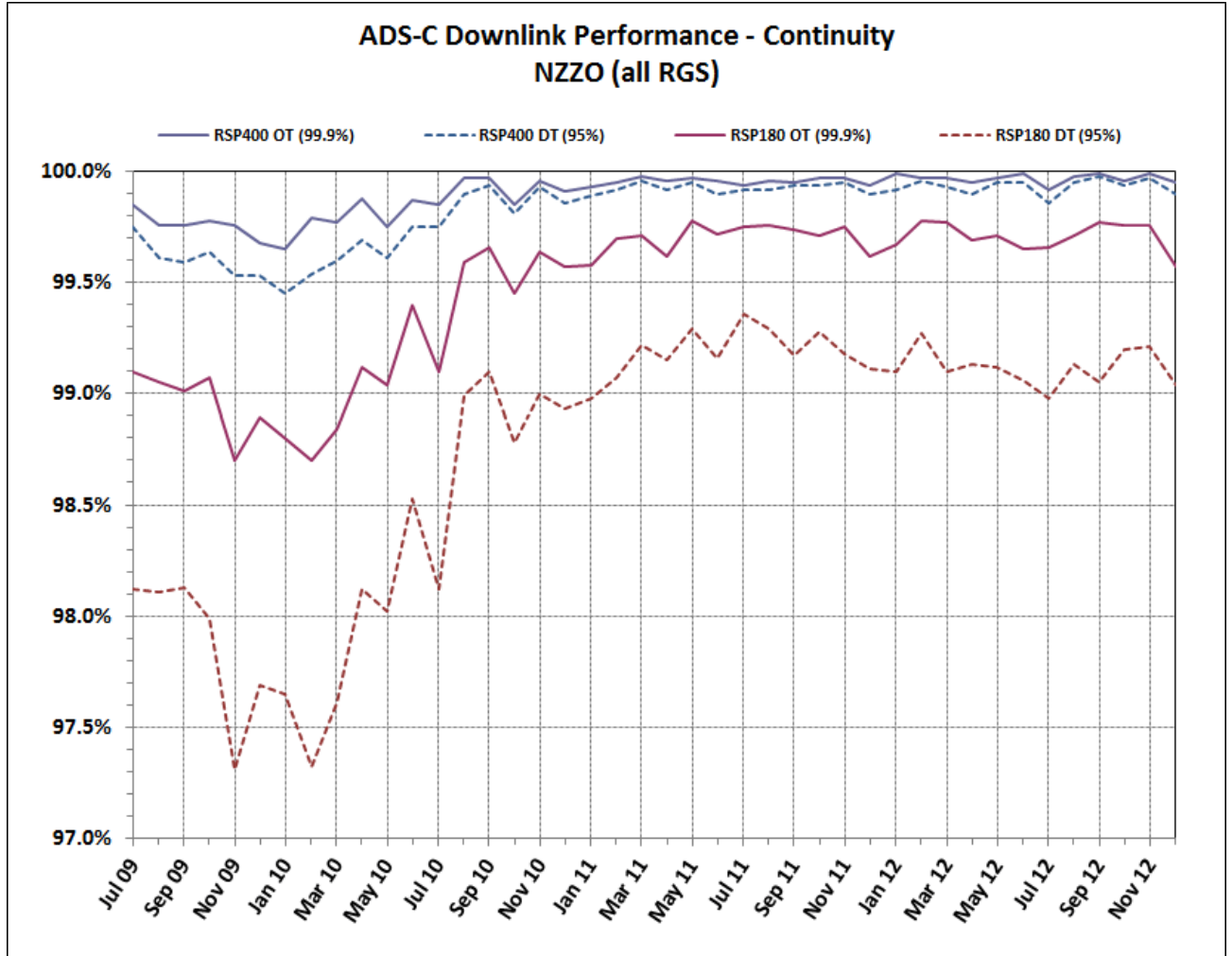
### **3. ACTION BY THE MEETING**

3.1 The meeting is invited to:

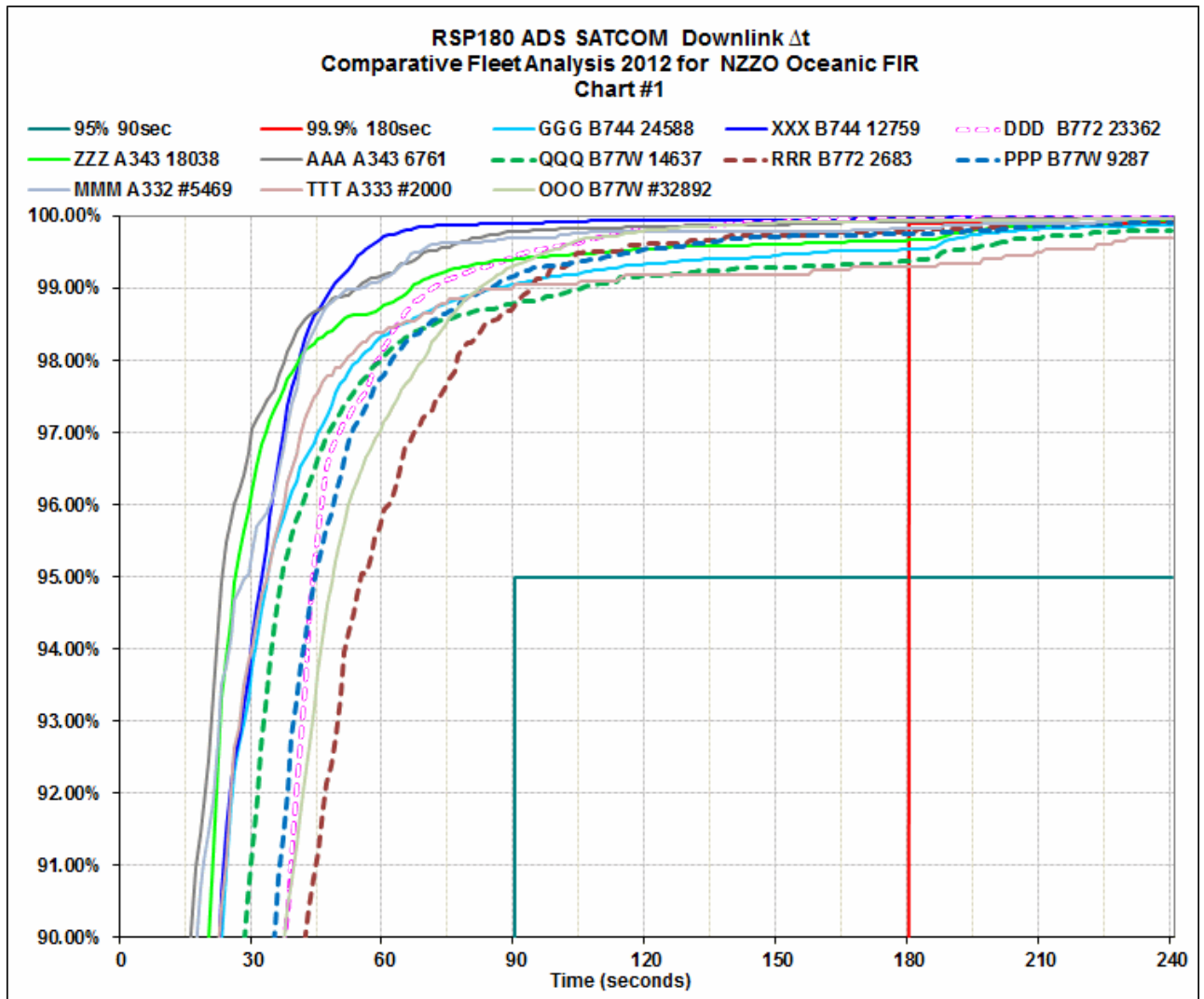
- a) Note the observed performance of FANS1/A data-link in NZZO.
- b) Review stakeholder support for the FANS1/A continuous improvement process in the region and investigate ways to improve participation.
- c) Review availability of the Iridium network and determine a way forward.
- d) Review use of the term “degraded performance” by Iridium and seek clarification of its meaning in regard to the classification of reported outages.
- e) Discuss ways that the Annex 11 requirement for the sharing of information from monitoring programs can be progressed.

