



WORKING PAPER

**MEETING OF THE METEOROLOGY PANEL (METP)
WORKING GROUP MIE**

FIRST MEETING

Montréal, Canada, 16 to 20 November 2015

**Agenda Item 4: Job Card CP.008.01 – Testing of the ATS message handling system
(AMHS) in relation to the exchange of digital aeronautical meteorological
information**

IWXXM Message Packaging

(Presented by B. L. Choy)

SUMMARY

This paper describes how IWXXM messages are aggregated to mimic “bulletinization” of TAC messages for transmission over AMHS. Further enhancements to the current aggregation mechanism are also proposed to better align with the structure and information carried by bulletins.

Action by the METP-WG/MIE is in paragraph 3.

1. INTRODUCTION

1.1 Currently, Annex 3 TAC messages including METAR/SPECI, TAF, SIGMET, etc are encapsulated with WMO Abbreviated Heading Line (AHL) to form bulletins¹ before they are being transmitted over AFTN or other media. The WMO AHL T₁T₂A₁A₂ii CCCC YYGGgg (BBB) contains data designators (T₁T₂A₁A₂ii), international location indicator of originating or compiling station (CCCC), date-time group (YYGGgg) and indicator on whether the bulletin is an additional issuance, a correction or amendment (BBB). TAC routine messages of the same kind may be aggregated by national or international data aggregator into one or more bulletins for subsequent distribution according to the routing schedule.

¹ See Section 2 of WMO No.386 Manual on the Global Telecommunication System Part I.

2. DISCUSSION

2.1 Albeit the ultimate target to develop IWXXM is to exchange aviation meteorological information over a digital environment supporting SWIM (System Wide Information Management), the migration from exchanging TAC to IWXXM formatted information has to be in a phased approach to ensure a smooth transition. As proposed in the Concept of Operations for the Transition of OPMET Data Exchange using IWXXM (The ConOps), certain functions of existing Aeronautical Fixed System (AFS), including aggregation of IWXXM messages into bulletins, are recommended to be retained during the transition. To achieve this, a GML Application Schema is required to “bulletinize” IWXXM messages.

2.2 The COLLECT-XML² is developed to represent a collection of GML feature instances of the same type of meteorological information³. The intent is to allow XML encoded meteorological information to be aggregated in a way that emulates the existing data distribution practices used within the Global Telecommunication System (GTS) and AFS. In addition to the XML schema, schematron rules are also in place to validate conformance of aggregated IWXXM messages to COLLECT-XML requirements. The bulletin can either be sent directly, or as a compressed file, as attachment via AMHS Extended Services. Appendix I shows an example of a bulletin of IWXXM METAR messages aggregated with COLLECT-XML.

2.3 Currently there is only one element “collect:bulletinIdentifier” in COLLECT-XML to identify the bulletin. It is an alphanumeric string conforming to a special convention of the WMO AHL⁴. While the metadata in a WMO AHL may be enough for exchanging TAC bulletins, more sophisticated representation of the metadata will be required for identification, exchange and processing of IWXXM bulletins. For example, The ConOps suggests the inclusion of metadata of the aggregation centre (Assumption 9), which may be different from the originating or compiling station mentioned in CCCC of the WMO AHL, in creating a bulletin.

2.4 Special attention is also required to ensure successful aggregation of IWXXM messages at national or international data aggregators. This is due to the fact that all “gml:id” defined within an XML/GML instance should be unique. As IWXXM messages are prepared by different originators, a set of common rules for the generation of “gml:id” is essential to ensure smooth aggregation of IWXXM messages from different originators.

3. ACTION BY THE METP-WG/MIE

3.1 The METP-WG/MIE is invited to note the information of this document and consider the following recommendations:

- (i) Review adequacy of metadata in COLLECT-XML to support identification, exchange and processing of IWXXM bulletins
- (ii) Promulgate proper procedures, through the publication of guidelines, to properly prepare IWXXM messages to ensure smooth aggregation of IWXXM messages from different originators

² See WMO FM 201-15 EXT, COLLECT-XML, Collection of features

³ A collection of meteorological information is often referred to as a bulletin

⁴ The fields are “pflag_productidentifier_oflag_originator_yyyyMMddhhmmss[_freeformat].type[_compression]”. See Page 25 of Attachment II-15 to WMO Manual on the Global Telecommunication System (WMO No. 386)

An example showing a COLLECT-XML packaged IWXXM METAR bulletin and its TAC counterparts. Equivalent parts in the IWXXM and TAC bulletins are highlighted in similar colours.

IWXXM message bulletin:

```
<?xml version="1.0" encoding="UTF-8"?>
<collect:MeteorologicalBulletin gml:id="SAHK31VHHH-201511020800">
  <collect:bulletinIdentifier>A_SAHK31VHHH020800_C_VHHH_201511020800--.xml</collect:bulletinIdentifier>
  <collect:meteorologicalInformation>
    <iwxxm:METAR gml:id="metar-VHHH-201511020800">
      ...
    </iwxxm:METAR>
  </collect:meteorologicalInformation>
  <collect:meteorologicalInformation>
    <iwxxm:METAR gml:id="metar- RCTP-201511020800">
      ...
    </iwxxm:METAR>
  </collect:meteorologicalInformation>
  <collect:meteorologicalInformation>
    <iwxxm:METAR gml:id="metar-RCHK-201511020800">
      ...
    </iwxxm:METAR>
  </collect:meteorologicalInformation>
  <collect:meteorologicalInformation>
    <iwxxm:METAR gml:id="metar- RCSS-201511020800">
      ...
    </iwxxm:METAR>
  </collect:meteorologicalInformation>
  ...
</collect:MeteorologicalBulletin>
```

TAC message bulletin:

```
SAHK31 VHHH 020800
METAR VHHH 020800Z 34011KT CAVOK 24/14 Q1018 NOSIG=
METAR RCTP 020800Z 05017KT 5000 BR FEW010 SCT016 BKN025 19/16
Q1021 NOSIG RMK A3015=
METAR RCKH 020800Z 34006KT 310V020 9999 FEW016 BKN045 BKN060 27/22
Q1016 NOSIG RMK A3001=
METAR RCSS 020800Z 12009KT 4500 BR FEW008 BKN018 OVC035 20/17
Q1021 NOSIG RMK A3015=
METAR RCMQ 020800Z 02017G28KT 9999 FEW012 BKN150 20/16 Q1017 NOSIG
RMK A3004 =
METAR RCNN 020800Z 33010KT 9999 FEW012 SCT025 BKN080 26/20 Q1016
NOSIG RMK A3001 =
METAR VMMC 020800Z 36014KT 9999 FEW045 23/15 Q1018 NOSIG=
METAR RPLL 020800Z 12008KT 040V170 9999 VCSH FEW023CB SCT025 SCT090
BKN300 30/23 Q1010 NOSIG RMK A2983 CB NW PCPN DSTN W-N=
METAR RPVM 020800Z 04005KT 9999 FEW020 BKN100 29/24 Q1010 A2984 CB
DSPTD=
METAR RPMD 020800Z NIL=
METAR RPLB 020800Z 06005KT 9999 FEW020 BKN080 29/22 Q1010 A2983
NOSIG=
METAR RPLI 020800Z 34002KT 9999 FEW019 32/23 Q1009 NOSIG RMK A2980=
METAR RPMZ 020800Z NIL=
NNNN
```