



*International Civil Aviation Organization*

**EIGHTEENTH MEETING OF THE METEOROLOGY  
SUB-GROUP (MET SG/18) OF APANPIRG**

ICAO Regional Sub-Office, Beijing, China  
18 – 21 August 2014

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**Agenda Item 3: Review outcomes from ICAO global groups**

**REVIEW OUTCOMES OF THE ICAO METEOROLOGY DIVISIONAL MEETING 2014**

(Presented by the Secretariat)

**SUMMARY**

This paper presents a summary of outcomes from the Meteorology Divisional Meeting held in Montréal between 7 and 18 July 2014.

**1. Introduction**

1.1 The ICAO Meteorology (MET) Divisional Meeting was held in Montréal, between 7 and 18 July 2014 (MET/14), in part conjointly with the Fifteenth Session of the World Meteorological Organization (WMO) Commission for Aeronautical Meteorology (CAeM-XV). The participation of Member States of both organizations, as well as invited international organizations, provided the international civil aviation community the opportunity to address, as a whole, issues vital to the current and future provision of aeronautical meteorological services.

1.2 All available documentation pertaining to MET/14 is on the following website: <http://www.icao.int/Meetings/METDIV14/Pages/default.aspx>.

**2. Discussion**

2.1 The nature and timing of the MET/14 and CAeM-XV events were as follows: WMO Technical Conference, 7 and 8 July 2014; conjoint ICAO/WMO meeting, 9, 10, 11 and 14 July 2014; WMO CAeM-XV, 15 and 16 July 2014; and conjoint ICAO/WMO meeting, 17 and 18 July 2014.

2.2 The meeting is reminded that ICAO meteorology divisional meetings are held once every eight or twelve years to coincide with the cycle of WMO CAeM Sessions. They necessarily serve as an integral part of the working arrangements between ICAO and WMO where recommendations concerning technical material related to the worldwide application of meteorology to international air navigation are prepared normally by simultaneous meetings of the appropriate technical bodies of the respective organizations (*Working Arrangements between the International Civil Aviation Organization and the World Meteorological Organization* (Doc 7475) and WMO Publication No. 60 Chapter 11.3 refer).

2.3 With reference to the MET/14 discussions, agenda item 1 principally addressed the Global Air Navigation Plan (GANP) and MET-related Aviation System Block Upgrades, or ASBUs; agenda item 2 principally addressed the enhancement of existing MET services and the emerging capabilities to fulfil the needs of the future global air traffic management (ATM) system in line with the GANP/ASBUs; agenda item 3 principally addressed the integration of MET into the future system-wide information management (SWIM) environment; agenda item 4 principally addressed institutional issues, including cost recovery, governance, oversight, personnel competence, and regionalized service provision; and agenda item 5 principally addressed standards and recommended practices, or SARPs, including draft Amendment 77 to Annex 3 to the Convention on International Civil Aviation and a proposed first edition of *Procedures for Air Navigation Services — Meteorology* (PANS-MET).

2.4 Outcomes from MET/14 included the development of 29 recommendations setting forth global objectives and implementation timelines, and directing the course of work for enhancing the provision of meteorological service to international air navigation for the next decade or more. A report on the discussions, including details of the recommendations from MET/14 is available on the website listed at 1.2, above. An executive summary of MET/14 is provided in **the Attachment** to this paper.

2.5 It is envisaged that, in late 2014, the Air Navigation Commission (ANC) will review the recommendations of MET/14 during its 197<sup>th</sup> Session, with the Council likewise taking action, as necessary, during its 203<sup>rd</sup> Session

### **3. Action by the Meeting**

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

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**Meteorology (MET) Divisional Meeting  
(2014)**

(7 to 18 July 2014, Montréal, Canada)

