



**FANS Interoperability Team Meeting
(FIT/21)**

**Papeete, Tahiti
4-5 March 2014**

Agenda Item 5: Working Papers

HFDL usage and performance in NZZO

Presented by Airways New Zealand

SUMMARY

This paper provides an analysis of HF Data Link (HFDL) usage in NZZO.

1. INTRODUCTION

- 1.1 In NZZO we have three Airbus fleets (QFA A388, UAE A388, and CSN A332) as the main users of HF Data Link (HFDL) in NZZO airspace. All these fleets use HFDL as a backup to SATCOM in what has become known as the Airbus “Next on Busy” mode of operation.

2. DISCUSSION

- 2.1 In 2013 we obtained 2655 ADS-C data points from HFDL. We have seen HFDL ADS-C downlinks from 6 aircraft fleets as illustrated in the table below. Our main users are:
- QANTAS A388, where HFDL is used for 10% of ADS-C downlinks outside VHF.
 - Emirates A388, where HFDL used for 15% of ADS-C downlinks outside VHF.
 - China Southern A332, where HFDL is used for 4% of ADS-C downlinks outside VHF.

Operator	Type	#HF
QFA	A388	1353
CSN	A332	216
CSN	B788	6
UAE	A388	1072
ACA	B77L	2
GTI	B744	3
HAL	A332	3
	Total	2655

2.2 As noted in previous working papers on this subject the use of HF DL in the “Next on Busy” mode does cause some performance degradation but this is not considered significant in RSP180 operations. The typical degradation of pure SATCOM performance by using HF DL in “next on busy” mode is illustrated in Figure 1 below for the QANTAS A388 fleet. The graph shows pure SATCOM performance compared with that from an aggregate of SATCOM and HF DL (which is the normal operations mode “next on busy”) and also shows the performance of pure HF DL.

