

FANS Interoperability Team Meeting (FIT/19)

Nadi, Fiji, 28-29 February 2012

Agenda Item 6 – Problem Reports

Issues with Uplink Message Delivery Discovered during FIT PR Investigation

Presented by the FIT Central Reporting Agency

SUMMARY

The CRA have identified a recurring problem with uplink message delivery. This paper explains the issue and offers two options for solving the problem. The FIT members are invited to agree to a resolution to this problem.

1. INTRODUCTION

- 1.1 The CRA has investigated 11 FIT PRs submitted since January 1, 2011 with a common characteristic. (Refer to Annex 1).
- 1.2 The common characteristic amongst these problems is that downlinks are successfully delivered over satcom but uplinks are not delivered.
- 1.3 These events have occurred with Boeing, Airbus, and Gulfstream aircraft.
- 1.4 All 11 events occurred with the SITA network.
- 1.5 The CRA is raising this issue for discussion since it has the potential to violate the availability and continuity requirements implied by RCP resulting from loss-of-function.

2. DISCUSSION

- 2.1 All DSPs use Media Advisories to track the network and medium through which FANS airplanes are communicating.
- 2.2 It has been demonstrated that relying on media advisories alone is insufficient for tracking airplanes.



- 2.3 The two primary DSPs each have supplementary logic to improve the rate of successful uplink delivery.
- 2.4 Media Advisories are generated by the airborne communications management function to indicate loss or establishment of a communications medium.
- 2.5 In the event that the satcom system has become temporarily unavailable but there has not been a complete loss of connectivity (e.g., VHF is still available), some aircraft do not generate a Satcom Established Media Advisory when satcom becomes available again.
- 2.6 When this occurs, SITA's tracking logic may not allow for successful delivery of uplink messages.
- 2.7 There are two primary options for correction this problem:
 1. Request that Boeing, Airbus, and Gulfstream change the Media Advisory logic for all affected airplane models.
 2. Request that SITA modify their tracking logic to consider medium used for the last FANS downlink message when routing FANS uplink messages.

3. ACTION BY THE MEETING

- 3.1 The meeting is invited to:
 - a) consider the problem and proposed solutions.
 - b) recommend corrective action for this problem.



Annex 1 – Uplink Message Delivery Failure Problem Report Summary

PR number	Title	Description	Cause	Resolution
925	Unable to establish CPDLC & ADS-C with one airplane	ATSU could not establish comms with one aircraft (A343); others from same company ok	Operator changed from SITA to ARINC for its primary SATCOM communications provider. SITA was not informed of the change. In the absence of an ES media advisory, SITA attempted to route uplinks via SITA satcom and uplink could not be delivered.	SITA changed default satcom provider for this operator to ARINC
958	Loss of data link with one airplane	ATSU lost all datalink comms with one aircraft (A343) at transition from VHF to satcom	925, 958, 960, 977, 1036 all have same root cause.	SITA changed default satcom provider for this operator to ARINC
960	Unable to establish CPDLC & ADS-C with one airplane	ATSU lost all datalink comms with one aircraft (A343) at transition from VHF to satcom	925, 958, 960, 977, 1036 all have same root cause.	SITA changed default satcom provider for this operator to ARINC
977	Unable to establish CPDLC & ADS-C with one airplane	ATSU could not establish comms with one aircraft (A343)	925, 958, 960, 977, 1036 all have same root cause.	SITA changed default satcom provider for this operator to ARINC
1007	Failed Logon Due to SATCOM Uplink Non-Delivery	CPDLC worked OK w/Gander. However could not logon w/Shanwick. (B752)	Operator has ARINC as provider for Inmarsat satcom and SITA for Iridium satcom. SITA's routing defaulted all satcom uplinks to ARINC, so Iridium uplinks were failing.	SITA changed default provider to SITA for this operator's Iridium equipped airplanes.
1018	Failed Log On Due to SATCOM Uplink Non-Delivery	Lost EGGX change over from CZQX at W030. Attempts at re-logon unsuccessful. (B752)	1007 and 1018 have same root cause	SITA changed default provider to SITA for this operator's Iridium equipped airplanes.



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PR number	Title	Description	Cause	Resolution
1034	Temporary loss of data link - B772	Altitude request was received from the airplane, but no response was received for uplinked clearance. Per review of the comm. logs, downlinks were being received via ARINC satcom.	Uplinks were attempted over SITA satcom and were met with UP INTERCEPT AIRCRAFT NOT LOGGED ON.	Crew re-established satcom which forced an ES media advisory to be sent. After that satcom ops were normal.
1036	Unable to establish CPDLC & ADS-C with one operator	Unable to establish either CPDLC or ADS-. Same symptoms as PR977. (A343)	925, 958, 960, 977, 1036 all have same root cause.	SITA changed default satcom provider for this operator to ARINC
1041	Gulfstream IV unable to log on SATCOM	A Gulfstream 4 tried repeatedly to log on to BIRD via SITA's EUA1 GES – every time we responded with a positive ACK which SITA was unable to deliver. The response is reason code "231" or "No station to" for an aircraft that just sent them a downlink.	Unknown	Unknown
1112	SATCOM Uplinks Not Delivered, But Downlinks Are	There were two uplinks. In both cases, the airplane had just sent an AFN downlink. What was rejected in both cases was the AFN response from the ground to that downlink. (B777)	Downlinks were being delivered over MTSAT, and uplinks were being attempted over the airline's default provider.	Unresolved
1115	Multiple logon and downlink issues	Multiple attempts required to logon to WAAF. In YBBB ATC unable to respond to downlinks, no ADS-C. (B777)	1112 and 1115 have same root cause	Unresolved