**EXECUTIVE SUMMARY**

**1. INTRODUCTION**

1.1 The Meteorology (MET) Divisional Meeting of 2014 (MET/14), conjoint with the 15th Session of the World Meteorological Organization (WMO) Commission for Aeronautical Meteorology (CAeM) was held at the Headquarters of the International Civil Aviation Organization (ICAO) in Montreal, 7 to 18 July 2014. The meeting was attended by 308 participants from 95 States and 7 international organizations (the Agency for Air Navigation Safety in Africa and Madagascar (ASECNA) the Civil Air Navigation Services Organisation (CANSO) the European Union (EU), the European Organisation for the Safety of Air Navigation (EUROCONTROL), the International Air Transport Association (IATA), the International Federation of Air Line Pilots' Associations (IFALPA), and the WMO).

1.2 The Secretary of the meeting was Mr. G. Brock, Chief, Meteorology Section, ICAO assisted by Mr. D. Ivanov, Chief, Aeronautical Meteorology Division, WMO. Mr. Brock and Mr. Ivanov were assisted by Mr. R. Romero, Mr. N. Halsey, Mr. G. Vega, Mr. A. B. Okossi, Mr. V. Ahago, Mr. P. Dunda and Mr. J. Armoa as agenda item Secretaries. Other officers of the ICAO Secretariat provided advice to the meeting, as required.

1.3 The following officers were elected at the first Plenary meeting to serve both the Plenary and the MET Committee:

Chairman: Mr. P. Lechner (New Zealand)

First Vice-Chairman: Mr. W. Maynard (Canada)

Second Vice-Chairman: Mr. D. Egere (Nigeria)

**2. SUPPORTING THE “ONE SKY” CONCEPT THROUGH THE ENHANCEMENT OF METEOROLOGICAL SERVICE FOR INTERNATIONAL AIR NAVIGATION**

2.1 The meeting was apprised of a new (fourth) edition of ICAO's Global Air Navigation Plan (GANP) (Doc 9750) together with a companion new edition of the ICAO's Global Aviation Safety Plan (GASP) (Doc 10004), which had been approved by the ICAO Council and endorsed by the 38th Session of the ICAO Assembly in 2013. To meet the global need for airspace interoperability while maintaining its focus on safety, the meeting noted that, under the concept of “One Sky” for international air navigation, the Organization had initiated an aviation system block upgrade (ASBU) methodology as part of the GANP in order to develop a set of air traffic management (ATM) solutions or upgrades, take advantage of existing equipage, establish a transition plan, and enable global interoperability.

2.2 To ensure that the MET-specific ASBU modules were understood in the context of their relationships and interdependencies with the other modules and including those related to system wide information management (SWIM), the meeting recommended to update the GANP and ASBU methodology to reflect such interdependencies as well as including a B2-AMET module in the Block 2 timeframe covering the period 2023-2028 which had not been explicitly developed previously. (Recommendations 1/1 and 1/2).

2.3 The meeting requested ICAO to ensure that the evolution of aeronautical meteorological service provisions was in the spirit of Resolution A38-11 of the 38th Session of the ICAO Assembly and consistent with the rolling fifteen-year strategy contained in the GANP (Recommendation 1/3).

### **3. IMPROVING THE SAFETY AND EFFICIENCY OF INTERNATIONAL AIR NAVIGATION THROUGH ENHANCED METEOROLOGICAL SERVICE PROVISION**

3.1 To support the ASBU methodology contained in the GANP the meeting agreed to develop the world area forecast system (WAFS) during the 2013 to 2028 timeframe focussed around a set of principles including the implementation of improved turbulence and icing algorithms and other forecast improvements, the use of forecast ensembles and the integration of WAFS information into the SWIM environment (Recommendations 2/1, 2/5 and 2/13 refer).

3.2 To ensure that the operation of the aeronautical fixed service (AFS) satellite distribution system for information relating to air navigation (SADIS), and the Secure SADIS FTP and WAFS Internet File Service (WIFS) Internet-based services, continue to meet user expectations the meeting recommended an appropriate ICAO expert group be tasked to further develop them in a manner consistent with the GANP. In addition, in deciding that SADIS 2G should not be extended beyond 2019, the meeting recommended that an appropriate expert group should undertake formal testing of the exchange of global OPMET information and WAFS forecasts on the ATS message handling system (AMHS) (Recommendations 2/2 and 2/3).

