

**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**

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**Agenda Item 10: HF Datalink**

**OBSERVED FANS1/A HF DL PERFORMANCE AND USE IN THE AUCKLAND  
OCEANIC FIR**

(Presented by Airways New Zealand)

**SUMMARY**

This paper provides an update on the use of HF DL in the Auckland Oceanic FIR. The use of HF DL is becoming more common and we are seeing a number of operators and aircraft types using the media.

**1. INTRODUCTION**

- 1.1 Airways New Zealand has been monitoring the use of HF DL in NZZO since 2005. This paper provides an update on our analysis.
- 1.2 From our observations, we are seeing an increase in the use of HF DL that is not consistent with current policy that HF DL is a tertiary option for communication, with HF DL sitting behind VHF and SATCOM in the CSP routing tables for uplinks, and with a similar priority system used on board the aircraft for downlinks. Furthermore, the performance measurements of the message traffic over HF DL is significantly worse than performance measurements of the message traffic over Satcom, which degrades the overall performance measurements for any particular operator.

**2. DISCUSSION**

- 2.1 Up until March 2008 most HF DL in NZZO for ADS and CPDLC was seen off the Thai Airlines A346 fleet which has now stopped operating in NZZO. UAE A345 aircraft also use HF DL as a backup media but the numbers of HF downlinks seen from these aircraft is very small. Since the QFA and UAE A388 started operating, both of which use HF DL, we have started monitoring again. Figure 1 shows the historical latency of both CPDLC and ADS downlinks using HF DL. The graph shows a steady improvement in performance and this correlates with the work done to improve the network performance since 2005.

### HFDL NZZO Downlink Performance

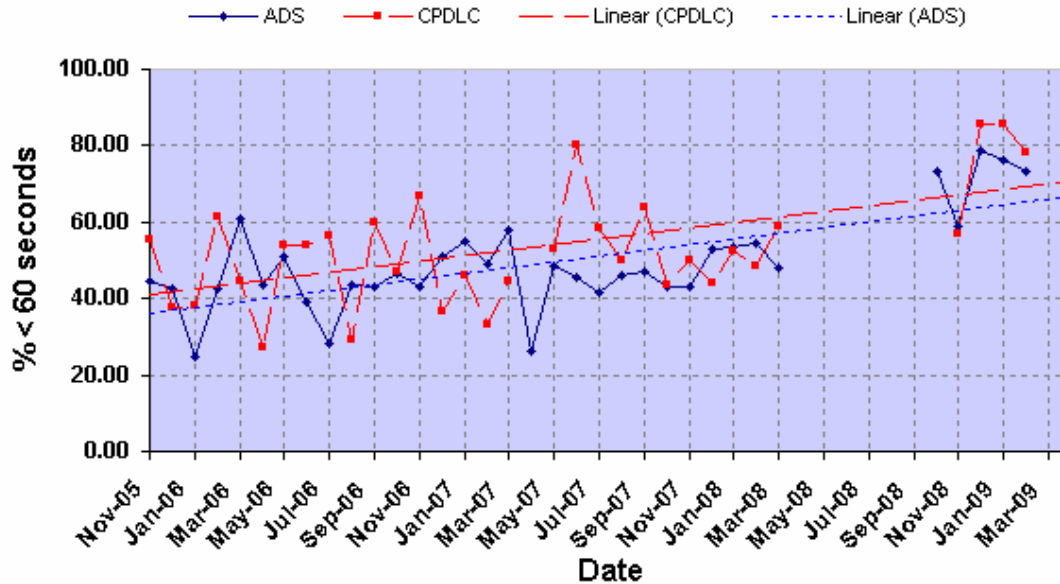


Figure 1: HFDL latency 2006-2009 NZZO

- 2.2 We have just completed an analysis of the A388 use of HFDL. QANTAS commenced operation on the Pacific routes in October 2008, and Emirates commenced operations on the Tasman in February. Although the number of data points is still low we are seeing over 45% of the CPDLC uplinks we monitor for RCP analysis being sent via HFDL. This is far more than we expect and we have raised a FANS problem report to investigate this issue.
- 2.3 Measured ADS latency from the A388 operations in NZZO is shown in Figure 2. This graph splits out the downlinks for each media and shows clearly that HFDL does not meet the latency requirements for the application of reduced distance-based separation standards. The observed HFDL performance does meet the 95% 300 sec requirement, which is typical for time based separations, but it still is below the 99.9% requirement. Observed SATCOM performance is below what we would normally see from FANS A+ aircraft and we are investigating this further.
- 2.4 Measured CPDLC Actual Communications Technical Performance (ACTP) from the A388 using SATCOM and HFDL media is shown in Figure 3. This is well below what we normally see from the FANSA+ aircraft operating in our region. We suspect that the large number of uplinks that are being sent via HFDL mentioned in 2.2 above may be having an impact on performance.

