



*International Civil Aviation Organization*

**Ninth Meeting of the Communications/Navigation/Surveillance and Meteorology Sub-Group (CNS/MET/SG/9) of APANPIRG**

Bangkok, Thailand, 11 – 15 July 2005

**Agenda Item 13(2): Review CNS/ATM systems planning and implementation:  
MET related issues**

**IDENTIFICATION OF A DATA LINK FOR  
UPLINKING GRAPHICAL METEOROLOGICAL INFORMATION**

(Presented by Hong Kong, China)

**SUMMARY**

This paper presents a proposal to invite ICAO to identify a data link to support future uplinking of graphical meteorological information and to develop relevant SARPs and guidance to facilitate implementation.

**1. INTRODUCTION**

1.1 Hong Kong, China implemented D-ATIS and D-VOLMET in 2001 supporting the uplinking of HKIA Aerodrome and OPMET information to the cockpit. Information on the current status of these services is given in another paper for the meeting. In CNS/MET SG/8, information on a survey conducted in Hong Kong, China of pilot's requirement on uplinking of meteorological information was presented. One of the follow-up efforts to address the pilot's needs is to identify cost-effective means for uplinking weather products to cockpit in the near-term and long-term.

1.2 This paper presents a proposal to invite ICAO to identify a data link to support future uplinking of graphical meteorological information and to develop relevant SARPs and guidance to facilitate implementation.

**2. DISCUSSION**

2.1 Subsequent to CNS/MET SG/8, further meetings with pilots, airline operators and other stakeholders were held in Hong Kong, China to discuss the way forward to address the pilot's needs identified by the survey (para. 1.1). As windshear and turbulence information was identified as the mostly needed weather product for uplinking to the cockpit, the feasibility of using an available technology to conduct a trial in the short-term was considered. It has been found that the standard ARINC 623 message type "Terminal Weather Information for Pilots (TWIP)" should be technically possible. TWIP has been implemented in the US for uplinking Terminal Doppler Weather Radar (TDWR) information to aircraft equipped with standard ACARS VHF data link facilities and avionics supporting ARINC 623. It is noted however that due to limitation of the ACARS VHF communications bandwidth of 2.4 kbps, only simple text-based information could be uplinked using TWIP. On the other hand, in the recent meeting of the CNS/MET Aeronautical Mobile Service Communications Data Link Study Task Force (AMSDLS/TF) of the CNS/MET SG, considering

availability of ICAO standards and maturity of technology, the introduction of VDL-Mode 2 and its interim steps were supported in the general strategy for the implementation of the air-ground data link in the Asia/Pacific Region for consideration by the CNS/MET SG. VDL-Mode 2 has a bit-oriented data transmission rate (including graphical transmission) of 31.5 kbps and has been implemented in parts of North America, Europe and Asia.

2.2 At the same time, a number of developments in meteorological products for uplinking are also noted. The METLINKSG/8 meeting held during 1-4 February 2005 had developed draft model templates for the graphical display of SIGMET information for volcanic ash, tropical cyclones and for all of the other required phenomena. Subject to finalization by WMO, the model templates for graphical SIGMET will be included in Appendix 1 to Annex 3 as part of Amendment 74. Concurrently, further work is being progressed in the development of guidance material for the display of meteorological information in the cockpit, and development of draft model template for the graphical display of turbulence and windshear information. As regards the encoding/decoding of graphical meteorological products for uplink, the possible use of the Weather Huffman (WH) code is being explored by METLINKSG in coordination with WMO.

2.3 In view of this progress in enabling graphical meteorological information uplink, there remains an outstanding task to identify the appropriate data link to support future uplinking of graphical meteorological information in the Asia/Pacific Region. This task should also take into account, amongst other considerations, the need of global interoperability and harmonization, and the need of relevant SARPs and guidance to facilitate implementation of the graphical meteorological information uplink on the identified data link. At present, meteorological information uplink applications, including D-ATIS, D-VOLMET, and TWIP, are exclusively implemented on the ACARS VHF data link which has significant constraints in the transmission of high-data-volume graphical information. In this connection, it is proposed to invite ICAO to identify a data link to support future uplinking of graphical meteorological information and to develop relevant SARPs and guidance to facilitate implementation. From the recent outcome of the AMSDLS/TF, VDL-Mode 2 appears to be a candidate for the Asia/Pacific Region.

2.4 The meeting is invited to consider the merits of the above proposal and formulate the following draft Conclusion:

**Draft Conclusion 9/xx – Air-Ground Data Link Supporting Graphical Meteorological Information Uplink**

That, ICAO is invited to identify a data link to support future uplinking of graphical meteorological information and to develop relevant SARPs and guidance to facilitate implementation.

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

3.1 The meeting is invited to:

- (a) note the information in this paper; and
- (b) agree on the proposed draft conclusion.

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