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Meteorology (MET) Divisional Meeting
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Commission for Aeronautical Meteorology
Fifteenth Session

Montréal, 7 to 18 July 2014

REPORT ON AGENDA ITEM 4

*(All Agenda Items considered conjointly with the
Fifteenth Session of the Commission for Aeronautical Meteorology
of the World Meteorological Organization)*

This report will be subject to review by the Air Navigation Commission and the Council of ICAO, and the Executive Council of WMO. The decisions of these bodies on the recommendations of the Meeting will be set forth in a Supplement to the Report of the Meeting, which will be issued in due course.

Agenda Item 4: Institutional issues

4.1: Review of the working arrangements between ICAO and WMO (Doc 7475)

4.1.1 The meeting recalled that the *Working Arrangements between the International Civil Aviation Organization and the World Meteorological Organization* (ICAO Doc 7475/WMO Publication No. 60, Chapter II.3), hereunder referred to as the “Working Arrangements”, provided the necessary foundation upon which respective spheres of activity of the two organization in the field of aeronautical meteorology were delineated and the mechanism for collaboration was defined. In particular, it served as a fundamental framework for the collaboration and partnership between ICAO and WMO in aeronautical meteorological matters, identifying and validating both the aeronautical requirements for meteorological service and the capability specifications to fulfil the requirements.

4.1.2 Over the past several decades there had been an appreciable acceleration in scientific and technological advances that could have not been foreseen in the 1950s and 1960s when the Working Arrangements were instituted and last updated. As a consequence, the meeting agreed that there was a need for a thorough review of the Working Arrangements in order to ensure that they appropriately reflect the respective mandates, governance structures and modes of operation of the two organizations. This review would be expected to include consideration of the data management policies of both organizations which would be of paramount importance in the future system-wide information management environment.

4.1.3 The meeting considered a proposal to establish an “inter-agency” group to manage the future Working Arrangements, whereby the work of the respective expert groups would be coordinated on a formal basis. However, the meeting agreed that given the commitment to review the Working Arrangements, which concerned the responsibilities of the corresponding Secretariats, it would not be feasible to operate under the supervision of such an inter-agency group. Furthermore, it was noted that it would be difficult to establish the authority under which such a group would operate and to whom it would be accountable. In this regard, the relationship and involvement of the Air Navigation Commission (ANC) in the ICAO framework, as the body responsible for the supervision of the States voluntary work force was highlighted. The meeting agreed that while strategic coordination was important this did not justify the establishment of a new group at a level similar to the ANC, or indeed the WMO Commission for Aeronautical Meteorology.

4.1.4 The meeting indicated that both ICAO and WMO should ensure that appropriate resources be allocated to undertake the work associated with the review of the Working Arrangements and related activities.

4.1.5 Noting ongoing work to update the ICAO standardization policies and arrangements between ICAO and other international standards-making bodies, the meeting agreed that it would be useful to consider the outcome of that work when reviewing the Working Arrangements. The meeting recognized the importance of the participation of all the stakeholders in this process but expressed concerns in giving a third party such a role in a bilateral agreement. Therefore, the meeting proposed that the review of the Working Arrangements should in principle be carried out by the Secretariats of the two organizations who could seek assistance, as necessary. In view of the foregoing the meeting formulated the following recommendation accordingly:

Recommendation 4/1 — Review of the working arrangements between ICAO and WMO

That ICAO and WMO:

- a) undertake a review to be completed not later than November 2016 of the *Working Arrangements between the International Civil Aviation Organization and the World Meteorological Organization* (ICAO Doc 7475/WMO-No. 60, Chapter II.3) to ensure that the respective roles and responsibilities as well as the commitments of both organizations are appropriately aligned with the mandates of both organizations taking into consideration evolving technological capabilities and aeronautical requirements; and
- b) upon completion of a) and as necessary, develop a proposed amendment to Doc 7475/WMO-No. 60, Chapter II.3 for the consideration and approval of the ICAO and WMO governing bodies.

