

## FANS Interoperability Team Meeting (FIT/18)

Honolulu, Hawaii, USA, 22-23 March 2011

### Agenda Item 4: Working and Information papers

#### Enhancements to Australian CPDLC Functionality

Presented by Airservices Australia

#### SUMMARY

This information paper provides information about the new CPDLC interface in use by Australian air traffic controllers.

## 1. INTRODUCTION

1.1 The CPDLC Editor is the name used to describe the TAAATS CPDLC interface in use by air traffic controllers in Australia. Until a software upgrade in Q2 2010, this same interface had been in use since the Australian transition to TAAATS in 1999. While it had its limitations, this interface was a big improvement on its pre-TAAATS predecessor (ADIS), which had no flight plan automation associated with it at all.

## 2. DISCUSSION

2.1 Prior to this software upgrade, when responding to a downlink request controllers accessed the CPDLC Editor via the “Current Messages Window” (CMW), the window in which the downlink was displayed.

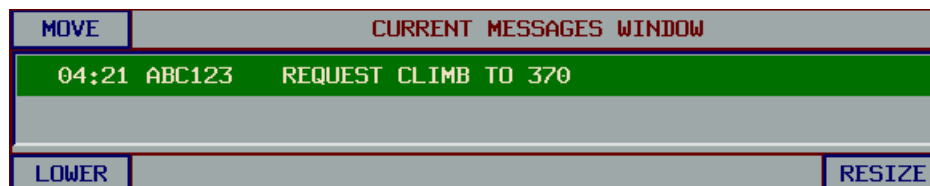


Figure 1. The Current Messages Window

2.2 This functionality resulted in a number of incidents, examples of which were described in [FIT15 WP/08](#) (ISPACG/22 – Tahiti 2008). The incidents described in this WP involved CPDLC clearances being uplinked to an aircraft in another FIRs’ airspace.

2.3 A trend that was identified was that these types of incidents generally occurred when:

- The controller was focused simultaneously on several tasks; and
- Aircraft with similar callsigns were operating in the airspace at the same time.

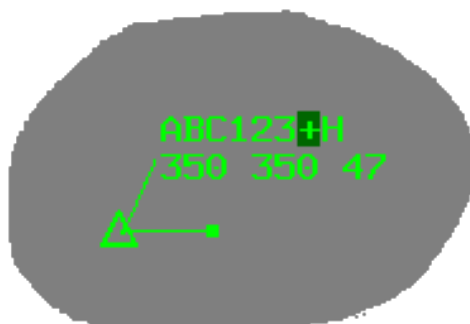
2.4 The cause of the incident was determined to be the lack of a “link” between the downlink request displayed in the CMW, and the corresponding aircraft (displayed on the controllers’ situation display). This lack of a link increased the potential for a controller to misidentify the aircraft that had transmitted the downlink request.



**Figure 2. Aircraft with similar callsigns**

2.5 New TAAATS CPDLC Editor software was introduced in April 2010. This software:

- Only allows access to the CPDLC Editor via the aircraft’s track label;
- Displays a track label indication on receipt of a downlink request to highlight the corresponding aircraft



**Figure 3. Downlink request - track label indication**

To date, this software has prevented any similar CPDLC-related incidents from occurring.

2.6 Another objective for this software upgrade included making the CPDLC Editor more user-friendly. To achieve this, other enhancements included:

- Improved editing capability;
- Improved functionality when constructing multi-element uplinks;
- Automatic display of suitable responses to a downlink request;
- Ability to customize variable drop down menus;
- Ability to easily create and customize standard free text message elements, including the ability to add “variables” within the message element;
- Reduce the size of the CPDLC Editor, to reduce screen clutter;
- Automatic loading of SSR codes from the ATS flight plan;
- Improved CPDLC Connection Management functionality.

2.7 The new software also supports the capability to uplink “optional lat/longs” in CPDLC route clearances, overcoming problems where the avionics were loading unexpected waypoints that were duplicates in the aircraft’s navigational data base.

2.8 The benefits achieved by the introduction of these software enhancements include:

- Improved safety through a reduction in CPDLC-related incidents;
- Improved response time to correctly formatted downlink requests;
- Improved standardization of responses to downlink requests
- Improved standardization in the use of standard free text message elements
- Reduced occurrences of aircraft avionics loading an incorrect waypoint following the uplink of a CPDLC route clearance.

### **3. ACTION BY THE MEETING**

3.1 The meeting is invited to:

- a) Note the CPDLC enhancements implemented by Airservices Australia
- b) Note the human factors risks associated with visually correlating a message in one window with an aircraft in another window (this risk does not just apply to CPDLC functionality)

Attachment 1

A1.1 This attachment contains diagrams of the TAAATS CPDLC Editor, prior to and after the software upgrade. Diagrams are (approximately) to scale.

