WP/5

4-5th June 2014

ARABIAN SEA INDIAN OCEAN ATS COORDINATION GROUP AND INDIAN OCEAN STRATEGIC PARTNERSHIP TO REDUCE EMISSIONS WORKING GROUP MEETING

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DOHA, QATAR 4-5 JUNE 2014

Agenda Item 9: Any Other business

Considerations when implementing a data link system by an ANSP

(Presented by Airservices Australia)

Summary

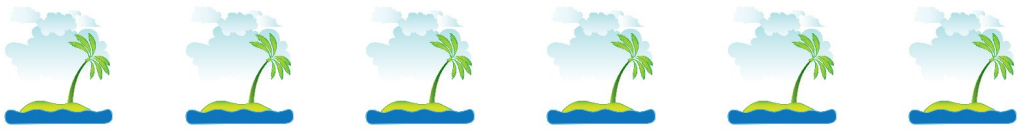
This working paper presents issues for consideration by an ANSP when implementing a data link system

1. INTRODUCTION

1.1 In the days before automated air traffic systems, changes to procedures or functionality within one ATS unit generally had little impact on an adjoining ATS Unit.

1.2 A minor change, such as a new phone number, might have to be coordinated but this would not be a common event. Generally, it was not necessary to consider your neighbours when making any changes to functionality within your ATS Unit.

1.3 In the past the air traffic services community consisted of “islands”, with little or no interconnectivity.



2. DISCUSSION

2.1 This entire "island concept" has changed. In an environment with ever increasing automation, it is critical that the effect of changes in functionality, or even the implementation of new procedures, are carefully considered and properly coordinated with adjoining ATS Units.

2.2 It is necessary to be aware that any automation system is only as good as the data used to drive the automation. Just to ensure interoperability between adjoining ATS units, it may be necessary to:

- Make changes to data adaptation, which may take some time to determine and to implement,
- Develop and promulgate procedures;
- Update Letters of Agreement.

2.3 All of these actions require coordination with adjoining ATS Units in sufficient time to permit them to make any required changes to their own automation. It is also necessary to consider that many ATS Units only make data adaptation changes on AIRAC dates, the next one of which may be a month in the future.

2.4 The best example to demonstrate the need for coordination is during the period leading up to the planned implementation of a data link system by an ATS Unit. While it may initially appear that such an implementation can be "contained" within the ATS Units' airspace, consider that from an automation perspective, the adjoining ATS Unit will need to:-

- Configure the parameters for the automated transmission of the NDA message
  - To achieve this, the adjoining ATS Unit will need to know the ATS Unit's logon address. Many automated systems expect the logon address to be the same as the FIR name of the ATS unit
- Configure the parameters for the automation of Address forwarding
  - To achieve this the adjoining ATS Unit will need to know the 7 character ACARS address of the ATS Unit
- Configure the parameters for the termination of the CPDLC connection

2.5 All of the above parameters need to be discussed, and agreed upon between the two ATS Units. This can only be accomplished this if timely coordination is conducted.

2.6 The above example solely outlines the requirement for data adaptation – there are many other issues to be considered. A suggested strategy for the implementation of data link is contained in Attachment 1.

2.7 An ATS Unit is no longer an island – it is part of the global ATM community…

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

a) Recognize the need to coordinate the implementation of new functionality (such as data link) with neighbouring ATS Units; and

b) Discuss and consider publishing the strategy contained in Attachment 1

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Data link Implementation strategy

Develop and define a Data link Concept of Operations

- Where will CPDLC be used (i.e. what airspace within the FIR will CPDLC be used in?)
- Is the implementation a "trial", or permanent? If it is a trial, it should not extend longer than is necessary, and have a defined start and finish date. Will the trial be H24?

- Will CPDLC be used for primary communications, or as a backup to HF (or VHF)?

- What services will CPDLC be used for?
  - Vertical clearances?
  - Route clearances?
  - Weather deviations?
  - Issuing SSR codes?
  - Frequency transfers?
  - Everything?

- What services will ADS-C be used for?
  - Situational awareness?
  - Separation service?
  - Conformance monitoring?
  - Replacement for voice position reporting?

- What separation standards will be supported by ADS-C
  - 15 minutes?
  - 10 minutes?
  - 50NM?
  - 30NM?
  - Establishing lateral separation?