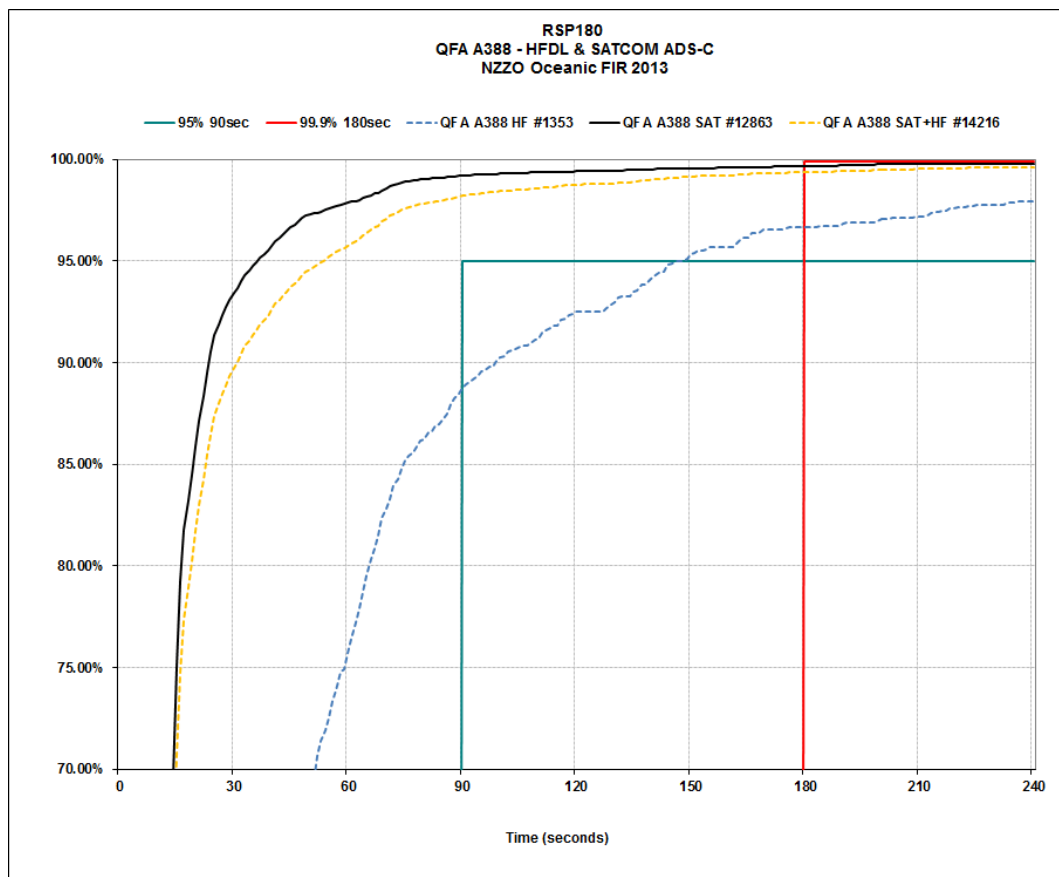


Figure 1: RSP180 QFA A388 – SATCOM, SATCOM+HF DL, HF DL

2.3 As illustrated in Figure 1 this fleet meets the RSP180 requirements when operating with HF DL in the “next on busy” mode and while a slight degradation is seen from pure SATCOM performance this is not significant. Attachment A to this paper contains performance graphs for QANTAS, Emirates, and China Southern HF DL operations and illustrates the consistency between the fleets.

2.4 If operating in pure HF DL mode without SATCOM fleets are expected to meet RSP400. While two of the fleets achieve the RSP400 requirement in 2013 one was well below. This is illustrated in Figure 2 below. Our experience during SATCOM failures is that the performance of HF DL will degrade below RSP400 when used in stand-alone mode and we expect that crews would immediately notify any SATCOM failure.