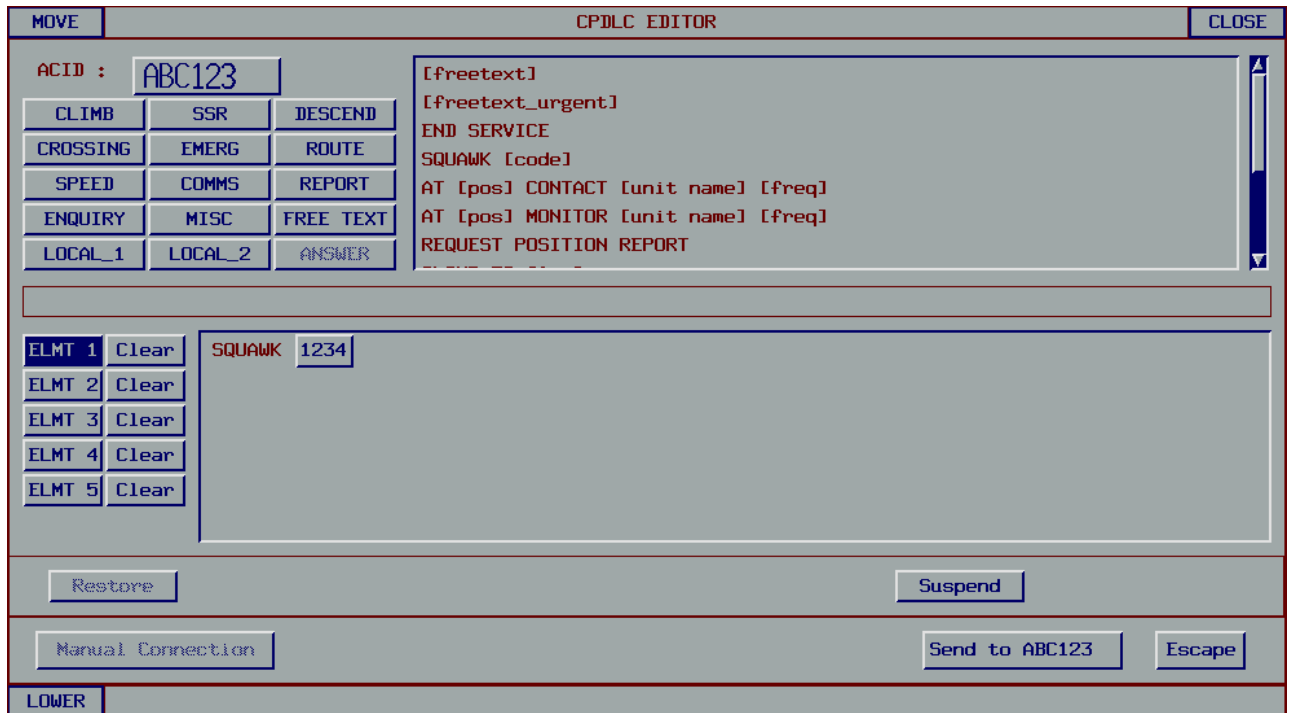


Figure 4. TAAATS CPDLC Editor (pre upgrade)

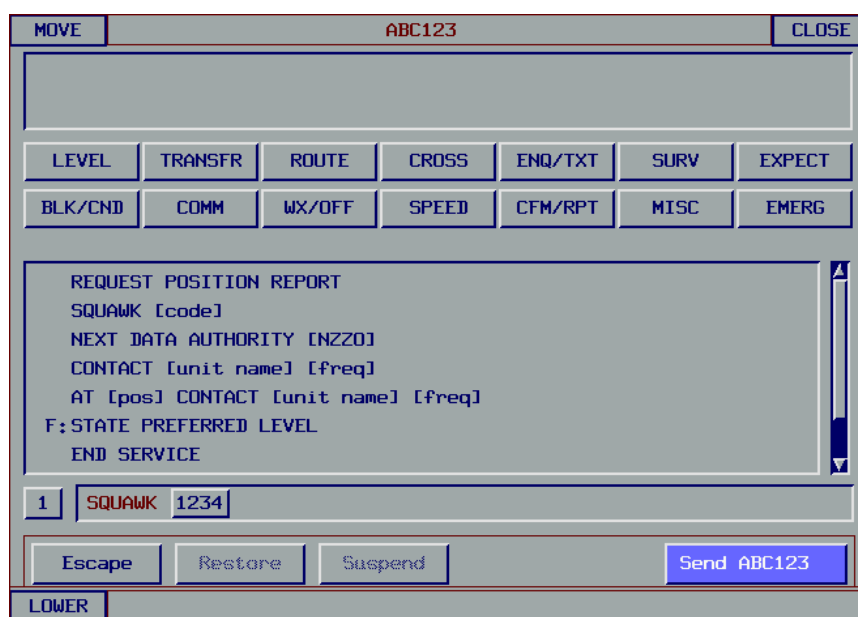


Figure 5. TAAATS CPDLC Editor (post upgrade)