### Fourteenth Meeting of the
### Informal South Pacific ATS Co-ordinating Group
### FANS Interoperability Team (ISPACG FIT/14)

Auckland, New Zealand, 5-6 March 2007

Agenda Item 9:

### Message Delivery Timer

(Presented by the Federal Aviation Administration)

### SUMMARY

This paper discusses possible mitigations to a late clearance execution hazard. Two potential solutions are given: (1) the use of the FANS latency timer or (2) use of a message lifetime text element indicator (TEI).

## 1    BACKGROUND

1.1    In air/ground communications, it is important to assure that ATC are advised of messages that cannot be delivered within an acceptable time limit, so that alternatives can be pursued. In the voice environment, this is handled procedurally, usually by the radio operator indicating to ATC that a message could not be delivered in a certain time. This paper describes possible methods to achieve equivalent functionality in a FANS datalink environment.

## 2    DISCUSSION

2.1    In the FANS environment, the message assurance function is used to determine success or failure of uplink message delivery. Communications service providers (CSP) will try to deliver the message for a set period of time and if they cannot deliver the message in that time, the CSP will provide a failure indication back to the ATC system. Most ATC systems will set a timer awaiting the message assurance indication of delivery and when the timer expires with no message assurance received, consider the message undelivered. If the timer used by the ATC system is less than that used by the CSP, then a disconnect exists whereby messages can be delivered after the ATC system has deemed the message undelivered. This disconnect constitutes a late clearance execution hazard.

2.1.1    Two possible mitigations to this hazard are (1) the use of the FANS latency timer or (2) Use of a message lifetime text element indicator (TEI).

2.2    Among the changes in RTCA DO-258A/EUROCAE-100A are operational requirements for a latency timer. The objective of the latency timer is to provide operators with a means of mitigating a late clearance execution hazard. When the transit time for a received CPDLC message exceeds latency timer value the aircrew will be notified of the condition (or the message is rejected).

2.3      Another method of achieving the same result as the FANS + latency timer would be to enable the ATC system to specify a message lifetime. Once the lifetime expires, the CSP would cease attempting to deliver the message and return a failure indication to ATC.

2.3.1    This function could be built around a new TEI that would specify in terms of UTC, the date/time by which the CSP would cease delivery attempt. The TEI could be something like 'DB' or 'Deliver By' and might look like this:

DB YYMMDD HHMMSS

DB 070301 143745 would denote to the CSP that this message must be delivered by March 1, 2007 at 14:27:45 UTC. Failure to deliver by that time would generate a MAS/F (message assurance failure) back to the ATC system.

2.3.2    Implementation of a new TEI would require an update to the relevant AEEC specifications and agreement by all the CSPs to implement the functionality described above.

## 3        ACTION BY THE MEETING

3.1      The group is requested to review the proposal presented in this working paper and evaluate its usefulness.