**Appendix A: Performance and Availability Data NZZO**

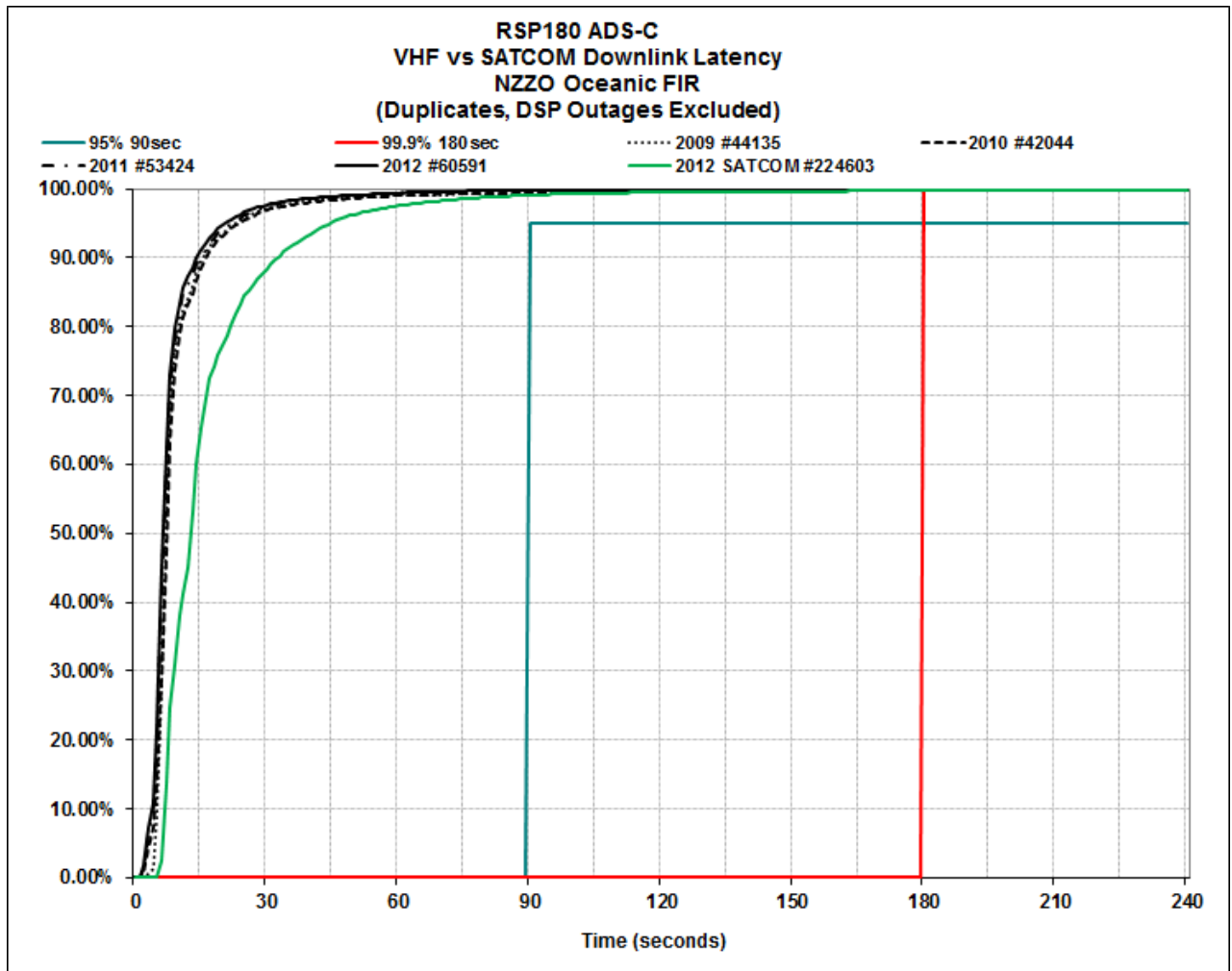
**ADS-C Performance: 2009-2011**