3.3 With regard to international airways volcano watch (IAVW), the meeting agreed that it was vital that the IAVW continue to evolve in line with the GANP. Therefore the meeting recommended that an appropriate ICAO expert group be tasked, in close coordination with WMO, to further develop the requirements for the IAVW consistent with the GANP including its integration into the future SWIM environment (Recommendation 2/6).

3.4 With regard to the development of initial provisions to meet the requirements for information concerning space weather, involving the establishment of space weather centres the meeting agreed not to include them in the draft Amendment 77 to Annex 3 in view of a lack of maturity but agreed that ICAO should work towards enabling space weather services for aviation by developing Annex 3 provisions for inclusion in 2018 (Recommendation 2/7).

3.5 With regard to the dissemination of information on the release of radioactive material into the atmosphere, the meeting recommended that an appropriate ICAO expert group, in close coordination with WMO, should be tasked to further develop provisions consistent with the evolving GANP (Recommendation 2/8).

3.6 The meeting supported, in principle, the evolution of the existing WAFS and IAVW, and the further development of provisions for space weather information, release of radioactive material and toxic chemicals and other hazardous meteorological phenomena. However, the meeting agreed that it was imperative that the future management and governance of the aeronautical meteorology system serving international air navigation be assessed in relation to the overall migration to the use of digital information. (Recommendation 2/4 refers).

3.7 In view of long-standing SIGMET implementation deficiencies in some States, the meeting agreed that there was an urgent need for the establishment of regional hazardous weather advisory centres (RHWACs) to assist meteorological watch offices (MWOs) with the provision of SIGMET information for select hazardous meteorological conditions that included, as a minimum, thunderstorms, icing, turbulence and mountain waves, but which excluded volcanic ash and tropical cyclones. Therefore the meeting recommended that a regional hazardous weather advisory framework should be implemented expeditiously and requested that an appropriate ICAO expert group, in close

coordination with WMO, be tasked to develop a regional advisory system for select en-route hazardous meteorological conditions especially in those States where notable SIGMET-related deficiencies persist (Recommendation 2/9).

3.8 The meeting recommended that ICAO, in close coordination with WMO, should be tasked to include meteorological service for the terminal area and other relevant operational requirements in Block 1 and subsequent blocks of the ASBU methodology to highlight potential related impacts on air traffic flow in consideration of air traffic control and ATM (Recommendation 2/10).

3.9 To support the implementation by 2028 of module B3-AMET of the aviation system block upgrades (ASBU) methodology the meeting recommended that an appropriate ICAO expert group be tasked, in close coordination with WMO, to undertake advanced planning, in the 2015 to 2020 timeframe, of the technological requirements and aeronautical meteorological service capabilities needed (Recommendation 2/11).

3.10 To support transition to a more collaborative operating environment and increased automation, the meeting recommended the development of provisions for aeronautical meteorological information services in the context of CDM and common situational awareness (Recommendation 2/13). Additionally, the meeting recommended that ICAO and WMO should ensure that human factors considerations remain integral to aeronautical meteorological service provision during the transition. (Recommendation 2/14).

#### **4. INTEGRATING METEOROLOGICAL INFORMATION EXCHANGE DEVELOPMENTS INTO THE FUTURE SYSTEM WIDE INFORMATION MANAGEMENT ENVIRONMENT**

4.1 To support trajectory based observations (TBO), the meeting recommended that an appropriate ICAO expert group (or groups), in close coordination with WMO finalize a draft concept of operations and roadmap concerning aeronautical meteorological information integration for TBO and establish further ATM requirements and aeronautical meteorological service capabilities (Recommendation 3/1).