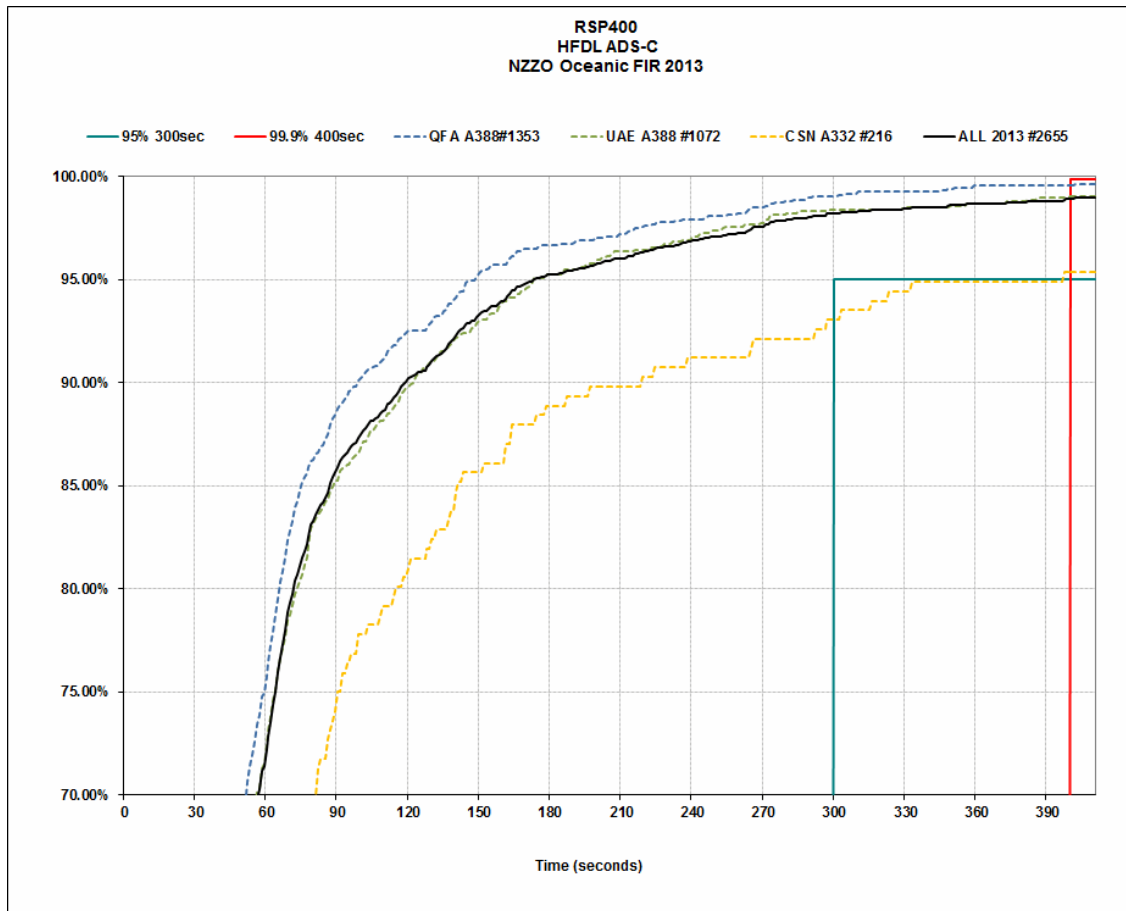


Figure 2: HFDL RSP400 analysis NZZO 2013

3. ACTION BY THE MEETING

