



International Civil Aviation Organization

**FOURTEENTH MEETING OF THE
COMMUNICATIONS/NAVIGATION/SURVEILLANCE
AND METEOROLOGY SUB-GROUP OF
APANPIRG (CNS/MET SG/14)**



Jakarta, Indonesia, 19 – 22 July 2010

Agenda Item 12: Implementation of the issuance of TAF and OPMET exchanges

3) Other OPMET implementation issues

REVIEW STATUS OF OPMET DATA REPRESENTATION

(Prepared by the Secretariat)

SUMMARY

This paper provides an attached report that describes the status of Extensible Mark-up Language (XML) developments and possible future migration.

This paper relates to:

Strategic Objectives:

D. Efficiency – Enhance the efficiency of aviation operations

Global Plan Initiatives:

GPI/19 – Meteorological Systems

1. Introduction

1.1 The WMO Commission for Aeronautical Meteorology (CAEM)/Commission for Basic Systems (CBS) Expert Team on the OPMET Data Representation was held in Paris, France on 26 October 2009. The full report may be accessed at <http://www.wmo.int/pages/prog/www/WDM/ET-ODR-2/Documents.html>. Developments on the migration to table driven codes for OPMET using extensible mark-up language (XML) are presented in the working paper AN-WP/8475 submitted to the Air Navigation Commission and reproduced in the **Attachment**.

2. XML developments and timelines

2.1 AN-WP-8475 provides information on XML developments with regards to the pilot test of METAR/TAF exchange and future timelines of further developments, endorsements and possible migration.

3. Action required by the Meeting

3.1 The meeting is invited to review the contents of the attached report.



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AN-WP/8475
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WORKING PAPER

AIR NAVIGATION COMMISSION

AN Programme No. D2-INF-MET: Meteorological information

**UPDATE ON ROADMAP RELATED TO THE MIGRATION
TOWARDS THE USE OF TABLE-DRIVEN CODES FOR OPMET
(Item No. 18409)**

(Presented by the Director of the Air Navigation Bureau)

SUMMARY

This paper contains a proposal to resume the migration to table-driven codes for the dissemination of METAR/SPECI and TAF with the replacement of the binary universal form for the representation of meteorological data (BUFR) code form by extensible mark-up language (XML). This follows a successful pilot project “proof of concept” carried out by the World Meteorological Organization (WMO) during 2009. Additional information concerning the scope and timescales of the work required is also provided.

Action by the Air Navigation Commission is in paragraph 4.

COORDINATION

C/ATM, C/CNS/AIRS

REFERENCES

*AN Min 176-4
AN Min 174-2
AN Min 172-11
AN Min 166-5
AN Min 161-12
C-Min. 180/3
Annex 3

APANPIRG/17 Report
EANPG/47 Report
EANPG/45 Report
Doc 7474, *Working Arrangements
between the International Civil
Aviation Organization and the
World Meteorological
Organization*

*Principal references

1. INTRODUCTION

1.1 The Commission will recall that, in its Recommendation 2/5, the MET Divisional Meeting (2002) (AN Min. 161-12) had invited the World Meteorological Organization (WMO) to develop a migration plan concerning the use of table-driven codes for the dissemination of METAR/SPECI and TAF. In response to this request, and in accordance with the *Working Arrangements between the International Civil Aviation Organization and the World Meteorological Organization* (Doc 7475), the WMO Commission for Basic Systems subsequently developed a migration plan that would ultimately lead to the global implementation of the binary universal form for the representation of meteorological data (BUFR) code-form for METAR/SPECI and TAF as a part of Amendment 77 to Annex 3 — *Meteorological Service for International Air Navigation* that would become applicable in November 2016. Furthermore, the first stage of that migration to exchange METAR/SPECI and TAF under voluntary bilateral agreement between States using the BUFR code-form was adopted by Council (C-Min. 180/3) as a part of Amendment 74 to Annex 3, applicable on 7 November 2007.

1.2 The Commission will also recall that it had agreed (AN Min. 176-4) that work by the Secretariat on the migration to the BUFR code-form should be suspended until the results of a study being carried out by a WMO Expert Team on the use of XML for the dissemination of METAR/SPECI and TAF were known. This was in response to concerns, regarding the possible negative economic, operational and safety impacts of the migration and in particular the fact that the aeronautical fixed telecommunication network (AFTN) was unable to handle binary codes such as BUFR, raised by the European Air Navigation Planning Group (EANPG) through its Conclusions 45/12 and 47/27 ((AN Min.166-5) and AN Min. 172-11 respectively) and through the ASIA/PAC Air Navigation Planning and Implementation Regional Group (APANPIRG) through its Conclusion 17/39 (AN Min. 174-2).

2. DISCUSSION

2.1 The Commission may wish to note that, in response to the concerns raised by ICAO, the WMO Commission for Basic Systems (CBS) and Aeronautical Meteorology (CAeM), in coordination with ICAO, jointly established an Expert Team on operational meteorological (OPMET) Data Representation (ET-ODR). The ET-ODR carried out a successful pilot project (“proof of concept”) on the use of XML during 2009. Furthermore, there was a strong consensus that an overall migration of all OPMET information was expected towards a weather information exchange model (WXXM) essentially based on the use of XML. The WXXM is expected to form an integral component of both the United States Federal Aviation Administration (FAA) NextGen and European Organisation for the Safety of Air Navigation (EUROCONTROL) SESAR programmes.

2.2 The most recent meeting of the ET-ODR held in Paris, France, on 26 October 2009 agreed that the following major milestones would be necessary in order to complete a successful migration to a WXXM including the use of XML:

- a) replacement of the BUFR code-form by XML as far as the bi-lateral use of table-driven codes for METAR/SPECI and TAF are concerned (Amendment 76 to Annex 3, applicable 2013);
- b) endorsement of the future use of WXXM by the planned conjoint ICAO/WMO MET/AIM Divisional Meeting (2014);
- c) start of implementation of WXXM (Amendment 77 to Annex 3, applicable 2016);
and

- d) completion of implementation of WXXM (Amendments 78 and 79 to Annex 3, applicable 2019, 2022 respectively).

2.3 The Commission may wish to note that an ad hoc group has been established by the Aerodrome Meteorological Observation and Forecast Study Group (AMOFSG) in order to develop a roadmap leading to the determination of the necessary changes to Annex 3 and any associated guidance material which is expected to assist the Secretariat throughout the process.

2.4 It may be noted that although the current AFTN is able to handle non-binary codes such as XML the likely data volumes involved in the creation of a WXXM (and thus the supporting data functions of both NextGen and SESAR) would pose considerable communications capacity issues for the systems currently in place.

3. CONCLUSION

3.1 Following the successful study carried out by WMO, it is suggested that the work relating to the migration to table-driven codes is resumed with the aim to meet the needs of the NextGen and SESAR programmes using a WXXM based on the use of XML. Furthermore, it is suggested that the current use of the BUFR code-form in Annex 3 for the exchange of METAR/SPECI and TAF under bilateral agreement be replaced by the use of XML as a part of Amendment 76 to Annex 3 as a first step.

4. ACTION BY THE AIR NAVIGATION COMMISSION

4.1 The Air Navigation Commission is invited to:

- a) note the contents of this paper;
- b) agree that the work relating to the migration to table-driven codes be resumed with specific regard to the use of a weather information exchange model (WXXM) based on the use of XML; and
- c) agree that the Secretariat, with the assistance of the AMOFSG, develop a draft amendment replacing the use of BUFR for the exchange of METAR/SPECI and TAF under bilateral agreement by the use of XML as a part of Amendment 76 to Annex 3.

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