International Civil Aviation Organization

THIRTEENTH MEETING OF THE ASIA/PACIFIC REGIONAL OPMET BULLETIN EXCHANGE WORKING GROUP (ROBEX WG/13)

Seoul, Republic of Korea, 16 – 18 March 2015

Agenda Item 4: OPMET Exchange

PROGRESS REPORT ON DIGITAL EXCHANGE OF AERONAUTICAL METEOROLOGICAL INFORMATION

(Presented by Singapore RODB)

SUMMARY

This paper is to update the meeting on Singapore's progress on the digital exchange of aeronautical meteorological information in the required XML/GML format.

1. INTRODUCTION

1.1 Singapore RODB implemented an XML Converter tool in its Message Switching System to convert OPMET messages from TAC to XML using the AvXML 1.0 package developed by the WMO and ICAO in September 2013[1].

1.2 This paper provides an update on the progress of on-going activities and future plans in Singapore to test the exchange of XML encoded OPMET data locally and with Federal Aviation Authority (FAA) through the ATS Message Handling System (AMHS).

2. PROGRESS REPORT

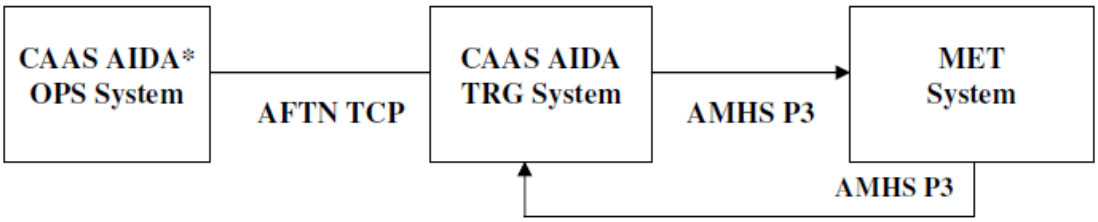
2.1 Character Test Messages sent from CAAS[2]-AMHS System to Singapore's MET System

2.1.1 As part of the test process to ensure there is no missing character during the transmission of XML encoded METAR and TAF messages, Singapore performed additional steps to check the number of characters sent on the AMHS between Singapore's CAA and Meteorological Service Singapore between 1 September and 31 October 2014.

[1] AvXML 1.0 package was developed by WMO's Task Team on Aviation XML (TT-AvXML) and the ICAO Meteorological Aeronautical Requirements and Information Exchange Project Team (MARIE-PT).
[2] CAAS: Civil Aviation Authority of Singapore

2.1.2 Character Test Messages included (a) Test Case 1: 500 Characters; (b) Test Case 2: 1000 Characters; (c) Test Case 3: 1500 Characters and (d) PRE-OPS Test sent to MET System over 3 days. All test cases passed without any adverse issue observed.

2.1.3 Diagram below shows the flow of the data feed from CAAS-AMHS System to Singapore's MET System



*AIDA – Aeronautical Integrated Data Exchange Agent (Integrated AFTN/CIDIN/AMHS Switch)