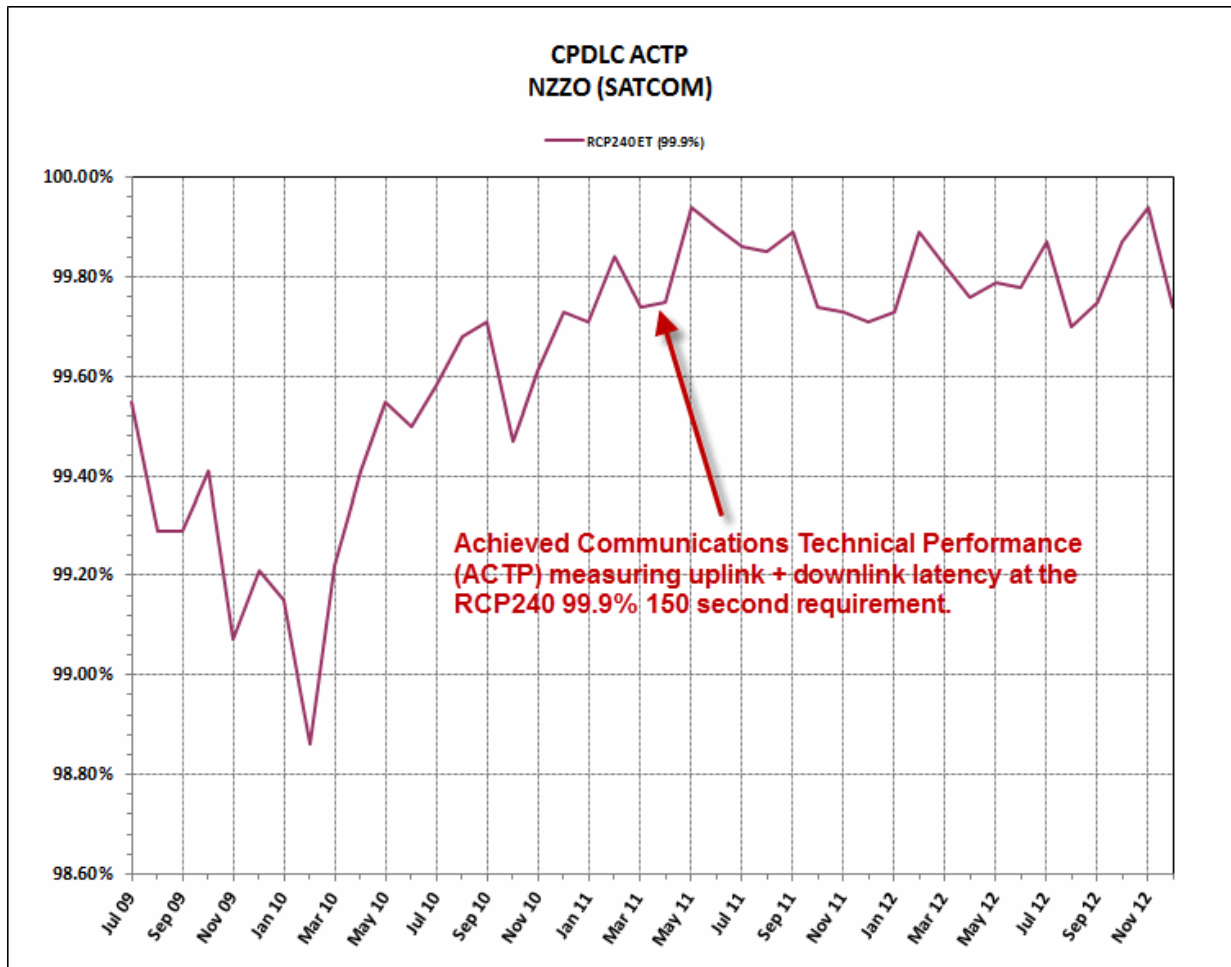
**ADS-C : Getting Better.**



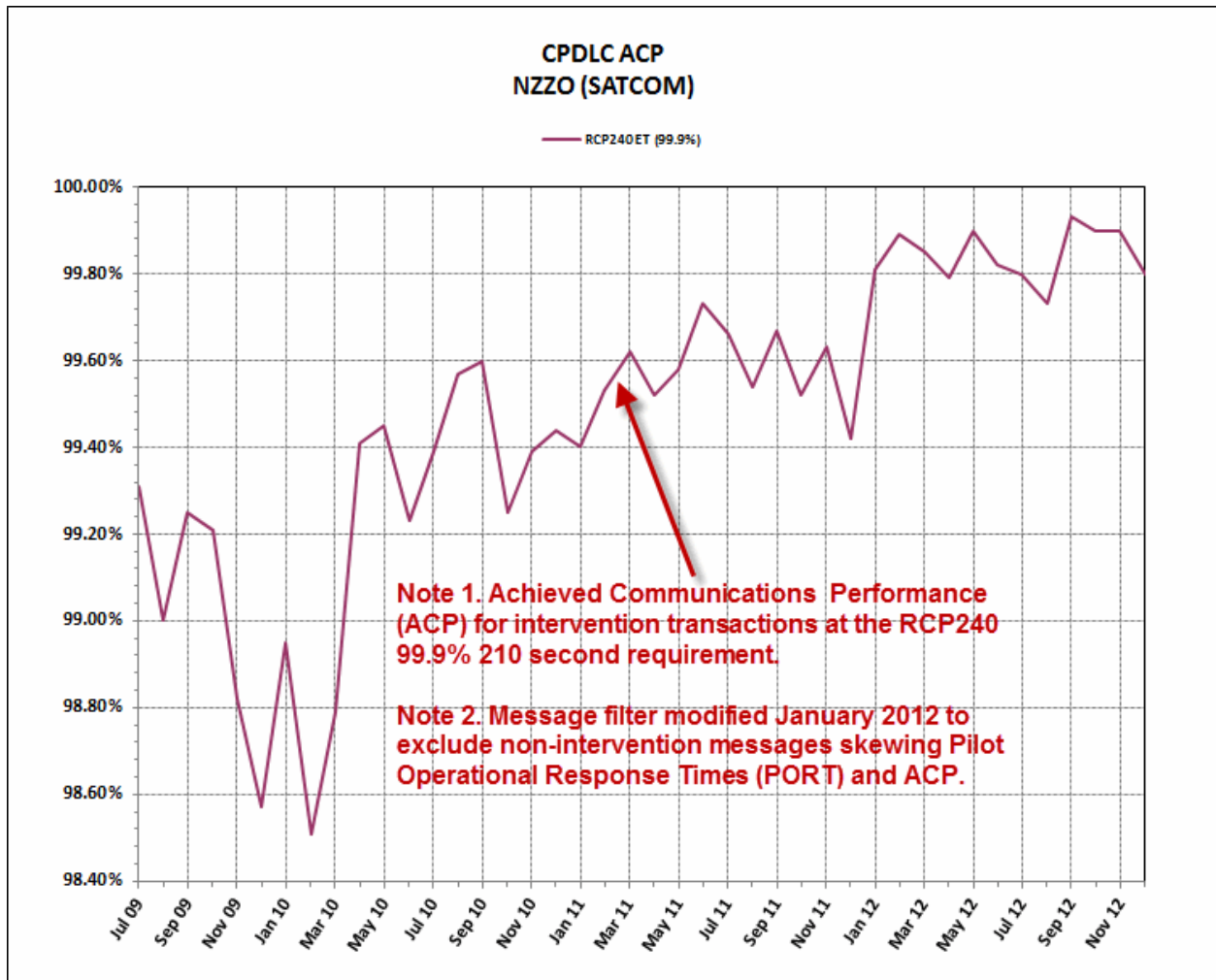