Procedures

- Will the procedures as outlined in the GOLD be adopted?
  - If so, consider liaising with the GOLD Editors to include the ATS Unit in the list of data link users

- Define logon procedures – these will be affected by:
  - Where is CPDLC to be used (see Concept of Operations)
  - Will the use of PDC by CPDLC be implemented? (This affects the timing of logons for departing aircraft)

- Develop specific CPDLC procedures in accordance with local requirements. Airlines will expect these to be in accordance with existing procedures in other regions

- Develop specific ADS-C procedures in accordance with local requirements.

- Be aware of voice phraseologies associated with the use of ADS-C and CPDLC

Documentation

- Publish data link information in AIP, including:
  - logon codes;
  - logon procedures;
  - required flight crew procedures
  - Standardised free text message elements in use;
  - Position reporting procedures;
  - Are there any specific CPDLC message elements not supported?

- Controller documents
  - Develop and publish ATC procedures

Data Adaptation

The ATS Units' adaptation data needs to be defined in order to support the use of data link described in the Concept of Operations. Some specific data to consider include:

- ACARS address will need to be defined

- Are CPDLC Connections to be established automatically or manually?
  - Manual ==> ATC controls who uses CPDLC and when
  - Automatic ==> reduced ATC workload, but also means it is more difficult to control when CPDLC is used by flight crew

- Will data link transfers be effected to adjoining units?
  - Yes ==> Need to define ACARS addresses of surrounding ATS units

- Will data link transfers be a manual or automatic process?
  - Manual ==> Controller training/scanning issue
  - Automatic ==> Data needs to be defined (NDA & Address Forwarding)

- Will CPDLC termination be automatic or manual?
  - Manual ==> Controller training/scanning issue
  - Automatic ==> Data needs to be defined (Auto EOS).

- Controller's CPDLC interface – define the layout (the capability to do this will vary depending on the ATM system):
  - Message categories
  - Message elements within each message category. Will the entire CPDLC message set be available?
  - Determine required standardised free text message elements
  - Define standardised free text messages in AIP

- ADS-C data
  - Define ADS-C periodic reporting rates – ensure that they are "reasonable" (i.e. not excessive), and are appropriate for the services being applied;
  - Define parameters for ADS-C event contracts

- Adaptation data must be 'controlled'
  - Changes to data adaptation must be properly authorized;
  - Prevent proliferation of non-standard standardised free text message elements

Coordination

- Airlines
  - To assist in a smooth transition to data link operations, the major data link operators throughout the region should be contacted directly
  - Are LOAs currently held with airlines? If so, do they need to be updated?
  - Determine appropriate points of contact with airlines to rapidly address data link related problems with flight crews

- Adjoining data link capable ATSUs
  - Are data link transfers from adjoining units for inbound aircraft required?
  - Letters Of Agreement may need to be updated
  - Determine appropriate points of contact with adjoining units to rapidly resolve data link transfer problems

- Regulator
  - Is liaison with, or approval from, the regulator required?
  - Is regulator approval required for other State aircraft to operate data link in the airspace?

- HF operators
  - Need to be aware of how the implementation of data link will affect them;
  - Are SELCAL checks still required?
  - Will controllers issue CPDLC frequency transfers. If the frequency transfer is to an HF frequency, do controllers have access to up to date HF frequencies?

Controller training

- All aspects of ADS-C and CPDLC must be covered in controller training
  - Standardisation in these areas is extremely important

Licencing

- Will data link be included in the existing controller licence, or an addition to it?
  - Does the licence structure in use by the ATS Unit need to be updated?

- Update any controller written assessment questions to include data link related questions

- Update check controller procedures to include data link during the assessment

Data link Service Provider

- Determine preferred data link service provider

Data link performance monitoring

- Technical performance
  - Routine performance data analysis
  - Decoding CPDLC ACARS data
  - Decoding ADS-C ACARS data
  - Data link problem reporting

- Controller performance
  - CPDLC routine sampling?

International Forums

- Establish contacts with other data link user groups
  - There are lots of lessons to be learned (GOLD contains a number of them)

- Establish contact with one of the established Central Reporting Agencies (CRA) to report data link problems. It is important to report them, as some problems are very easy to solve!

Safety monitoring

Ensure that a means of reporting data link related occurrences is available, and that there are staff who are trained to investigate data link related occurrences