4.2 To support the integration of meteorological information into a future SWIM environment, to allow the ATM system to develop along with the expectations of the GANP, the meeting recommended that ICAO, through an appropriate expert group and in close coordination with WMO, develop provisions to enable the inclusion of aeronautical meteorological information in the future SWIM environment consistent with the GANP based on given milestones and guided by an appropriate roadmap. (Recommendation 3/2).

4.3 To ensure that the meteorology-related developments within the SWIM environment are fully aligned with the mandates of both ICAO and WMO, the meeting recommended ICAO, through an appropriate expert group and in close coordination with WMO, to include consideration of a number of issues including the identification and recognition of approved data sources, cost recovery and the scalability of data requirements (Recommendation 3/3).

#### **5. INSTITUTIONAL ISSUES**

5.1 The meeting recommended that ICAO and WMO undertake a thorough review of the Working Arrangements between ICAO and WMO (Working Arrangements between the International Civil Aviation Organization and the World Meteorological Organization (Doc 7475)) in order to ensure that they appropriately reflect the respective mandates, governance structures and modes of operation of the two organizations (Recommendation 4/1).

5.2 In order to clarify the use of the terms “Contracting State” and “Meteorological Authority” in certain provisions of Annex 3/Technical Regulations [C.3.1] and in related guidance material, the

meeting recommended ICAO, in coordination with WMO, to further clarify the notion of meteorological authority, through appropriate amendments to ICAO provisions and supporting guidance material (Recommendation 4/2).

5.3 With regard to the oversight of aeronautical meteorological service provision, the meeting recommended ICAO to urge States to ensure that the personnel performing safety oversight functions of the aeronautical meteorological service are adequately qualified and competent, thus meeting the requirements of Annex 19, and to develop appropriate guidance material to assist States (Recommendation 4/3).

5.4 To strengthen guidance on national cost recovery, particularly in those States with complex airspace arrangements, the meeting recommended that ICAO and WMO undertake a review and, as necessary, update of guidance/guidelines on the recovery of costs of aeronautical meteorological service provision (Recommendation 4/4).

5.5 To ensure that the competency and underpinning training of the aeronautical meteorological personnel is sufficient to adapt to new working practices, the meeting tasked WMO, in coordination with ICAO, to undertake steps through the implementation of a competency framework based on quality management system principles and supported by relevant training material. (Recommendation 4/5).

5.6 To mitigate the risk of critical misunderstandings caused by language problems that may, have flight safety implications downstream, the meeting recommended that ICAO, in close coordination with WMO, consider the development of provisions concerning the required level of English language proficiency of aeronautical meteorological personnel (Recommendation 4/6).

5.7 Taking into account existing ICAO provisions and WMO Resolution 40, and appreciating that the cost for the provision of aeronautical meteorological service was entirely recoverable from aviation, the meeting recommended that ICAO and WMO remind States/Members of their obligations in respect of the provision and use of aeronautical meteorological information for aeronautical purposes only (Recommendation 4/7).

## **6. STANDARDS, RECOMMENDED PRACTICES AND PROCEDURES**

6.1 Taking into account the discussions under Agenda Items 1 to 5 the meeting formulated a draft Amendment 77 to Annex 3/Technical Regulations [C.3.1] and consequential amendments to Annex 11, PANS-ABC and PANS-ATM (Recommendation 5/1).

6.2 Noting the need for the clear distinction between functional and performance requirements and the elaboration of those requirements through technical specifications the meeting recommended that ICAO, in coordination with WMO, undertake a restructuring of Annex 3/ Technical Regulations [C3.1] and the development of a Procedures for Air Navigation Services — Meteorology (PANS-MET, Doc xxxx). This restructure would be done as part of Amendment 78 to Annex 3 (Recommendation 5/2)

## **7. NEXT STEPS**

7.1 In late 2014, the Air Navigation Commission (ANC) will review the recommendations of the meeting during its 197th Session, with the Council likewise taking action, as necessary, during its 203rd Session.

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