

ELEVENTH AIR NAVIGATION CONFERENCE

Montreal, 22 September to 3 October 2003

Agenda Item 7 Aeronautical air-ground and air-to-air : communications

DATA LINK FLIGHT INFORMATION SERVICES (DFIS) APPLICATIONS

(Presented by China)

SUMMARY

This paper elaborates the operational benefits and encourages the early applications of data link flight information services in particular for data link — automatic terminal information service (D-ATIS), VOLMET data link service (D-VOLMET) and pre-departure clearance (PDC) delivery via data link.

Action by the conference is in paragraph 6.

1. INTRODUCTION

1.1 The disseminations of airfield and weather information via the automatic terminal information service (ATIS), and regular meteorological information (VOLMET) are usually through voice broadcasts on high frequency (HF) and/or very high frequency (VHF) radio channels. In addition, pre-departure clearance (PDC) is issued to aircraft through voice on a designated VHF channel.

1.2 With more information to be broadcasted, it becomes time-consuming for the pilot to transcript the relevant content. Sometimes, it is not possible to include SIGMET information in the VOLMET broadcast within the time slot allocated. As one of the alternate means, we have to provide the critical information via broadcast over a particular NDB channel. This in turn imposes greater inconvenience and more time for the pilots to listen and/or transcript the required information.

1.3 When airport becomes busier as traffic increases, radio congestion is frequently encountered for voice delivery of the pre-departure clearance to the pilots. This obviously will cause delay and adversely affect the ATC operational efficiency.

2. DATA LINK APPLICATION

2.1 To overcome the above problems and to make use of the currently available data link technology which has been developed under the CNS/ATM systems, China conducted trials at Hong Kong International Airport on the dissemination of the ATIS and VOLMET via data link (D-ATIS and D-VOLMET) to aircraft in May 1999. For the pre-departure clearance, the trial using data transmissions commenced in October 2000. Aircraft equipped with the appropriate aircraft communications addressing and reporting system (ACARS) and the required software (compliant to AEEC Specifications 618, 620, 622 and 623) can access and/or receive the full script of the D-ATIS, D-VOLMET and PDC messages.

2.2 The meteorological, terminal and departure clearance information are prepared and updated dynamically, and stored for access in the databases, which are managed and maintained by the local Civil Aviation Authority. The databases are linked with data transporter as provided by the selected data link service providers.

2.3 Subsequent to a period of stringent data verification and integrity checks, and the encouraging feedback from the airline users, the D-ATIS/D-VOLMET and PDC delivery via data link were put into operational use in April and December 2001 respectively at Hong Kong International Airport. More than 35 airlines are now using the D-ATIS/D-VOLMET services, with the peak monthly request reaching 8 400 approximately. For the PDC delivery via data link, more airlines are now utilizing the service, representing about 43 per cent of the departure traffic at the Hong Kong International Airport. Several airlines have expressed interest to participate and would use the above data link service.

2.4 Samples of the D-ATIS, D-VOLMET and PDC printouts in the cockpit are given at the appendix.

2.5 China is considering to extend the D-ATIS and PDC delivery services via data link to other major airports in China. At the same time, use of other data link technologies, including ACARS over aviation VHF link control (AOA) and VHF digital link (VDL) is being explored.

3. BENEFITS OF DATA LINK FLIGHT INFORMATION SERVICES

3.1 Throughout the trials and implementation of D-ATIS, D-VOLMET and PDC delivery via data link, positive feedback and favorable comments have been received from the pilots, IATA, airlines and air traffic controllers, which clearly establish and confirm the added operational and/or safety benefits including:

- a) Reduction in workload for pilots and controllers;
- b) Greater data integrity;
- c) Removal of errors due to reception/transcription;
- d) No time constraint and no coverage limitation for pilots to obtain the ATIS/VOLMET information;
- e) Reduction in radio channel congestions for PDC delivery;

- f) Enhanced flight efficiency and safety;
- g) Receiving at will by the pilots;
- h) Most updated information; and
- i) Quick access to specific information in the ATIS/VOLMET/PDC messages.

3.2 The known intrinsic limitation of ACARS system for non end-to-end delivery means does not affect much on the information with broadcast in nature such as DFIS as the timely information can be accessed at the will of the pilots in advance.

3.3 The implementation of DFIS through ACARS system can also promote utilization of avionics, which are already available, in a more efficient manner.

4. ASIA PACIFIC REGIONAL STRATEGY

4.1 In view of the successful trials and applications of the above data link flight information services, and the added operational and/or safety benefits, the Asia/Pacific Air Navigation Planning and Implementation Regional Group (APANPIRG) decided at its fourteenth meeting held on 4 to 8 August 2003 to include the data link flight information services (DFIS) applications as one of the key priorities for implementation of the CNS/ATM systems for the Asia/Pacific Region.

5. CONCLUSION

5.1 The trials and applications of the data link flight information services, i.e. D-ATIS, D-VOLMET and PDC delivery via data link, have successfully demonstrated the added operational and/or safety benefits. States should strengthen and focus more efforts towards their implementation so that all parties concerned can reap the benefits as mentioned in this paper.

5.2 Providing DFIS applications through management of databases by ATS provider and practical data transporter by service provider is in consistent with the direction of the rich information based ATM system as described in the ATM Operational Concept Document.

6. ACTION BY THE CONFERENCE

6.1 The conference is invited to:

- a) take note of the identified operational and/or safety benefits as a result of applications of data link flight information services;
- b) take note of the action taken by the fourteenth meeting of the APANPIRG on DFIS;
- c) reaffirm existing data link technology is an appropriate available means in the near term for access of flight data information with broadcast in nature; and

- d) encourage the States to plan for early implementation of the relevant data link flight information services.

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