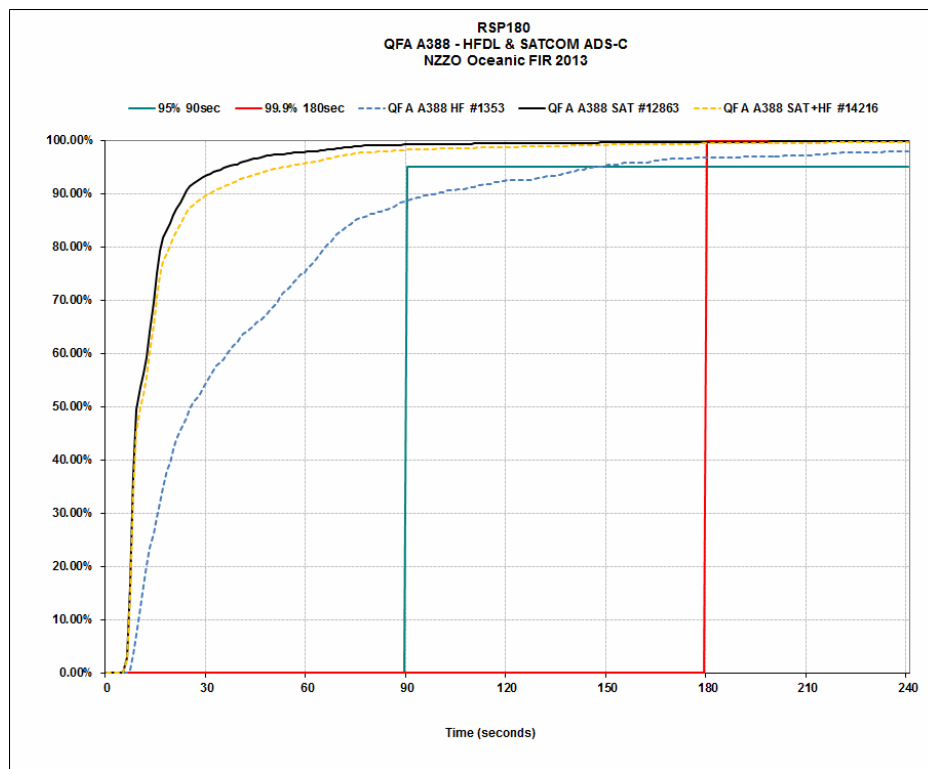
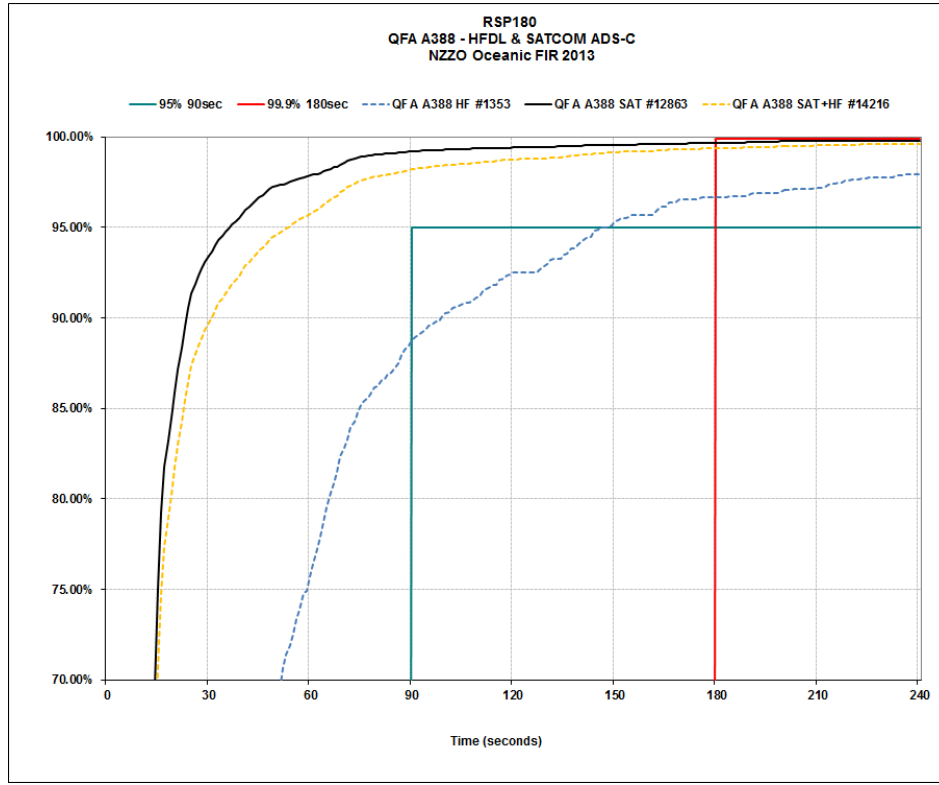
3.1 The meeting is invited to:

