



**Twenty Second Meeting of the
Informal South Pacific ATS Co-ordinating Group (ISPACG/22)
FANS Interoperability Team Meeting (FIT/15)**

Papeete, Tahiti, 11-12 March 2008

Agenda Item 6: Enhanced ATSU Monitoring

AFN Logon - Interoperability

Presented by Airways New Zealand

SUMMARY

In Boeing B767, 757, 737 aircraft the ACARS MU/CMU (supplying the ACARS header registration used in messages) has a hard coded tail number. However, the pilot is required to manually enter the tail number in the FMC (supplying the aircraft registration used in the body of the message, and used by ATSP to address their responses). This implementation can not protect against human input errors and to mitigate this Airways New Zealand has implemented an additional validation check on the AFN log-on.

1. INTRODUCTION

- 1.1 It is possible to get a mismatch between the aircraft registration in the ACARS header and that contained in the body of the AFN log on message (FN_CON). This can occur in Boeing B767, 757, 737 aircraft where although the ACARS MU/CMU (supplying the ACARS header registration) has a hard coded tail number the pilot is required to manually enter the tail number in the FMC (supplying the registration in the body of the message). This implementation is subject to human input errors and to mitigate this Airways New Zealand has implemented an additional validation check on the AFN log-on.
- 1.2 This paper describes the current interoperability requirements and proposes that all ATSP review their current log on validation and implement an additional check to mitigate against an invalid manual entry of aircraft registration into the FMC.

2. DISCUSSION

- 2.1 DO258A para. 3.4.2. requires that every uplink message from an ATS provider shall use the aircraft registration number which is contained within the FN_CON encapsulated by the CRC check. If an incorrect registration is entered into the FMC on a B767, B757, or B737 then the ATSP system response if compliant with DO258A will be addressed to this incorrect registration. In the example AFN log on below the ACARS header registration FG-XCA has been supplied by the ACARS MU and is

correct. However, the registration contained in the body of the AFN logon message FG-XCB has been manually entered by the pilot and is incorrect.

```
QU AKLCDYA
.QXSXMXS 241117
AFD
FI TB0075/AN FG-XCA
DT QXT POR1 241117 L52A
- AFN/FMHTBY075,.FG-XCB,318110,111734/FPON00309W166451,0/FCOADS,01/FCOATC,017FE3
575
```

The ATSP system response to this message will be addressed to the incorrect registration as illustrated below:

```
QU FANS1XA
.AKLCDYA 241118
AFU
AN FG-XCB/MA 995A
- /AKLCDYA.AFN/FMHTBY075,.FG-XCB,318110,111801/FAK0,NZZO/FARADS,0/FARATC,0B919
995
```

- 2.2 To mitigate against this problem Airways has implemented a two stage log-on verification process in the OCS ground system. In the first stage the registration in the ACARS header is compared with the registration in the body of the FN_CON message. If the registrations are identical the system proceeds to the second stage of the log-on which is the normal flight plan correlation using the flight id and tail number in the body of the message. If the registrations are found to be not identical in the first stage check then the log-on is rejected in the FN_ACK response with reason code 4, as per ARINC 622-4 para. 3.4. The FN_ACK uplink reject message is addressed to the registration contained in the ACARS header to ensure the reject gets back to the correct aircraft, and the incorrect registration that was received in the body of the FN_CON is retained in the body of the FN_ACK to ensure that when the message gets to the aircraft it will be directed to the FMC. The FN_ACK response using this process will be as illustrated below:

```
QU FANS1XA
.AKLCDYA 241118
AFU
AN FG-XCA/MA 995A
- /AKLCDYA.AFN/FMHTBY075,.FG-XCB,318110,111801/FAK4,NZZO/FARADS,0/FARATC,0B919
995
```

3. ACTION BY THE MEETING

- 3.1 The meeting is invited to:

- a) Recommend that ATSP implement a two stage log on process to mitigate against data entry errors when pilots manually enter the aircraft registration on some aircraft types.