



ICAO

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WORKING PAPER

MEVA/TMG/31 — WP/11
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Thirty first MEVA Technical Management Group Meeting (MEVA/TMG/31)
Kingston, Jamaica, 24 to 26 May 2016

Agenda Item 4: Network interconnection Activities and new circuits
4.3 Requirement for new MEVA III circuits

METEOROLOGICAL INFORMATION EXCHANGE

(Presented by AMHS Task Force)

EXECUTIVE SUMMARY	
This working paper presents a follow-up and summary concerning the conclusions from ANI/WG/3 Meeting on XML Testing over AMHS.	
Action:	Suggested actions are listed in section 3
<i>Strategic Objectives:</i>	<ul style="list-style-type: none">• Safety• Air Navigation Capacity and Efficiency• Security & Facilitation
<i>References:</i>	<ul style="list-style-type: none">• Third NAM/CAR Air Navigation Implementation Working Group Meeting (ANI/WG/3) Mexico City, Mexico, 4 to 6 April 2016

1. Introduction

1.1 The Third NAM/CAR Air Navigation Implementation Working Group Meeting (ANI/WG/3) in Mexico City, Mexico in April 2016 invited the GREPECAS Group D AMHS Task Force (TF) led by United States, Ms. Dulce M. Roses, to form a working group of Brazil, Dominican Republic, United States to prepare a strategy to ensure operational use of AMHS for the exchange of OPMET data formatted in accordance with a globally interoperable information exchange model, use extensible markup language (XML)/geography markup language (GML), and be accompanied by the appropriate metadata.

1.2 Additionally, States should consider participation in AMHS testing for XML MET exchange in two phases:

- Phase 1 – a compatibility test, to see if AMHS can accept the new XML message formats
- Phase 2 – to test the ability of the AMHS to accept realistic messages and volumes

1.3 This paper summarizes work so far of AMHS TF members; suggests some initial components of the work strategy; and recommends further action by ICAO necessary to achieve the required objectives.

2. Discussion

2.1 Amendment 76 to ICAO Annex 3 – Meteorological Service for International Air Navigation (Nov. 2013) indicates that, under bilateral agreements between States in a position to do so, states should exchange METAR, SPECI, SIGMET and TAF in a digital form (XML/GML) in addition to Traditional Alphanumeric Codes (TAC) forms. With Amendment 77 (planned Nov. 2016), METAR, SPECI, SIGMET and TAF should be exchanged in a digital form. Finally, Amendment 78 (expected Nov. 2019) METAR, SPECI, SIGMET and TAF shall be exchanged in a digital form.

2.2 The ICAO Meteorological Information Exchange Model (IWXXM) is a data model built on the ISO TC211 standards for exchanging operational meteorological (OPMET) data.

2.2 Since 2010 the United States' FAA has had activities with international partners to perform validation and problem isolation using XML data in an AFTN/AMHS environment. Initially using 'canned' WXXM data 'pasted' into the AMHS Basic Services' message-transfer-body-parts (MTBP), data was exchanged with AMHS directly between States, and subsequently via a third 'transit' State. For the last testing, in 2015, XML data generated by the Singapore MET system was exchanged with the FAA via the United Kingdom AMHS system.

2.3 Conclusions from these testing were as follows:

- a) AMHS provides a suitable platform for transmission of XML data
- b) AFTN has limitations, and requires an understanding of specific systems involved:
AFTN systems used for disseminating XML-encoded data should support the full IA-5 character set, in order to avoid the rejection of some characters.
AFTN systems must be capable of configuration for line length > 69 chars.
AFTN messages have a size limitation of 1800 characters.
- c) If using AMHS for XML data, States should consider any likely transit through an AFTN system.

2.4 The recent Sixty Second meeting of the Aeronautical Fixed Service Group (AFSG) Planning Group in Athens, 23-25 February, 2016 proposed an AMHS profile for IWXXM information exchange, detailing X.400 parameters and recommending IWXXM transfer by AMHS file-transfer-body-parts (FTBP). It also recommended that mandatory compression of the data to be transferred occur in the MET domain and not be a function of AMHS.

2.5 Based on the above, the AMHS TF recommends the following activities that can be achieved by Member States without MET involvement:

- a) Undertake additional AMHS testing with concentration on transfer of Enhanced Services' file-transfer-body-part (FTBP) which has not been the focus of previous AMHS testing intended for the migration of AFTN messages to AMHS

- b) Quantify the current flow of MET messages encoded with Traditional Alphanumeric Codes (TAC) such that an estimation of required bandwidth can be made when equivalent compressed XML-formatted sizes are known

2.6 Clearly a parallel effort of co-operating MET partners is required to complete the required objectives with activities including:

- a) Implementing XML encoding of TAC information and validating it against the current operational data flows
- b) Implementing a compression mechanism to be standardized within the MET community
- c) Deriving factors to determine the change in message size between TAC and compressed XML-encoded data
- d) Implementing embedded AMHS User Agent technology for exchange of FTBP information with an AMHS Message Transfer Agent (MTA)
- e) Evaluating MET data exchanged via AMHS for validity and common interpretation
- f) Quantify the current flow of MET messages encoded with Traditional Alphanumeric Codes (TAC) such that an estimation of required bandwidth can be made when equivalent compressed XML-formatted sizes are known

2.7 Further Recommendations – To further common objectives for the exchange of XML-encoded MET information over the AMHS, ICAO is invited – as a matter of some urgency – to form a parallel Task Force of co-operating Meteorological partners prepared to engage in the exchange and validation of XML-encoded MET information using AMHS.

3. Suggested Actions

3.1 The Meeting is invited to:

- a) Provide any comments and considerations related with the actual capacity and Inter-regional connectivity required for the AMHS testing for XML MET exchange;
- b) States to consider participation of the States Review and to further comments to the Project D AMHS Task Force coordinator as required;
- c) Member States take note of recommended actions mentioned under paragraph 2.6;
- d) ICAO to take note of recommended action mentioned under paragraph 2.8;
- e) Take appropriate action as needed