# PRESENTATION TO THE AFI 2021 IWXXM FROM THE BCC ON 25TH AUGUST 2021

The International Civil Aviation Organization (ICAO) has mandated that from November 2020 weather information must be provided in ICAO meteorological information exchange model, IWXXM, as well as in traditional alphanumeric code (TAC) format. In comparison to traditional TAC format text messages, which are human-readable, IWXXM format messages with their XML tag structures are better suited to machine generation and interpretation, allowing a greater degree of automated integration with flight planning and mapping systems. With the increased digitization and automation of controller tools it has become necessary for machine-readable message formats to be created. and processing of all types of weather data such as TAC, IWXXM, binary and graphics products, from multiple sources and make that data available to users in several standard formats. In ICAO these formats are as prescribed in annex 10 vol II.

Amendment 78 ICAO Annex 3 requires that weather information such as aerodrome routine meteorological reports (METAR), aerodrome special meteorological reports (SPECI), terminal aerodrome forecasts (TAF), significant meteorological information (SIGMET), air men's meteorological information (AIRMET), tropical cyclone advisories (TCA), volcanic ash advisories (VAA) and space weather advisory information (SWX) be provided in IWXXM format. The exchange of IWXXM information became a recommendation through Amendment 77 to ICAO Annex 3 from November 2016, with some States exchanging digital products (IWXXM) from early 2017. The exchange of IWXXM became a standard from November 2020, as indicated in Amendment 78 to ICAO Annex 3. The use of OPMET in a TAC format presented an obstacle to the digital use of the data as it often contained typographical errors, is poorly structured and lacks validation. This made the handling of global data difficult to use correctly and expensive to maintain.

## Current Operations and Capabilities

## Current Capabilities

The current capabilities are dedicated to Traditional Alphanumeric Code (TAC) data exchange, via the Aeronautical Fixed Service (AFS), primarily the aeronautical fixed telecommunications network through AFTN and AMHS protocols, SADIS and WIFS. AMHS provides a mechanism for the exchange of IWXXM information as attachments by utilizing the AMHS File Transfer Body Part (FTBP) feature over the AFS.

## Data Producer/Originating Unit

The TAC Data Producer provides TAC data only.

### Data Aggregator

The function of the Data Aggregator is to take individual TAC reports, perform limited data validation and aggregate them into bulletins. Bulletins shall consist of one or more reports of the same type (e.g. METAR or TAF).

### Data Switch

A Data Switch will route the data according to the WMO abbreviated header structure, TTAAiiCCCC, of the bulletin. The bulletin header fulfills the regulations described in WMO doc No 386, Manual on the Global Telecommunication System.

### National OPMET Centre (NOC)

The role of the NOC is to gather and validate all - international required OPMET messages – required Annual Operating Plan AOP and agreed exchanged non-AOP - (refer to the Regional (electronic) Air Navigation Plans for AOP) generated by all originating units within a State, to compile national data into bulletins and to distribute them internationally according to the regional distribution schema.

A NOC should perform the following functions:

• Data Aggregator.

• Data Validator; and

• Data Switch.

### Regional OPMET Centre (ROC)

A ROC is responsible for the collection from NOCs and validation of all required AOP and agreed exchanged non-AOP OPMET data in its area of responsibility (AoR) according to the regional distribution schema.

Each ROC is responsible for the collection of required OPMET data from the other ROCs in the region and the dissemination to the other ROCs of the required data from its AoR.

A ROC should perform the following functions:

• Data Aggregator; and

• Data Switch.

### Interregional OPMET Gateway (IROG)

An IROG is responsible for the collection of all required OPMET data from its interregional area(s) of responsibility (IAoR) and its dissemination to the ROCs in its region. Furthermore, the IROGs are responsible for collection and dissemination of their

region's required AOP and agreed non-AOP exchanged OPMET data to their partner IROGs.

The IROG is responsible for the validation of the bulletins sent to the IROGs of its IAoR and received from their IAoR.

For TAC data exchange, an IROG should perform the following functions:

• Data Aggregator; and

• Data Switch.

### International OPMET Databank

An International OPMET Databank provides the capability for users to interrogate TAC data through the AFTN or AMHS. In some regions the databank is known as a Regional OPMET Databank (RODB).

Operational principles:

#### *OPMET Databank Requests*

- Requests for TAC data can be sent via the AFS using AFTN or AMHS. These requests work as

described in current Regional OPMET Data Bank (RODB) Interface Control Documents (ICD).

- The above example describes the syntax of TAC requests:

▪ "RQM/" is used as the start of the query

▪ only the new T1T2 message types defined by the World Meteorological Organization

(WMO) are allowed

▪ the request is sent to the AFTN address of the International Databank

#### *OPMET Databank Replies*

- Replies to TAC requests are described in the current RODB Interface Control Documents.
- Reply reports of a request will be aggregated into one or more messages, according to the same rules used by the Data Aggregators, e.g. no mixing of message types in one file.
- The RODB Interface Control Documents should specify a set of standardized information & error replies, specifically when the required data are not defined (example: request for a SIGMET with a wrong location indicator)

## Preparations of the HKNA BCC for IWXXM

In the capacity of the BCC operating for 7 corresponding NOC States, Kenya has implemented :

a. The capacities to convert TAC data received from their associated 7 NOC States into IWXXM format.
b. The extended AMHS with FTBP functionality to exchange IWXXM data with their corresponding IROG Pretoria; and
c. The IWXXM operational tests conducted in November 2020 and passed.

## EXPERIENCE IN THE REGION