- a) Note the performance of HFDL ADS-C latency in NZZO in 2013, and
- b) provide feedback on the analysis provided.

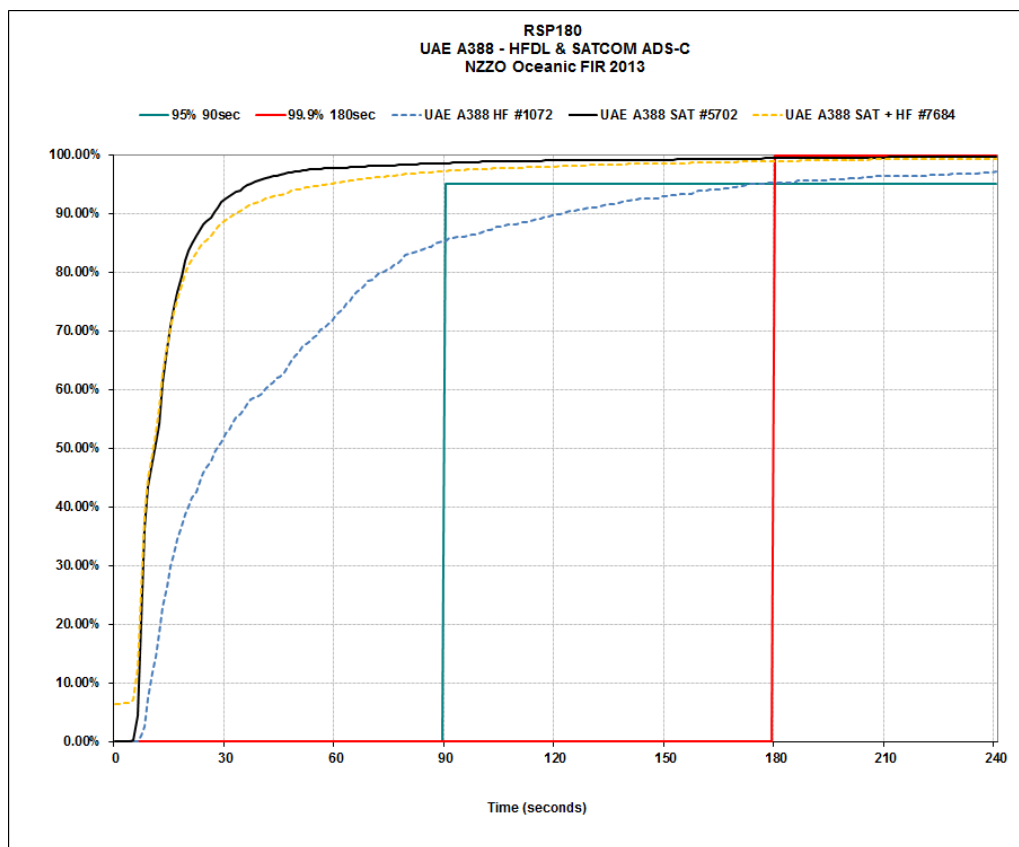
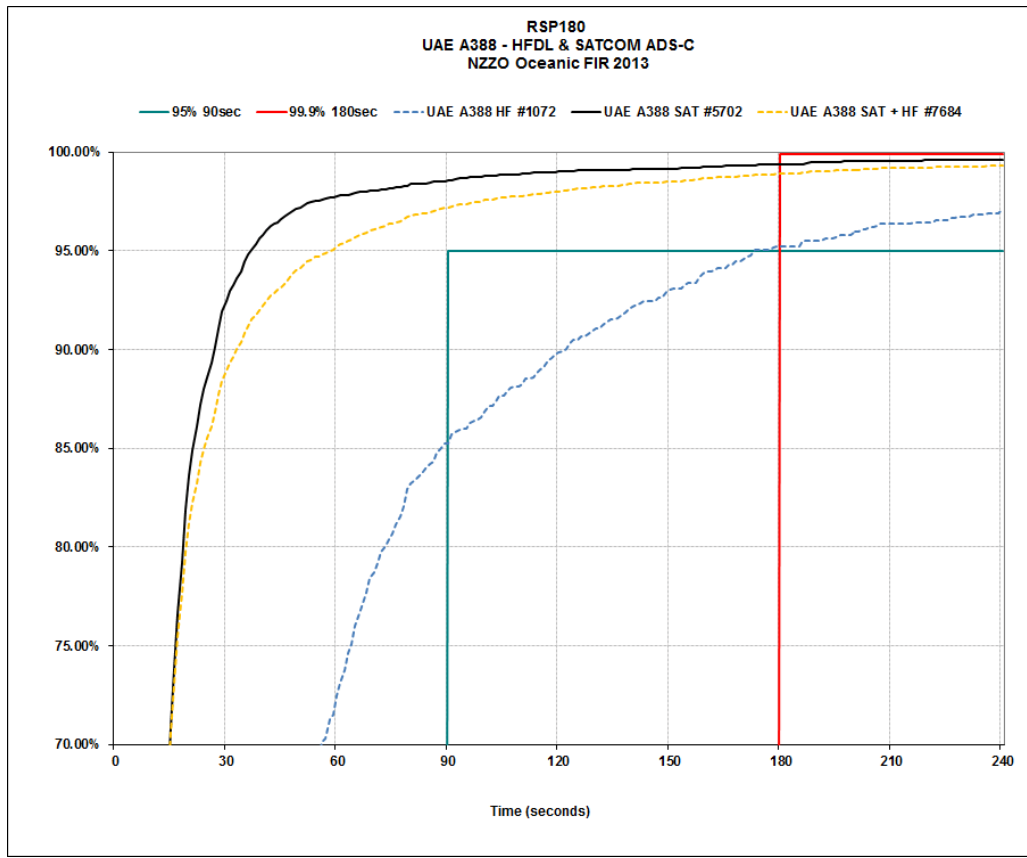
Attachment A to WPXXX

HFDL Performance Graphs – NZZO 2013

QFA A388



UAE A388



CSN A332