**ADS-C Performance: SATCOM vs VHF**



**CPDLC ACTP: 2009-2012**

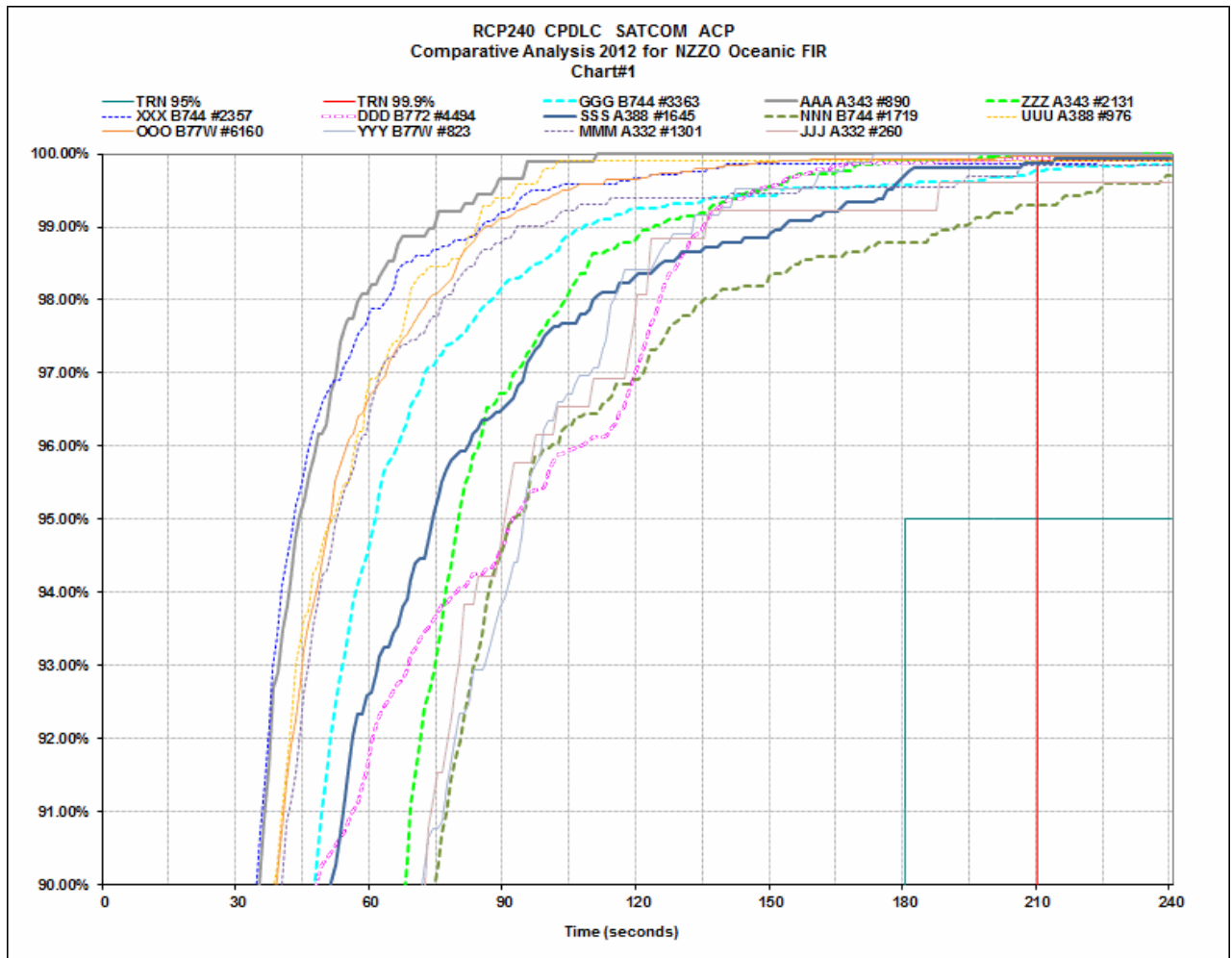


**CPDLC ACP: 2009-2012**

