International Civil Aviation Organization
South American Regional Office
Meeting on GREPECAS MET Programme Projects

(Lima, Peru, from 18 to 22 September 2017)

SAM/MP2-IP/05
08/09/17

Agenda Item 5: Feasibility studies of new MET Projects as a result of the necessary implementations within the framework of Proposal for Amendment 78 to Annex 3 and the conclusions of the work of the MET Panel

Update on ICAO Meteorology Panel Activities

(Presented by United States of America)

SUMMARY

This paper reports on the recent ICAO Meteorology Panel (MET Panel, METP) organizational changes, requirements development process, and activities. Key initiatives for each of the work streams and considerations for member States are included.

1. INTRODUCTION

1.1 This paper reports on the background of the ICAO Meteorology Panel (MET Panel, METP), the requirements development process, and an update on key initiatives.

2. DESIGN AND WORK PARADIGM OF ICAO MET PANEL (METP)

2.1 Composition of METP.

The METP was established by the Air Navigation Commission (ANC) in September 2014. It is composed of 24 voting Members from invited states and international organizations, including 18 States, six international organizations (EuroControl - ECTL, International Air Transport Association - IATA, International Federation of Air Line Pilot's Associations - IFALPA, International Federation of Air Traffic Controllers' Association - IFACTA, Agency for Aerial Navigation Safety in Africa and Madagascar - ASECNA, World Meteorological Organization - WMO), two observers, 65 technical advisors, and an ICAO Secretariat.

2.2 Workflow Structure.

Work is assigned by ANC in the form of Job Cards. The METP is organized around the grouping of Job Cards. There are currently five Working Groups (WGs), each headed by a Rapporteur. Subordinate Work Streams are each headed by a Coordinator.

The primary deliverables for each Job Card include draft Standards and Recommended Practices (SARPs) and any additional necessary documentation including concept of operations documents, roadmaps, functional and performance requirements, and service provider selection criteria (in the case of entirely new meteorological services). Each effort is expected to culminate in formal amendments of ICAO Annex 3. Amendment 78 becomes effective in November 2018 with Amendment

79 in November 2020. In addition, the ANC has directed that any new amendments to the SARPs broadly consider System Wide Information Management system (SWIM) integration.

The five WGs are: MET Requirements and Integration (WG-MRI), MET Information and Service Development (WG-MISD), MET Information Exchange (WG-MIE), MET Operations Group (WG-MOG), and MET Cost Recovery Guidance and Governance (WG-MCR).

Within MISD, there are currently five primary Work Streams:

a) Release of Radioactive Material (RRM): Develops provisions for information on the release of radioactive material into the atmosphere.
b) Regional Hazardous Warning Advisory System (RHWAC): Develops provisions to support the implementation of a phenomenon-based, regional advisory system for select en route hazardous meteorological conditions considering the long-standing requirements for States where notable SIGMET-related deficiencies persist.
c) Space Weather: Develops provisions for information on space weather to international air navigation.
d) Volcanic Ash: Develops requirements for the International Airways Volcano Watch, consistent with the Global Air Navigation Plan (Doc 9750).
e) World Area Forecast System: Develops requirements for the World Area Forecast System (WAFS), consistent with the Global Air Navigation Plan (Doc 9750).

The MRI Working Group requires support capabilities identified in the Global Air Navigation Plan (GANP) and Aviation System Block Upgrades (ASBUs) with an emphasis on Trajectory-Based Operations (TBO).

The MIE Working Group is establishing policy and requirements for the exchange of meteorological information in Extensible Markup Language (XML)-Geography Markup Language (GML) format (IWXXM) and is also developing a meteorological plan for implementation of the System Wide Information Management system (SWIM).

2.3 **METP Requirements Development Process.**

The METP now follows a systems engineering-based approach, which involves the following steps:

a) Concept of Operations (ConOps): Completion of a user needs analysis, an assessment of current capability, shortfall analysis, and concept definition;
b) Establishment of preliminary performance requirements and then an Alternatives Analysis;
c) Requirements validation (including possible demonstration)
d) Service Provision Documentation: includes developing the final performance requirements, SARP development (Annex 3), a Service Description, and ICAO Procedures for Air Navigation Services (PANS)/manual development (for application and use of Annex 3 SARPs for MET information).

3. CURRENT METP EFFORTS

3.1 IWXXM.

The ICAO METP has been very active in Extensible Markup Language (XML) development. The ICAO Meteorological Information Exchange Model (IWXXM) Version 2.0 was implemented in August 2016. Under Annex 3, IWXXM is currently a "recommended" format, but will become "mandatory" in 2020. The Traditional Alphanumeric Code (TAC) is now frozen, unless specific safety issues needed to be addressed.

METP, with primary support from WMO, will mature the code and extensions standards to support state/regional added value information. This also entails active coordination with the ICAO Information Management Panel (IMP) and alignment with the Aeronautical Information Exchange Model (AIXM), Flight Information Exchange Model (FIXM), and global SWIM concepts.

It is likely that both TAC and IWXXM formats will be used extensively for the next five to 10 years.

3.2 RRM Work Stream.

This Work Stream is focused on the provision for SIGMET and AIRMET information, including the utility of cylindrical SIGMETs. When detailed radioactive release information is not available, a cylindrical SIGMET is issued, with a radius up to 30km (from the surface to upper limit of flight). This is based on the International Atomic Energy Agency (IAEA) recommendation for surface contamination. A guidance document is slated for development by 2018.

3.3 Space Weather.

The METP has agreed to focus on the impacts of space weather events on High Frequency (HF) communications, satellite navigation, communication and surveillance, and radiation exposure. Space weather warnings will follow a format similar to advisory messages issued for volcanic ash clouds and tropical cyclones and will convey the following informational elements: type of space weather impact, expected onset/duration of event, a description of the spatial extension affected for the next 24 hours, and a general description of the severity of space weather activity in moderate or severe terminology.

A Space Weather Manual is currently being developed to provide guidance material. In addition, the METP is focused on the criteria and associated capabilities to identify the optimum number of space weather centres through the ICAO designation process based on the audits and site visits of each candidate space weather center by the WMO. The ICAO Council will formally designate the provider States after the METP and ANC make recommendations based on technical merit.

3.4 Regional Hazardous Weather Centers.

The RHWAC Work Stream is focused on two distinct issues that need to be addressed separately and heavily involve user input/feedback:

a) SIGMET provision in deficient areas (includes guidance for bi-lateral or regional provision for deficient areas and possible establishment of Centers to cover deficient areas or the development of Centers for global SIGMET provision);

b) Phenomena-based global hazard information: to address increasing need for consistent weather information that is seamless across FIR boundaries.

3.5 **Meteorological Requirements Integration.**

MRI is focused on the provision and utility of meteorological information for future operational capabilities. Meteorological information and its role in supporting trajectory-based operations (TBO) is a primary driver. The METP is seeking to know what specific information is needed (other than giving better forecasts). MRI is closely following the METP requirements development process and is also utilizing existing guidance and documentation such as the ICAO Global Air Navigation Plan (GANP).

4. ACTION BY THE MEETING

The meeting is invited to:

a) note the information contained in this paper; and

b) contact Michael.Bettwy@faa.gov with questions.

- END -