Note.— As a minimum, the review is to address the means of establishing aeronautical requirements for meteorological service for international air navigation and the technical methods and practices and governance structures recommended for use in providing the required service. This review should also ensure that there is no duplication of effort or documentation between the two organizations.

Agenda Item 4: Institutional issues
4.2: Other institutional issues

Designated meteorological authority

4.2.1 The meeting was aware that ICAO Annex 3 — *Meteorological Service for International Air Navigation*/WMO Technical Regulations [C.3.1], Chapter 2, 2.1.4 required States/Members to designate a meteorological authority to provide meteorological service for international air navigation or to arrange for the provision on its behalf. In this regard, while the operational responsibility for aeronautical meteorological service resided with the designated meteorological authority, the ultimate responsibility for fulfilling the ICAO requirements in respect of the Convention on International Civil Aviation (Doc 7300) resided with the State.

4.2.2 In this regard, the meeting took note of the practice of some States/Members to delegate the provision of meteorological service for international air navigation to a commercial entity. The meeting noted that such delegation, whilst fully in line with Annex 3/Technical Regulations [C.3.1], did not relieve the designated meteorological authority of the responsibility for safety oversight of the meteorological service provision through the maintenance of and adherence to performance standards, including quality assurance and quality control, and that the State/Member continues to bear the full responsibility for the meteorological service provided to international air navigation by that State/Member.

4.2.3 To this end the meeting noted that some confusion remained regarding 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. It was agreed, therefore, that a review should be undertaken to provide clarification where possible in this regard. This review was not to change the intent of such provisions, particularly regarding the definition of the meteorological authority or the prerogative of the State to designate the meteorological authority. The meeting formulated the following recommendation accordingly:

Recommendation 4/2 — Definition of meteorological authority

That ICAO, in coordination with WMO, further clarify the notion of meteorological authority, through appropriate amendments to ICAO provisions and supporting guidance material.

Oversight of aeronautical meteorological service provision

4.2.4 The meeting was aware that as part of the Universal Safety Oversight Audit Programme (USOAP) Continuous Monitoring Approach (CMA), ICAO conducted mandatory audits of all States with a view to improving global aviation safety through the correction of deficiencies identified by the audits. Moreover, the new Annex 19 — *Safety Management*, applicable since 14 November 2013, required States to establish and implement a safety oversight system. The meeting was apprised that Annex 19 recommends that the State should use a methodology to determine its staffing requirements for personnel performing safety oversight functions, taking into account the size and complexity of the aviation activities in that State. Furthermore, Annex 19 requires each State to establish minimum qualification requirements for the technical personnel performing safety oversight functions and provide for appropriate initial and recurrent training to maintain and enhance their competence at the desired level.

4.2.5 In an Annex 3 context, the meeting noted that while the provisions extensively refer to the responsibilities of the State-designated meteorological authority, the provisions do not extend to describing the responsibilities of a meteorological inspectorate, where meteorological inspectors could be a subset of the personnel performing safety oversight functions.

4.2.6 In view of the foregoing, the meeting agreed that there was a need for a State to ensure that the personnel performing safety oversight functions of the aeronautical meteorological service were adequately qualified as required by Annex 19 — *Safety Management*. The meeting formulated the following recommendation accordingly:

Recommendation 4/3 — Oversight of aeronautical meteorological service provision

That ICAO:

- a) urge States to ensure that the personnel performing safety oversight functions of the aeronautical meteorological service are adequately qualified and competent meeting the requirements of Annex 19 — *Safety Management*; and
- b) develop appropriate guidance material to assist States in establishing oversight of aeronautical meteorological service provision.