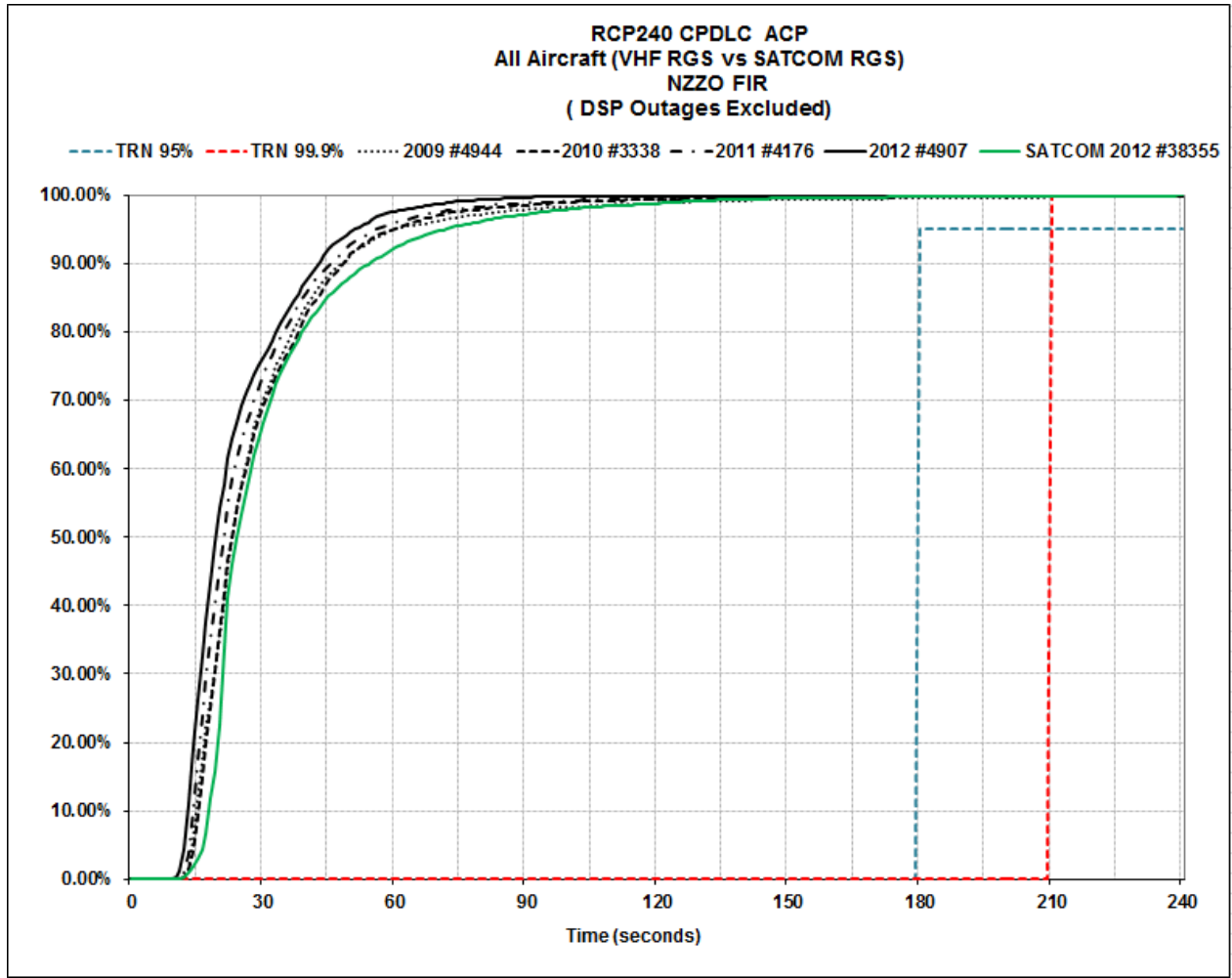




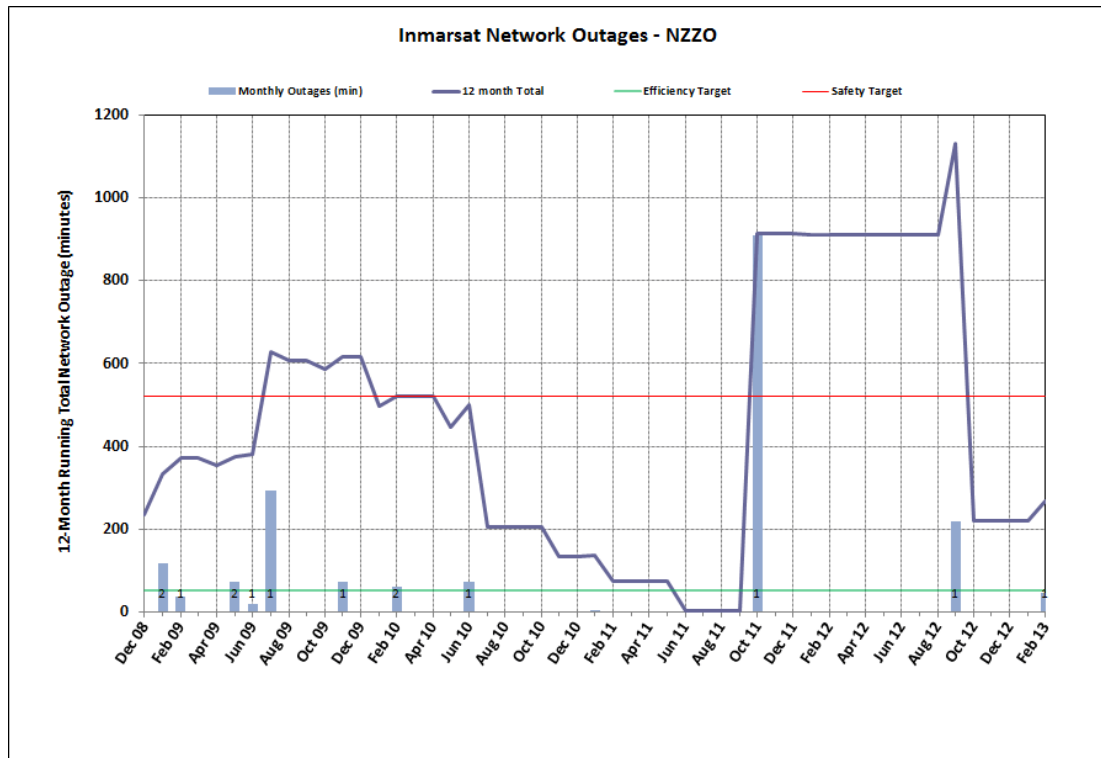
### CPDLC – Getting Better



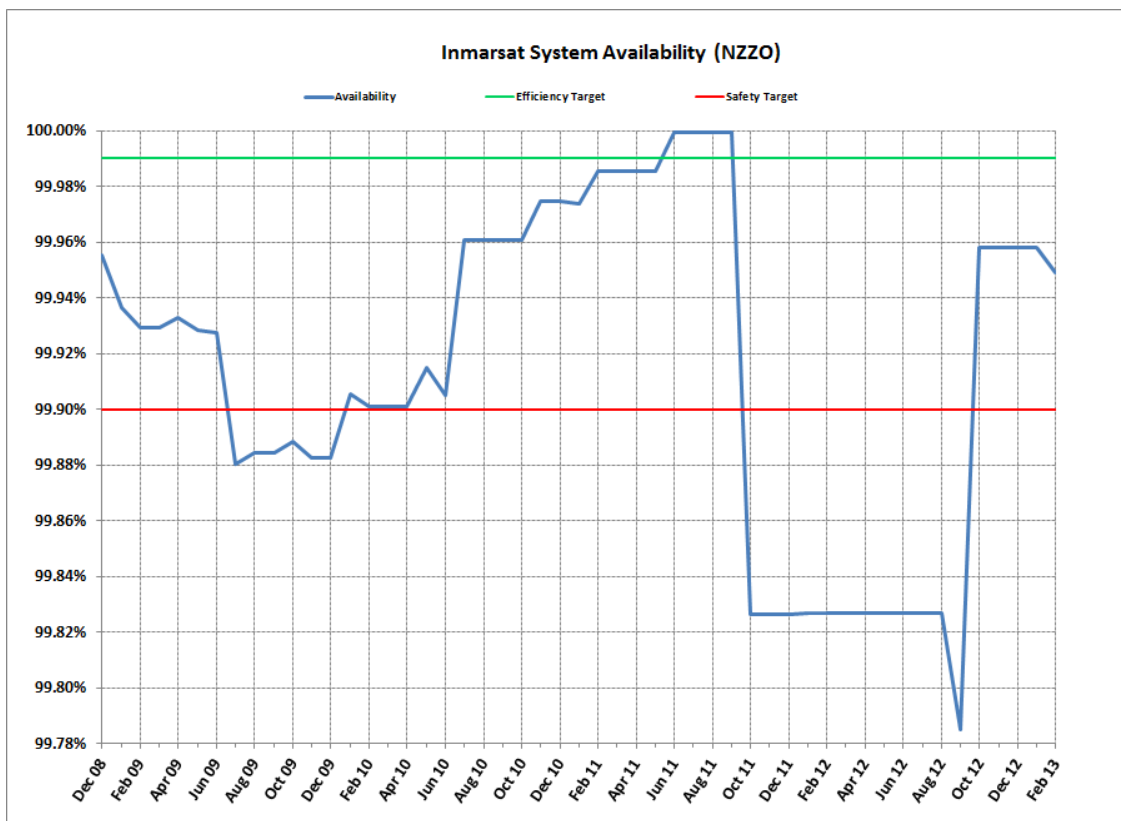