Figure 1: Data Flow for Character Test Messages

2.2 Conversion of VA SIGMET from TAC to XML compliant format

2.2.1 The following shows two examples for VA SIGMET (received on 20 and 24 February 2015) that were successfully converted into the XML format and transmitted on the AHMS:

```
FF WSSSYMYX
240615 RJTDYPYX
^WVJP31 RJTD 240620
RJJJ SIGMET A02 VALID 240620/241220 RJTD-
RJJJ FUKUOKA FIR VA MT ASOSAN PSN N3253 E13106 VA CLD OBS AT 0600Z
FL060 MOV E INTST UNKNOWN=
```

```
Originator: $ /C=XX/ADMD=ICAO/PRMD=SINGAPORE/O=CAASG/OU1=WSSS/CN=WSSSNEAA
Primary Recipients:
 $ /C=XX/ADMD=ICAO/PRMD=SINGAPORE/O=CAASG/OU1=WSSS/CN=WSSSMHSA/
PRI: GG
FT: 240619

LVJP31 RJJJ 240620
<?xml version="1.0" encoding="UTF-8"?>
<iwxxm:VolcanicAshSIGMET xmlns:iwxxm="http://icao.int/iwxxm/1.0" xmlns:gm
  <iwxxm:issuingAirTrafficServicesUnit>
    <saf:Unit gml:id="uuid.7abf6b40-b72e-11e2-rjjj-0800200c9a66">
      <gml:identifier codeSpace="urn:uuid:">7abf6b40-b72e-11e2-rjjj-08002
      <gml:name>FUKUOKA</gml:name>
      <saf:type>ATCC</saf:type>
      <saf:designator>RJJJ</saf:designator>
    </saf:Unit>
  </iwxxm:issuingAirTrafficServicesUnit>
  <iwxxm:originatingMeteorologicalWatchOffice>
    <saf:Unit gml:id="uuid.7abf6b40-b72e-11e2-rjtd-0800200c9a66">
      <gml:identifier codeSpace="urn:uuid:">7abf6b40-b72e-11e2-rjtd-08002
      <gml:name>TOKYO SOURCE CENTER</gml:name>
      <saf:type>MWO</saf:type>
      <saf:designator>RJTD</saf:designator>
    </saf:Unit>
  </iwxxm:originatingMeteorologicalWatchOffice>
  <iwxxm:sequenceNumber>2</iwxxm:sequenceNumber>
  <iwxxm:validPeriod>
    <gml:TimePeriod gml:id="tp-20150224T0620Z-20150224T1220Z">
      <gml:beginPosition>2015-02-24T06:20:00Z</gml:beginPosition>
      <gml:endPosition>2015-02-24T12:20:00Z</gml:endPosition>
    </gml:TimePeriod>
  </iwxxm:validPeriod>
  <iwxxm:phenomenon xlink:title="Volcanic Ash" xlink:href="http://codes.w
  <iwxxm:analysis>
    <om:OM_Observation gml:id="va-position-and-motion-RJJJ-20150224T06200
      <om:type xlink:href="http://codes.wmo.int/49-2/observation-type/IWX
      <om:phenomenonTime>
        <gml:TimeInstant gml:id="ti-20150224T062000Z">
          <gml:timePosition>2015-02-24T06:20:00Z</gml:timePosition>
        </gml:TimeInstant>
      </om:phenomenonTime>
      <om:resultTime xlink:href="#ti-20150224T062000Z"/>
      <om:validTime xlink:href="#tp-20150224T0620Z-20150224T1220Z"/>
      <om:procedure>
        <metce:Process gml:id="p-49-2-va-sigmet">
          <gml:description>WMO No. 49 Volume 2 Meteorological Service for
        </metce:Process>
      </om:procedure>
      <om:observedProperty xlink:href="http://codes.wmo.int/49-2/SigWxPhe
      <om:featureOfInterest>
        <sams:SF_SpatialSamplingFeature gml:id="ss-FUKUOKA_FIR">
          <sam:type xlink:href="http://www.opengis.net/def/samplingFeatur
          <sam:sampledFeature>
            <saf:Airspace gml:id="uuid.37a7f1d0-b731-11e2-9e96-rjjj-89476
              <gml:identifier codeSpace="urn:uuid:">37a7f1d0-b731-11e2-9e
              <gml:name>FUKUOKA FLIGHT INFORMATION REGION</gml:name>
```

```
WVID20 WIII 201540
WIIF  SIGMET 05 VALID 201500/202100 WIII-
WIIF JAKARTA FIR VA ERUPTION MT. SINABUNG N0310 E09823
VA CLD OBS AT 1500Z
SFC/FL240 N0335 E09815  N0300 E09800  N0245 E09835 -
N0320 E09850  N0335 E09815 MOV E 15KT
SFC/FL450 N0315 E09830  N0415 E09745  N0435 E09650 -
N0400 E09600  N0300 E09825  N0315 E09830 MOV NW 25 KT
FCST 2100Z VA CLD APRX
SFC/FL240 N0315 E09720  N0240 E09835  N0240 E09930 -
N0335 E09935  N0425 E09755  N0315 E09720
SFC/FL450 N0315 E09830  N0505 E09630  N0410 E09545 -
N0255 E09525  N0300 E09820  N0315 E09830=
```

```
Originator: $ /C=XX/ADMD=ICAO/PRMD=SINGAPORE/O=CAASG/OU1=WSSS/CN=WSSSNEAA
Primary Recipients:
 $ /C=XX/ADMD=ICAO/PRMD=SINGAPORE/O=CAASG/OU1=WSSS/CN=WSSSMHSA/
PRI: GG
FT: 201558

LVID20 WIIF 201540
<?xml version="1.0" encoding="UTF-8"?>
<iwxxm:VolcanicAshSIGMET xmlns:iwxxm="http://icao.int/iwxxm/1.0" xmlns:gm
  <iwxxm:issuingAirTrafficServicesUnit>
    <saf:Unit gml:id="uuid.7abf6b40-b72e-11e2-wiif-0800200c9a66">
      <gml:identifier codeSpace="urn:uuid:">7abf6b40-b72e-11e2-wiif-08002
      <gml:name>JAKARTA</gml:name>
      <saf:type>ATSU</saf:type>
      <saf:designator>WIIF</saf:designator>
    </saf:Unit>
  </iwxxm:issuingAirTrafficServicesUnit>
  <iwxxm:originatingMeteorologicalWatchOffice>
    <saf:Unit gml:id="uuid.7abf6b40-b72e-11e2-wiii-0800200c9a66">
      <gml:identifier codeSpace="urn:uuid:">7abf6b40-b72e-11e2-wiii-08002
      <gml:name>JAKARTA SOEKARNO HATTA</gml:name>
      <saf:designator>WIII</saf:designator>
    </saf:Unit>
  </iwxxm:originatingMeteorologicalWatchOffice>
  <iwxxm:sequenceNumber>5</iwxxm:sequenceNumber>
  <iwxxm:validPeriod>
    <gml:TimePeriod gml:id="tp-20150220T1500Z-20150220T2100Z">
      <gml:beginPosition>2015-02-20T15:00:00Z</gml:beginPosition>
      <gml:endPosition>2015-02-20T21:00:00Z</gml:endPosition>
    </gml:TimePeriod>
  </iwxxm:validPeriod>
  <iwxxm:phenomenon xlink:title="Volcanic Ash" xlink:href="http://codes.w
  <iwxxm:analysis>
    <om:OM_Observation gml:id="va-position-and-motion-WIIF-20150220T15400
      <om:type xlink:href="http://codes.wmo.int/49-2/observation-type/IWX
      <om:phenomenonTime>
        <gml:TimeInstant gml:id="ti-20150220T150000Z">
          <gml:timePosition>2015-02-20T15:00:00Z</gml:timePosition>
        </gml:TimeInstant>
      </om:phenomenonTime>
      <om:resultTime xlink:href="#ti-20150220T150000Z"/>
      <om:validTime xlink:href="#tp-20150220T1500Z-20150220T2100Z"/>
      <om:procedure>
        <metce:Process gml:id="p-49-2-va-sigmet">
          <gml:description>WMO No. 49 Volume 2 Meteorological Service for
        </metce:Process>
      </om:procedure>
      <om:observedProperty xlink:href="http://codes.wmo.int/49-2/SigWxPhe
      <om:featureOfInterest>
        <sams:SF_SpatialSamplingFeature gml:id="ss-JAKARTA_FIR">
          <sam:type xlink:href="http://www.opengis.net/def/samplingFeatur
          <sam:sampledFeature>
            <saf:Airspace gml:id="uuid.37a7f1d0-b731-11e2-9e96-wiif-89476
              <gml:identifier codeSpace="urn:uuid:">37a7f1d0-b731-11e2-9e
              <gml:name>JAKARTA FLIGHT INFORMATION REGION</gml:name>
              <saf:type>FIR</saf:type>
```