Multi-regional, regional and sub-regional provision of service and associated cost recovery

4.2.7 The meeting was aware that in accordance with Article 15 to the Convention on International Civil Aviation (Doc 7300), States/Members were entitled to recover from international civil aviation the costs for providing the required meteorological service for international air navigation. The meeting noted that the legal basis for cost recovery provided by Article 15 was elaborated upon in ICAO's *Policies on Charges for Airports and Air Navigation Services* (Doc 9082), and that, in addition, ICAO's *Manual on Air Navigation Service Economics* (Doc 9161) provided internationally-agreed guidelines, developed by the Air Navigation Services Economics Panel (ANSEP), for the practical application of the recovery of costs for aeronautical meteorological service provision. The meeting noted that WMO had a related publication titled the *Guide on Aeronautical Meteorological Service Cost Recovery — Principles and Guidance* (WMO Publication No. 904).

4.2.8 The meeting noted that the existing ICAO and WMO guidance/guidelines predominantly concentrated on the provision and cost recovery of aeronautical meteorological service, including the provision of meteorological data, on an individual State/national level. The meeting appreciated that a cost recovery mechanism may be warranted for the case of States wishing to entrust service provision to a commonly operated entity under sub-regional, regional or multi-regional agreement. The meeting noted the need to consider strengthening guidance on national cost recovery, particularly in those States with complex airspace arrangements. The meeting formulated the following recommendation accordingly:

Recommendation 4/4 — Guidance/guidelines on the recovery of costs of aeronautical meteorological service provision

That ICAO and WMO undertake a review and, as necessary, update of the ICAO *Manual on Air Navigation Service Economics* (Doc 9161) and WMO *Guide on Aeronautical Meteorological Service Cost Recovery* (WMO Publication No. 904) so as to ensure that they appropriately reflect agreed and equitable cost recovery practices in those instances where aeronautical meteorological service provision is fulfilled on a multi-regional, regional or sub-regional (multi-State) basis.

Quality management

4.2.9 The meeting recalled that Amendment 72 to Annex 3/Technical Regulations [C.3.1], applicable on 1 November 2001, introduced provisions concerning the quality management of meteorological service provided to users, including quality assurance and quality control aspects. The meeting further recalled that as part of Amendment 75, applicable on 15 November 2012, the requirement that the State establish and implement a properly organized quality system comprising procedures, processes and resources had been upgraded from a Recommended Practice to a Standard.

4.2.10 The meeting was pleased to note that since the Meteorology Divisional Meeting in 2002, both ICAO and WMO had undertaken concerted and often joint efforts to provide technical assistance to States/Members with respect to the implementation of a quality management system for aeronautical meteorological services. Such efforts had included the development of guidance material (notably the Manual on the Quality Management System for the provision of Meteorological Service for International Air Navigation (ICAO Doc 9873, WMO Publication No. 1001) and amendments thereto), the conducting of regional seminars and workshops, and the conducting of technical assistance missions to individual States. These efforts had been complemented by many State/Member collaborative initiatives, such as bilateral/twinning assistance between those States/Members that had already fully implemented a quality management system and those States/Members yet to fully implement. It was noted by the meeting that there would be a need to re-examine the existing ICAO and WMO guidance material on quality management in due course owing to the pending publication of the next version of the ISO 9001 Standard which was expected during 2015.

Aeronautical meteorological personnel competency

4.2.11 The meeting was aware that Annex 3/Technical Regulations [C.3.1] requires States/Members to ensure that the designated meteorological authority complies with the requirements of the WMO in respect of the qualifications and training of meteorological personnel providing service for international air navigation. Moreover, the requirements concerning the qualifications and training of meteorological personnel in aeronautical meteorology were given in WMO Publication No. 49, *Technical Regulations*, Volume I — *General Meteorological Standards and Recommended Practices*. The meeting was apprised that on 1 December 2013 WMO had introduced competency Standards with respect to aeronautical meteorological observers and aeronautical meteorological forecasters and that on 1 December 2016 WMO would further require that aeronautical meteorological forecasters successfully complete those elements of the Basic Instruction Package – Meteorology (BIP-M) necessary to support the competency requirements for their assigned area and airspace of responsibility. Commensurate with these new and upcoming competency Standards, the meeting noted that WMO had undertaken a revision

to its technical regulations, such that top-level Standards were contained in WMO-No. 49 and supplementary guidance material was available on a WMO CAeM training website¹.