**CPDLC – SATCOM vs VHF ACP**



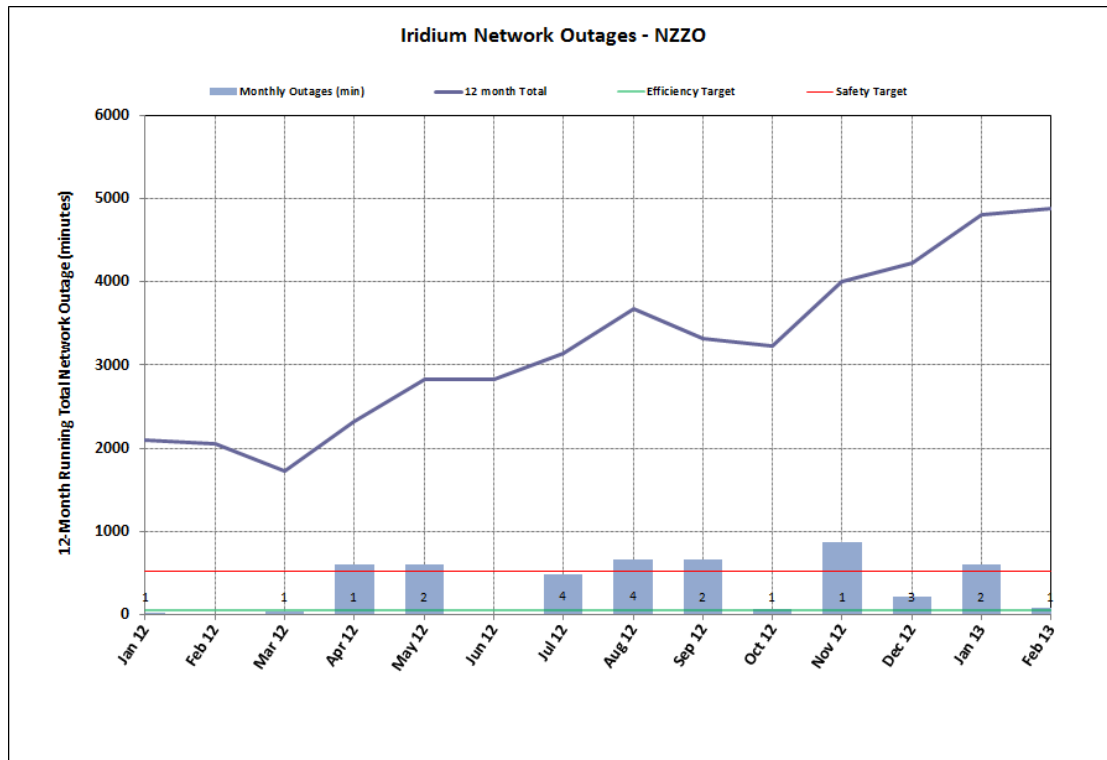
### Inmarsat Availability : Network Outages



### Inmarsat Availability



### Iridium Availability: Network Outages



### Iridium Availability: System Availability

