



Sixth Meeting of CNS/MET Sub-Group of APANPIRG

Bangkok, Thailand, 15 – 19 July 2002

Agenda Item 10 b): Review transition to final phase of WAFS

TRANSMISSION OF DOWNLINK METEOROLOGICAL DATA TO WAFCS

(Presented by New Zealand)

SUMMARY

This paper outlines New Zealand's experience with the reception, use and transmission of downlinked meteorological data through to the World Area Forecast Centres.

1. Introduction

1.1 Increasing technological capability has enabled the development of Automatic Dependent Surveillance systems (ADS) for air traffic management purposes and the reporting of aircraft engineering and environmental data via satellite and VHF ground stations. These ADS systems provide information on the prevailing meteorological conditions being experienced by suitably equipped aircraft.

1.2 The routine provision of such aircraft meteorological observations are prescribed in Annex 3 with a certain frequency of reporting required during the different phases of each flight. In high-density traffic situations the frequency of reporting is determined in the regional air navigation agreement.

1.3 Similarly AMDAR (Aircraft Meteorological Data Reporting) systems are making an important contribution to the aircraft observation database. These various systems (ASDARS, ACARS) also send data back to ground stations for ongoing use and distribution.

1.4 Together, ADS and AMDAR are expected to vastly increase in the provision of aircraft observations of wind and temperature. This, in turn, has very positive benefits for numerical weather prediction and consequently the forecast products from the World Area Forecast Centres.

2. Practice and Experience in New Zealand

2.1 Currently New Zealand is receiving aircraft reports from both the ADS and AMDAR systems, and forwarding the meteorological information components to the WAFCS and other interested parties.

2.2 The New Zealand ATS provider (Airways Corporation) receives the full ADS stream of data and uses the positioning components for its air traffic management purposes. While the same stream of data is fed to the ground offices of the airlines concerned, and since December 1999, the meteorological components are stripped out and sent to the meteorological service provider (MetService).

2.3 In the absence of a published standard, the form of the ADS messages transmitted to MetService is the AIREP code. MetService uses this information in its continuing Meteorological Watch Office support of international air navigation and forwards the ADS and manual aircraft reports in the same routine hourly bulletins to the WAFCs and other interested parties, via the WMO global Telecommunications System, GTS.

2.4 Currently all of the ADS based aircraft reports received are from international operators with reporting taking place as programmed, at waypoints and as may be requested from time to time by MetService. On average over 300 aircraft reports are received within any given 24 hours. About 150 of these reports are derived from ADS data streams. This represents a 100% increase in the number of aircraft reports previously received.

2.5 Currently, in co-operation with Air New Zealand and the Australian Bureau of Meteorology, the meteorological service provider, MetService, is participating in an AMDAR programme using equipment aboard Qantas and Air New Zealand aircraft. Reports are being received directly from the aircraft on domestic main trunk routes and regional international routes.

2.6 Unlike the ADS based aircraft reports, the AMDAR systems are able to provide higher resolution data and turbulence information, the latter being of significant importance in the domestic New Zealand context. The AMDAR reports are also disseminated to interested parties and the WAFCs, but are compiled in separate hourly bulletins.

2.7 While New Zealand is currently processing both ADS and AMDAR aircraft reports this information is not yet being used in local numerical weather prediction models on an operational basis.

3. **Concerns About Automated Reports**

3.1 It is pleasing that the amount of aircraft reporting information being made available for the support of international aviation is increasing through the spreading use of ADS and AMDAR. However, it is of concern that, while the automatic systems on board aircraft are limited in the types of meteorological parameters measured, crews are increasingly neglecting the manual reporting of significant meteorological information not covered by these automatic systems.

3.2 New Zealand was only able to ensure that the meteorological components of ADS data streams were made available to the meteorological service supplier due to a fortuitous series of events. The rapidity of development of aviation technologies including ADS type systems often seems to outstrip the abilities of service organisations to take advantage of such developments or even maintain existing systems and capabilities.

3.3 This underscores the importance of all aviation infrastructure service organisations and organisations engaged in the development and use of new technologies ensuring significant and thorough liaison, communication and co-operation either directly or through appropriate industry and international forums.

4. **Action by the Meeting**

4.1 The meeting is invited to

- (a) Note the content, and
- (b) Exchange views on the various matters discussed in this paper.