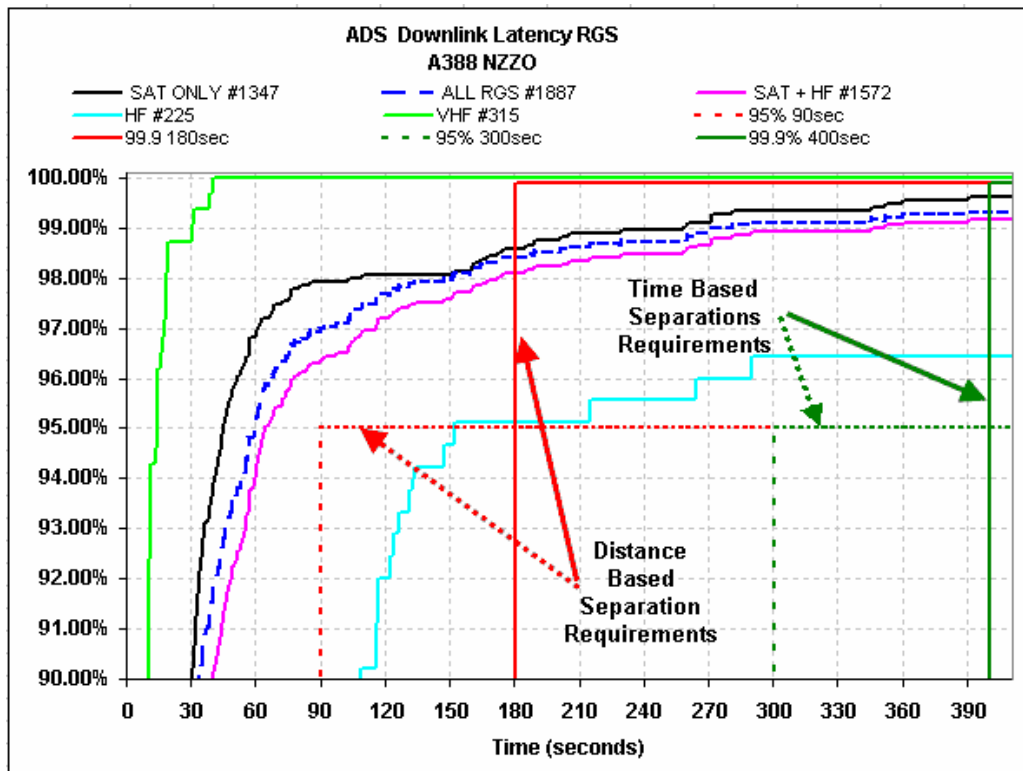


Figure 2: A388 latency October 2008 – February 2009 NZZO FIR

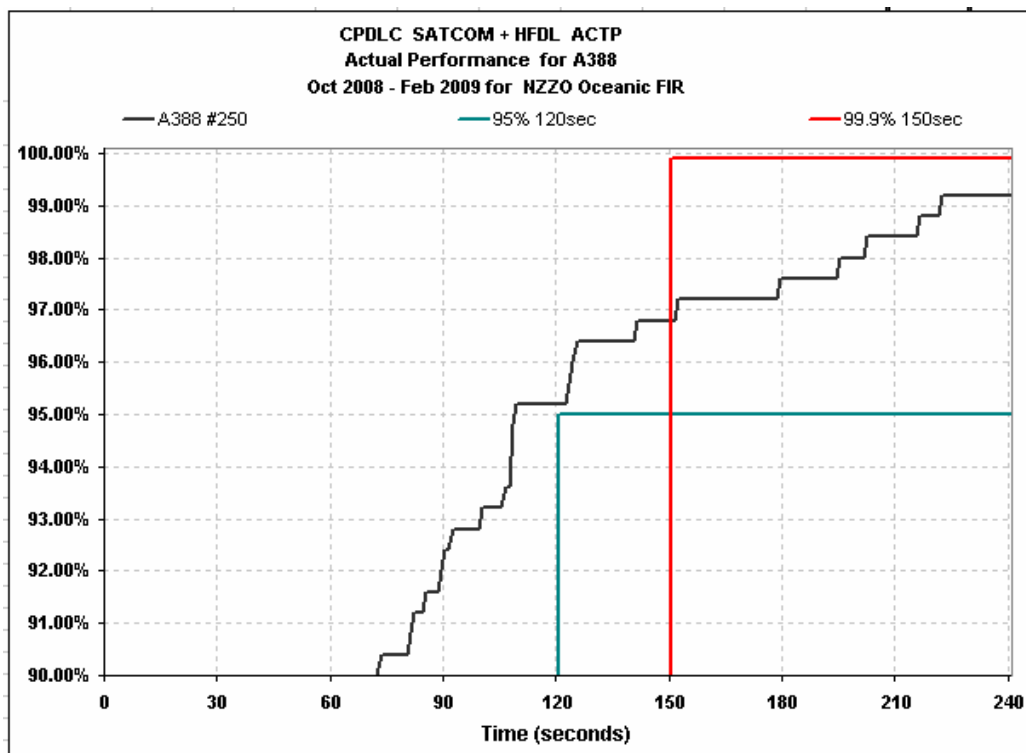


Figure 3: A388 CPDLC ACTP October 2008 – February 2009 NZZO



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

3.1 The meeting is invited to:

- a) Note the measured performance of HFDL in the NZZO.