



*International Civil Aviation Organization*

**FIFTEENTH MEETING OF THE  
ASIA/PACIFIC AIR NAVIGATION PLANNING AND  
IMPLEMENTATION REGIONAL GROUP (APANPIRG/15)**

**Bangkok, Thailand, 23 to 27 August 2004**

**Agenda Item 2.2: CNS/MET Matters**

**AERONAUTICAL FIXED SERVICES (AFSG)**

(Presented by France)

**SUMMARY**

This information paper is a working paper presented by France in April 2004 to European Air Navigation Planning Group (EANPG) on behalf of the Planning Group on the use of AMHS to convey BUFR coded meteorological messages.

To meet the BUFR requirements, there is no need to implement the full Extended ATS Message Handling Service. An appropriate AMHS implementation profile based on ICAO Document 9705 is currently being specified by ICAO ACP WGN. Minor upgrades to the systems already deployed (or soon to be deployed) for the Basic ATS Message Handling Service will be sufficient to enable the AMHS to additionally convey binary data as required for BUFR-coded MET messages.

Therefore, the Meeting is invited to note the recommendations on the use and on the implementation of AMHS.

**1. Introduction**

1.1. The World Meteorological Organization (WMO) has decided to migrate to Binary Universal Form for the Representation of meteorological data (BUFR) for Coded Meteorological Messages. This matter had been considered by the MET Div Meeting (2002), which recommended the development of a migration plan for the use of table-driven code forms for the dissemination of METAR/SPECI and TAF.

1.2. The WMO decision to migrate from all alphanumeric codes to table-driven code forms (TDCF) for information communication purposes will also require the migration to TDCF for aeronautical meteorological codes. The migration should commence in 2007 and be completed in 2015.

1.3. The ICAO Secretariat and Regional Offices have identified some of the issues that need to be addressed in relation to the migration to BUFR for OPMET requirements. The identified issues include the impact on aviation communications infrastructure, and more specifically on the Aeronautical Fixed Service (AFS), which is currently used to carry and distribute alphanumeric OPMET messages, by means of the Aeronautical Fixed Telecommunication Network (AFTN). The implementation of BUFR may also impact the overall distribution organization of OPMET data, but this issue is considered to exceed the terms of reference of the Planning Group.

1.4. ICAO has standardized, as part of the Aeronautical Telecommunication Network (ATN), the ATS Message Handling Service as the migration target for ground messaging, to resolve the issues created by the obsolescence of AFTN and by the confinement to Europe of the Common ICAO Data Interchange Network (CIDIN). When this migration is complete, the AMHS should be the replacement of AFTN and CIDIN, and it should carry all the functional information exchanges currently achieved by means of the AFTN/CIDIN.

1.5. This paper provides elements demonstrating the adequacy of the AMHS to meet BUFR requirements and recommends that the AMHS be specified as the target communication system to accommodate the transfer of BUFR coded messages.

## **2. Discussion**

2.1 The main requirements created by the support of BUFR code in the AMHS are:

- the support of binary data exchanges. This function is part of the Extended ATS Message Handling Service, already specified in ICAO Document 9705 Edition 3; and
- adequate network capacity within the AMHS to absorb the traffic increase resulting from the new code forms.

### *Standardization considerations.*

2.2 From a standardization perspective, the Extended ATS Message Handling Service (hereafter “Extended Service”) is a functional superset of the Basic ATS Message Handling Service (hereafter “Basic Service”). The Extended Service is implemented by the addition of several functions to the Basic Service. Only some of these additional functions are required to meet the BUFR transfer requirements.

2.3 The ICAO Aeronautical Communications Panel (ACP) Working Group N had anticipated the emergence of such new requirements, and it is currently developing AMHS Implementation Profiles to face this situation. The goal of such profiles is to allow incremental development of AMHS, enabling smooth transition from the Basic Service to the Extended Service. Each profile offers a level of functionality intermediate between the Basic Service and the Extended Service. All profiles are interoperable one to each other. The target approval date for this ACP WGN work item is the ACP/1 meeting, which will take place in 2005.

2.4 One of the AMHS Implementation Profiles foreseen by ACP WGN meets all the BUFR requirements, it is called “text and binary data messaging”. It is a functional subset of the Extended Service which includes a small number of functions in addition to the Basic Service. When adopted at ACP/1, it should become the recommended profile to enable migration from MET Traditional Alphanumeric Codes (TACs) to BUFR codes.

### *Implementation considerations.*

2.5 States are currently planning, or have undertaken, deployment of the Basic ATS Message Handling Service, with timeframes compatible with the start of the migration to BUFR. This does not include, in principle, the support of binary data exchanges, nor of the profile recommended above.

2.6 However, it should be noted that ATS Message Servers (i.e. AMHS message switches) that are or will be deployed for the Basic Service have the intrinsic ability to transparently convey binary data, and should therefore be compliant with the recommended profile without any upgrade.

2.7 The main impact of BUFR requirements is at the level of ATS Message User Agents (i.e. the systems providing the interface to actual users of the ATS Message Handling Service). Basic Service ATS Message User Agents, if based on Commercial-Off-The-Shelf (COTS) X.400 products, already include, in general, the functions needed to support binary data exchanges. A limited upgrade should be required to enable full compliance with the recommended profile.

2.8 The requirement for network capacity identified in section 2.1 above should be met through AFS capacity planning, as currently performed by the AFSG.

*Summary of discussion.*

2.9 The AMHS provides the most appropriate way to support the transfer of BUFR coded MET messages. To meet the BUFR requirements, there is no need to implement the full Extended ATS Message Handling Service. An appropriate AMHS implementation profile based on ICAO Document 9705 is currently being specified by ICAO ACP WGN. Minor upgrades to the systems already deployed (or soon to be deployed) for the Basic ATS Message Handling Service will be sufficient to enable the AMHS to additionally convey binary data as required for BUFR-coded MET messages.

### **3. Action by the Meeting**

3.1 The meeting is invited to note that the EANPG / AFS Group has recommended:

- the use of AMHS to meet the new communication requirements introduced by Binary Universal Form for the Representation of meteorological data (BUFR), and to support the efforts of ACP WGN in the completion of the development of an AMHS Implementation Profile meeting the aforementioned new requirements.
- that ICAO EUR Member States and Organizations, when implementing AMHS, do not restrict to the Basic ATS Message Handling Service but implement at least the above recommended AMHS Implementation Profile, for availability of services in a timeframe compatible with the accommodation of BUFR coded messages.

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