International Civil Aviation Organization
CAR/SAM REGIONAL PLANNING AND IMPLEMENTATION GROUP (GREPECAS)
Sixth Meeting of the CNS Committee of the GREPECAS ATM/CNS Subgroup (CNS/COMM/6)
Santo Domingo, Dominican Republic, 30 June to 4 July 2008

Agenda Item 1: Development of Communication Systems

1.5 Communication considerations to support the migration to the exchange of BUFR-code meteorological messages

FOLLOW UP ON ACTIVITIES FOR THE MIGRATION TO A NEW OPMET FORMAT

(Presented by the Secretariat)

SUMMARY

This working paper presents a follow up on activities for migration to a new OPMET format and actions suggested as a result of the suspension of the BUFR code for OPMET transmission.

References:

- Report of the GREPECAS/13 meeting (Santiago, Chile, 14-18 November 2005);
- Report of the eighth meeting of the AERMET Subgroup (Santiago, Chile, 9-13 October 2006);
- Report of the GREPECAS /14 meeting (San José, Costa Rica, 16-20 April 2007);
- Ad hoc meeting on the planned migration of OPMET data to table-oriented code formats (Geneva, Switzerland, 13 April 2007);
- Meeting of the WMO CBS Panel on Data and Code Display (Darmstadt, Germany, 23-27 April 2007);
- Fourth meeting of the 176th Session (25 October 2007) of the ICAO Air Navigation Commission; and
- Second meeting of the ACP Working Group (Montreal, 21-25 April 2008).

Strategic Objectives:	*This working paper is related to Strategic objective D.*

1. Introduction

1.1 The plan for migration from OPMET meteorological information transmission in traditional alphanumeric form to a coded format based on bit-oriented tables (BUFR - *Binary Universal Form for the Representation of meteorological data*) was approved at the Fourteenth WMO (World Meteorological Organization) Congress, held in Geneva, Switzerland on 5-23 May 2003.

1.2 According to ICAO Document 7475 –*Working arrangements between the International Civil Aviation Organization and the World Meteorological Organization*, aspects concerning aeronautical codes are the prerogative of the WMO, and ICAO must follow WMO plans for their implementation.

1.3 The GREPECAS/13 meeting approved Decision 13/29 - *Plan for the migration of aeronautical meteorological messages to the BUFR code in the CAR/SAM Regions*, whereby the AERMET Subgroup was requested, in coordination with the CNS Committee of the GREPECAS ATM/CNS/SG, to develop a detailed plan for the migration of aeronautical meteorological codes to the BUFR code. Accordingly, the GREPECAS/13 meeting, through Conclusion 13/83 – *Nomination of communication experts to serve on the COM/MET Task Force*, agreed that the CNS Committee would support the work of the COM/MET Task Force by nominating members of the communication area to serve on that Task Force.

1.4 Following WMO guidelines, ICAO established the following timetable of amendments to Annex 3 – *Meteorological service for international air navigation*, for the transition to the BUFR code:

Year-end 2007 – Amendment 74: Establishes the use between States, under bilateral agreements, of the BUFR code, together with the alphanumeric codes.

2010 – Amendment 75: Establishes the exchange/distribution of BUFR among OPMET data banks, based on the recommended practices (RP).

2013 – Amendment 76: The recommended practices become standards and provisions for all States to put OPMET messages in BUFR code in OPMET databases, as a recommended practice.

2016 – Amendment 77: The aforementioned recommended practice becomes a standard and full implementation of BUFR-coded OPMET messages begins. The transition provides for the use in parallel of alphanumeric codes and codes based on bit-oriented tables for OPMET messages starting in 2007 and, by 2015, exclusive use of code formats based on bit-oriented tables.

1.5 The GREPECAS/14 meeting considered that the ATN Task Force of the CNS Committee, and the COM/MET Task Force of the AERMET Subgroup should conduct a detailed analysis of the communication aspects deemed necessary for migration to the exchange of BUFR-coded meteorological messages in the CAR/SAM Regions, for possible implementation during the first and second transition stages. This means the use of terminals with coding/decoding capability, the use of AMHS systems with extended service, the preparation of an interface control document (ICD) to integrate AMHS and MET systems, the establishment of display system standards, template conversion specifications, acceptance standards, conversion programmes, and safety aspects *(Decision 14/54 – Communication aspects for migration to the exchange of BUFR-coded meteorological messages).*

2. Analysis

2.1 The meeting of the COM/MET Task Force of the AERMET Subgroup, held on the first day of the eighth meeting of the Meteorology Subgroup (Santiago, Chile, 9 October 2006), while discussing BUFR code implementation, analysed the possible impact of BUFR introduction in CAR/SAM States/Territories. This analysis presents some complexities that would arise in the BUFR code implementation process, together with the most relevant aspects to be considered for the transition, with emphasis on the responsibility of the WMO and ICAO.

2.2 The GREPECAS/14 meeting, as a result of its analysis of the impact of BUFR implementation, formulated Conclusion 14/21 – *Review of the transition to BUFR code,* in which ICAO is urged to consider revising the decision to transition from traditional alphanumeric codes to BUFR-coded OPMET messages, in order to look into the possibilities for reducing its negative impact on the aeronautical community; to entrust consideration of BUFR-coding, particularly of aspects concerning aviation safety, to the pertinent WMO commissions; and lastly to ensure, through close coordination with the WMO Secretariat, that all aspects of importance to aviation are fully considered in future decisions of that institution.