4.2.12 The meeting acknowledged that the realization of the “One Sky” concept for international air navigation (discussed under Agenda Item 4) would inevitably result in changes to the way in which aeronautical meteorological information, products and other related services were prepared and provided to users. There would likely be an increased reliance on automated production and delivery processes aligned with advances in technology and a more prominent role to be played by aeronautical meteorological personnel in the collaborative decision-making (CDM) process of aviation stakeholders (providers and users of services), ensuring human-in-the-loop interactions for the foreseeable future. Accordingly, the meeting noted that the specific functions of aeronautical meteorological personnel would likely evolve, and there would be a need to ensure that the competency and underpinning training of the personnel was sufficient to adapt to new working practices. The meeting formulated the following recommendation accordingly:

Recommendation 4/5 — Evolving competency of aeronautical meteorological personnel

That WMO in coordination with ICAO undertake steps to ensure that aeronautical meteorological personnel can, through the implementation of a competency framework based on quality management system principles and supported by relevant training material, adapt to new working practices arising from the realization of the “One Sky” concept for international air navigation.

Note.— Such new working practices may include a transition to automated production and delivery processes aligned with advances in technology (including digital information exchange) and a more prominent role in collaborative decision-making among aviation stakeholders (service providers and users).

English language proficiency

4.2.13 The meeting was aware that Annex 3/Technical Regulations [C.3.1], Chapter 9, requires meteorological information to be supplied to operators and flight crew members for the principle purposes of pre-flight planning and in-flight re-planning. Moreover, briefing and/or consultation is required to be provided, on request, to flight crew members and/or other flight operations personnel. The purpose of such briefings/consultations was to ensure that the recipients were supplied with the latest available information on existing and expected meteorological conditions along the route to be flown, at the aerodrome of intended landing, alternate aerodromes and other aerodromes as relevant. Furthermore, coordination activities were required between aeronautical meteorological personnel across national borders for example, between neighbouring meteorological watch offices, volcanic ash and tropical cyclone advisory centres and world area forecast centres,

4.2.14 The meeting was also aware that Annex 3/Technical Regulations [C.3.1] does not establish requirements with respect to the language to be used by, or the language proficiency of aeronautical meteorological personnel where such coordination is involved.

¹ <http://www.caem.wmo.int/moodle/> (under ‘Regulatory and reference material’, log-in as a ‘guest’).

4.2.15 The meeting noted that Annex 1 — *Personnel Licensing* makes clear that the requirement for training and qualifications for all aeronautical meteorological personnel is the responsibility of WMO (Chapter 4, 4.8 refers), and that this is in keeping with Annex 3 provisions (Chapter 2, 2.1.5) as well as the Working Arrangements. However, the meeting noted that while WMO has responsibility for the training of personnel on the fields of meteorology, hydrology and climatology, such a mandate for training in basic educational subjects such as languages does not fall within the scope of WMO responsibilities, since such educational requirements are the responsibility of secondary and tertiary education systems of States/Members. The meeting was apprised that top-level competency requirements of aeronautical meteorological forecasters included the need for such personnel to be able to “communicate effectively” with users in their area of responsibility. For personnel providing the required oral briefing to flight crew members and coordination between meteorological offices in different States, it was considered that knowledge of English would be essential so as to mitigate the risk of critical misunderstandings caused by language problems that may, downstream, have flight safety implications.