2.3 **On-going Activities and Future Plans**

2.3.1 Two activities will be conducted between March and July 2015.

(i) Pre-operational testing on the delivery of XML/GML coded METAR and TAF messages on AMHS with the FAA

Following a discussion on the test plan between Singapore's CAA, Meteorological Service Singapore and the FAA in early February 2015, it was agreed that the test cases would be finalized in early March. The following activities would be conducted:

- Singapore will send the XML coded METAR and TAF using the existing operational communication link to the United Kingdom. This is an intermediate system that provides a routing function to facilitate the exchange of XML coded OPMET messages to FAA Ops.
- The FAA Ops will verify the receipt at their User Agent's (UA's) site and provide comments on the test. Feedback obtained and experienced gathered will be shared at the appropriate ICAO forum.
- Diagram below shows test message exchange between the Singapore AMHS UA and the US-FAA AHMS UA though the UK System

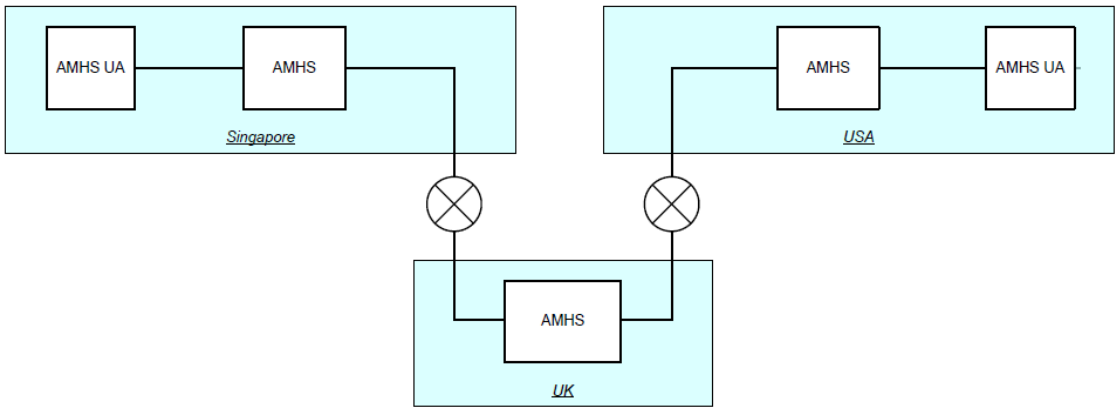


Figure 2: Test Configuration for handling XML messages exchanged

(ii) The completion of encoding TC SIGMET and WS SIGMET in XML/GML compliant format by early July.

3. ACTION BY THE MEETING

3.1 The meeting is invited to note the information provided in the paper.

– – – – – – – – – – – – –