2.3 In the light of the concern expressed by several ICAO Regional Planning and Implementation Groups (PIRGs) over the planned migration of OPMET data transmission (METAR/SPECI and TAF) from the traditional alphanumeric code forms (TACF) to the use of the BUFR-coded form, ICAO and the WMO met in Geneva, Switzerland on 13 April 2007 to discuss the migration towards a change in OPMET information transmission forms.

2.4 The main task of the meeting was to consider alternative solutions to migration towards BUFR coding, such as the study of migration from the current TACF forms using AFTN to XML application.

2.5 Furthermore, the WMO CBS (Commission of Basic System) Expert Team met in Darmstadt, Germany on 23 to 27 April 2007 to address meteorological code representations, including aeronautical meteorological codes.

2.6 As a result of those meetings, the WMO and ICAO have jointly decided to have studies and tests made of XML use for OPMET data transmission and to have BUFR implementation activities stopped until those studies have been completed. In order to further the studies and tests of XML use for OPMET data transmission, ICAO and the WMO agreed to take the following actions at the meetings cited in the previous paragraphs:

- Prepare a formal answer from the WMO to ICAO's letter about the concern expressed by some PIRGs (May/June 2007);

- Have the CBS Administration Group set up a new team of experts (ET) to be entrusted with developing XML standards for METAR/SPECI and TAF. The ET would include experts from the CAeM (Commission for Aeronautical Meteorology) and ICAO (June 2007);

- Develop XML standards (including coding/decoding software and the pertinent XML coding tables) (2008); and

- Prepare a pilot project for an extreme-to-extreme exchange of METAR/SPECI and TAF in XML from an aerodrome meteorological office to an aeronautical end user, in order to ensure the code's viability in an operational environment (2008).

2.7 The ICAO Air Navigation Commission, at the fourth meeting of its 176th session (25 October 2007), approved the suspension of migration towards the BUFR code until the studies of XML use for OPMET data exchanges have been completed by the WMO expert team.

2.8 It should also be noted that the ICAO Aeronautical Communications Panel (ACP), at its Second meeting of the Working group of the whole in Montreal on 21 to 25 April 2008, on examining the possibility of starting the issue of standards on new ground-to-ground message applications like SMTP and XML, considered it premature, but felt that these applications should be placed on its working agenda for analysis in 2009.

2.9 In the light of the suspension of migration towards the BUFR code until the WMO studies on XML use have been completed, the ATN Task Force and the COMMET Committee of the MET Subgroup should also suspend their studies on communication aspects considered necessary for migration towards the exchange of meteorological messages in BUFR codes until the XML studies for OPMET data exchanges have been completed.

2.10 With regard to the studies of communication aspects considered necessary for migration to the BUFR code, it has been determined thus far that neither the AFTN nor the basic AMHS would support migration to the BUFR code. Only the extended AMHS would have the file transfer body part capacity to support that migration. The technical specifications of the extended AMHS will be included in the preliminary fourth edition of ICAO Document 9705/9880 – *Comprehensive aeronautical telecommunication network (ATN) manual* being revised by the ICAO Aeronautical Communications Panel (ACP).

2.11 Of all of the AMHS systems installed in the CAR/SAM Regions at this time, only those of Argentina and Paraguay are extended AMHS systems. There are plans for many of the States/Territories and international organizations in the CAR/SAM Regions to have installed AMHS systems by the year 2010.

2.12 The WMO Expert Team has not yet started the studies of XML for OPMET message transmission (METAR/SPECI and TAF), which are expected to be completed by the year 2009.

2.13 ICAO, as the ad hoc Meeting on the planned migration of OPMET data toward table-driven code forms (Geneva, Switzerland, 13 April 2007) determined, should participate actively in the work of the WMO Expert team for the studies of XML application in OPMET message transmission, in order to avoid what happened to the migration of OPMET messages to the BUFR code form.

2.14 Furthermore, the WMO Expert team, together with ICAO, should, as part their studies of XML application in OPMET message transmission, analyze its possible impact on systems that are replacing the AFTN, such as the AMHS system, which is in growing use in the CAR/SAM Regions and other regions of the world.

3. Suggested action

3.1 The Meeting is invited to:

a) take note of the information supplied;

b) analyze the action of suspending the studies being conducted by the ATN task force and the COM/MET Task force of the AERMET Subgroup on communication aspects considered necessary for migration towards the exchange of meteorological messages in BUFR codes until the XML studies are completed, taking due note of what is specified in section 2, paragraphs 2.1 to 2.13 of this working paper;

c) study the action requesting ICAO to participate actively in the studies of XML use for OPMET data transmission, taking due note of the contents of section 2, paragraphs 2.16 and 2.17 of this working paper;

d) examine the suggested inclusion within the studies being carried out by the WMO expert team on XML use for OPMET data transmission, of its impact on systems that are replacing the AFTN, such as the AMHS system (section 2, paragraph 2.18 of this working paper); and

e) analyze any other considerations the Meeting deems pertinent with regard to the matter.

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