



International Civil Aviation Organization

**The 3<sup>rd</sup> Meeting of the Future Air Navigation Systems Interoperability Team-Asia (FIT-Asia/3)**

Pattaya, Thailand, 26 – 27 May 2014

---

**Agenda Item 3: Review of ADS/CPDLC Operations**

**INVESTIGATION ON THE REPORTED AIRBUS A380 FANS OPERATIONS ON L888 ROUTE AND REMEDIAL ACTION**

(Presented by China)

**SUMMARY**

In ISPACG/27, Airbus introduced IP01 which reported factual operations exercised on L888 route carried out with the A380 msn4 flight test aircraft during a Hong Kong / Toulouse flight in December 2012.

This paper presents results of investigation of the reported issues and the remedial actions that can be undertaken to promote standardized practices as recommended in the GOLD.

**1. INTRODUCTION**

1.1 In ISPACG/27, Airbus introduced IP01 which reported factual operations exercised on L888 route carried out with the A380 msn4 flight test aircraft during a Hong Kong / Toulouse flight in December 2012. This paper is provided to the FIT-Asia/2 meeting.

1.2 China conducted an investigation to the issues reported. This paper presents the results of investigation and the related remedial actions that can be undertaken to promote standardized practices as recommended in the GOLD. IP01 of ISPACG/27 is included as an attachment to this paper (**Attachment A**).

**2. DISCUSSION**

2.1 China had provided data-link services on ATS route L888 in remote western China since 2001. A group of data-link engineers had been designated to develop the technical ability for data-link performance monitoring in 2012.

2.2 After FIT-Asia/2 meeting, China conducted an in-depth investigation about the issues reported by Airbus. All relevant AFTN messages and ACARS messages of the flight reported were collected and analyzed. The operational status of ADS-C/CPDLC workstations and ATC operations of the four FANS 1/A Chinese centres of Kunming ZPPP, Chengdu ZUUU, Lanzhou ZLLL and Urumqi ZWWW were examined and reviewed.

Operational Status of CPDLC/ADS-C workstations

2.3 Currently, the CPDLC/ADS-C workstations in the centres of Kunming ZPPP, Lanzhou ZLLL and Urumqi ZWWW are standalone systems. The CPDLC/ADS-C workstations in the centre of Chengdu ZUUU used to be a standalone system, but this function has been enabled in their upgraded automation system since August 2013. But for all systems in the four centres, the ATSU correlation of the AFN logon information with the relevant information in the flight plan held by the ATSU are not automatic, they need controller actions.

2.4 Explanatory notes to clarify the detail of the investigations:

Delay of confirmation of flight application

2.5 After the investigation of the AFTN messages of the flight, it was found that the operator used different flight numbers to apply different routes of the same test flight which caused a confusion for flight approval. The application by of AIB101 (non-L888 application) was approved and confirmed by CAAC two days before the flight was conducted. But there was a new coordination of AIB103 applied for the use L888 a couple of hours before the departure. This application was approved 1.5 hour before the estimated departure time and the AIB101 application (detected as using the same aircraft) was canceled. Therefore using AIB101 for L888 was considered invalid and that's why ATC centres request the pilot to change callsign.

Failure of automatic CPDLC connections and transfer

2.6 It was reported that connections with FANS 1/A Chinese centres had all to be manually exercised and no automatic transfer from one centre to the other. By analyzing the ACARS messages, it was found that all the ATC uplink messages that attempted to connect to the pilots were rejected. **Figure 1** is a snapshot of one of the messages, in which the remark of 'UP INTERCEPT INVALID FLIGHT NUMBER' indicates that the service was refused. Therefore, the services in neither of the four centres was activated.

```

接收时间: GMT 2012-12-15 5:17:48
报文类型: DOWNLINK
原文:
  QU BJSIRXA
  . BJSXCXA 150517
  SVC
  - UP INTERCEPT INVALID FLIGHT NUMBER                213

  QU BJSXCXA
  . BJSIRXA 150517
  AFU
  AN F-WWDD/FI AIB101/MA 172A
  - /LHWE1YA. AFN/FMHAIB101, . F-WWDD, , 051748/FAKO, ZLLL/FARADS, O/FARATC, O, LHWE1YA724A
  L

```

**Figure 1** An example of rejected downlink message

2.7 China tracked down the transfer of the messages and found that the operator's 3-letter ICAO designator (AIB) failed to match the designator (94Y) registered in the CSP. According to the ACARS message specification, the system will read the operator designator within the portion of the AFN logon message and compare it with the one in the CSP's operator list. If it cannot be matched, the operator cannot be identified as a valid user and all the data-link service are rejected. That explains why no connection is automatically established for all FANS 1/A Chinese centres. If the operator wants to use the data-link service, the operator need be correctly registered in the CSP.

No reply to CPDLC requests from ZPPP

2.8 It is confirmed that the operators that apply for L888 route rarely used the portion between Kunming ZPPP and Chengdu ZUUU since a few years ago. There are very few flights along this part of the route. From 2012, Kunming ZPPP has VHF coverage. So even if there are flights, the controllers prefer to use VHF voice communication though it is considered as the alternative means of communication. That explains ZPPP did not reply to CPDLC requests.

### Use of FREE TEXT in ATC Operations

2.9 It is confirmed from centre of Urumqi ZWWW and Lanzhou ZLLL that the controllers will issue an uplink FREE TEXT message mostly when they need the pilot to provide the time of flying over the boundary or the time of the next second FIX. Actually, the pilot can send a standard CPDL message to report the time to fly over the next FIX. When a flight is flying west along L888 (from Chengdu to Urumqi ), the controllers often need the pilot to report the time to fly over the next second FIX to have enough time of coordination with the downstream adjacent ACC. **Figure 2** gives an example in centre of Urumqi ZWWW. The controller requests the time of flying over the boundary in FREE TEXT when the aircraft fly over SADAN, because there won't be enough time for coordination when the aircraft is near KCA, but this information cannot be requested by a standard message. According to the centres of ATC, almost 90% of the FREE TEXT were used for this purpose.



**Figure 2.** An example in centre of Urumqi ZWWW

2.10 Actions to be undertaken:

#### Delay of confirmation of flight application

2.11 It is suggested the operator avoid using different callsigns for application of the same flight, and use the callsign approved to conduct the flight.

#### Failure of automatic CPDLC connections and transfer

2.12 It is suggested that the operator's 3-letter ICAO designator (AIB) be correctly registered to the CSP.

#### No reply to CPDLC requests from ZPPP

2.13 ZPPP will promote standardised practices as recommended in the GOLD but also use voice contact for safety reason. ATMB is considering of adjustment to the AIP by adding some descriptions for way of ATC communication contact in this portion of route.

### Use of FREE TEXT in ATC Operations

---

2.14 It is recommended in GOLD that the controller should generally use standard message elements and should only use standard message elements when issuing a clearance. Four FANS 1/A Chinese centres are notified to avoid the controllers' use of the free text message element to promote standardized practices as recommended in the GOLD.

2.15 It is suggested the meeting discuss the issues reported in Section 2.9 and consider if there is a need to define the operational contents, format, and use as a new standardized message type.

**3. ACTION BY THE MEETING**

- 3.1 The meeting is invited to:
- a) note the information contained in this paper;
  - b) discuss any relevant matters as appropriate; and
  - c) suggest actions to be taken in Section 2.10 to 2.15

.....