4.2.16 Taking into account the language proficiency requirements/ratings that exist for those personnel engaged in radiotelephony communications in Annex 1, the existing competency requirements established by WMO for aeronautical meteorological personnel (WMO No 49, Vol. 1, Part 2), and appreciating that as collaborative decision making (CDM) among aviation stakeholders plays a more prominent role in how air navigation service providers (including MET) and users interact, the meeting agreed that there was a need to consider the development of provisions concerning English language proficiency for those aeronautical meteorological personnel providing briefings and/or consultations to flight crew members as well as coordination between meteorological offices in different States. The meeting also noted that since this would involve a relatively small number of personnel and that in many States face-to-face briefing would tend to be replaced by more automated methods any requirements for language proficiency should be at the discretion of the State concerned. The meeting formulated the following recommendation accordingly:

Recommendation 4/6 — English language proficiency of aeronautical meteorological personnel

That ICAO, in close coordination with WMO, consider the development of provisions concerning the required level of English language proficiency of aeronautical meteorological personnel to be applied at the discretion of the State.

Note.— The development of such provisions would be intended to mitigate the risk of misunderstandings between the aeronautical meteorological service provider and the user that may impact the level of weather-related situational awareness and flight safety, as well as promote inter-State coordination, as needed.

The provision and use of aeronautical meteorological information for aeronautical purposes only

4.2.17 The meeting was aware that the ICAO *Manual of Aeronautical Meteorological Practice* (Doc 8896), Appendix 10, provides guidelines for access to aeronautical meteorological information² and

² Aeronautical meteorological information in this context consists of OPMET information (including tropical cyclone advisories, volcanic ash advisories, METAR, SPECI, special air-reports, TAF, GAMET area forecasts, and SIGMET and AIRMET information) and WAFS forecasts.

that, in this regard, the telecommunications facilities to be used for the international exchange of OPMET information should be the ICAO aeronautical fixed service (AFS), in accordance with Annex 3/Technical Regulations [C.3.1] and Parts IV and VI of the ICAO regional air navigation plans. The meeting noted that, through the use of the AFS to exchange OPMET information, States/Members meet their obligation under Article 28 of the *Convention on International Civil Aviation* (Doc 7300) regarding the supply to users of aeronautical meteorological information for the provision of meteorological service for international air navigation. In addition, the recovery of the associated costs by States/Members through charges on international civil aviation should be based on the principles contained in Article 15 of Doc 7300 and *ICAO's Policies on Charges for Airports and Air Navigation Services* (Doc 9082).

4.2.18 The meeting was further aware that the Twelfth World Meteorological Congress (Cg XII) of WMO formulated Resolution 40 — WMO policy and practice for the exchange of meteorological and related data and products including guidelines on relationships in commercial meteorological activities³ and that, in this regard, Annex IV to Resolution 40 makes clear in the context of meteorological and related data and products that “aeronautical information generated specifically to serve the needs of aviation and controlled under the Convention on International Civil Aviation (Chicago, 1944) is not included in the application of the practice”. The meeting affirmed therefore that aeronautical information, of which aeronautical meteorological information prescribed by Annex 3/Technical Regulations [C.3.1] is a component⁴, cannot be considered as basic meteorological data nor used for non-aeronautical purposes.

4.2.19 Taking the referred ICAO provisions and WMO resolution into account, and appreciating that the cost for the provision of aeronautical meteorological service was entirely recoverable from aviation (through air navigation charges), the meeting agreed that there was a need to remind States/Members of their obligations in respect of the provision and use of aeronautical meteorological information. The meeting formulated the following recommendation accordingly:

Recommendation 4/7 — Provision and use of aeronautical meteorological information for aeronautical purposes only

That ICAO and WMO remind States and Members respectively of their obligations in respect of the provision and use of aeronautical meteorological information for aeronautical purposes only.

Note.— Aeronautical meteorological information in this context consists of OPMET information and WAFS forecasts.

— END —

³ http://www.wmo.int/pages/about/Resolution40_en.html

⁴ Excluding air-reports received at world area forecast centres (WAFCS) which shall be further disseminated as basic meteorological data in accordance with Annex 3/Technical Regulations [C.3.1], Appendix 4, 3.2.