AERONAUTICAL METEOROLOGY PROGRAMME

Report to Plenary on item 11.6

REFERENCE:
Cg-XVI/A/WP 11.6

APPENDICES:
A. Draft text for inclusion in the general summary on item 11.6
B. Draft Resolution 11.6/1 (Cg-XVI) – Aeronautical Meteorology Programme

ACTION PROPOSED:
It is recommended that the draft text given in Appendix A be included in the general summary of the work of the session and that the draft resolution in Appendix B be adopted.
11.6  AERONAUTICAL METEOROLOGY PROGRAMME (agenda item 11.6)

11.6.1 Congress was pleased to note the achievements of the Aeronautical Meteorology Programme during the fifteenth financial period. A description of the Aeronautical Meteorology Programme is given in the Annex to this paragraph.

Competency of personnel in aeronautical meteorology

Top level competencies and implementation guidelines

11.6.2 Congress was informed that the WMO Executive Council (EC-LXII, June 2010) had approved the inclusion of Competence Standards for Aviation Meteorological Forecasting and Observing Personnel into WMO Publication No. 49, Technical Regulations, Volume I. The Standards were developed and endorsed by the WMO Commission for Aeronautical Meteorology (CAeM) and respond directly to the requirement listed in ICAO Annex 3, paragraph 2.1.5, which states “Each contracting State shall ensure that the designated meteorological authority complies with the requirements of the World Meteorological Organization in respect of qualifications and training of meteorological personnel providing service for international air navigation”. Congress thus endorsed the relevant text in Resolution 11.6/1 (Cg-XVI), whilst recognizing that national personnel qualification requirements for Aeronautical Meteorological Personnel could be set at a higher level.

11.6.3 Congress strongly supported the introduction of a competency-based system for personnel in aeronautical meteorology, recognizing that such systems are generally used in the entire aviation sector, where all types of personnel are required to be able to demonstrate their ability to meet the competence standards for their activities. Members will be expected to provide evidence of their personnel’s competence as part of their Quality Management System. Congress thus welcomed the successful development and testing of a comprehensive toolkit for competency assessments of personnel, and congratulated the CAeM for the excellent work completed in a very short time.

11.6.4 Regarding the need for meteorological service providers to aviation to fulfill the Competence Standards, which are driven by the associated ICAO requirements for personnel by 1 December 2013. Congress noted that some Members may experience difficulty in meeting this target date. The implementation guidance which takes into account regional and national differences and notes that the technical infrastructure available will allow a degree of flexibility in the way competency can be demonstrated. Congress considers this new approach has been designed to make it easier for Members to meet the Standards and more pragmatic than a purely qualifications-based system and would give confidence to users that the meteorological personnel would have been assessed on the job with documented results.

11.6.5 Congress noted with appreciation the intention of the Secretariat to distribute information concerning the introduction of the new competency-based system for their staff, including “Frequently Asked Questions” (FAQ) and their plans concerning Supplement 1 of WMO publication WMO-No. 258. The FAQ had been prepared following numerous discussions between experts and representatives of Members present at a number of WMO gatherings, and were created to provide as much clarification as possible on questions raised regarding the new system. Congress stressed that the provision of such information is crucial, considering that Members would need to develop and implement the education and training plans and to prove the competencies of aeronautical meteorological personnel in time for the deadlines.
11.6.6 Congress warmly welcomed the initiative of several Members who had made expertise and time available for this important process, and strongly encouraged these and other Members with the required expertise and resources to be available for continued support and advice to Members in the developing world.

**Competency Assessment Toolkit and Application**

11.6.7 Congress welcomed the highly useful toolkit for competency assessments and encouraged Members not only to make best use of this facility, but to exchange experiences and best practices, and requested the Secretary-General to ensure that such best practice examples would be made available via appropriate means to all Members.

11.6.8 Congress further requested the Secretary-General to maintain the implementation guidance for competencies as a living document accessible on the CAeM page of WMO Website (www.caem.wmo.int/moodle) under regular review to reflect evolving technology and user requirements.

**Governance and partnership in aeronautical meteorology**

**Requirements for services provided to international civil air navigation- the link to ICAO**

11.6.9 Congress recalled the working arrangements between WMO and ICAO which recognize the ICAO Council as the decision-making body on the requirement for meteorological services for international civil air navigation. These decisions are prepared by working and study groups reporting to the Air Navigation Commission, and published in the relevant Annexes to the ICAO Convention. Consistent with these arrangements, all meteorological service providers are required to implement a recognized quality management system as a Standard with applicability date of 15 November 2012, and the recommendation is to obtain a certification according to the ISO 9001:2008 Standard for Quality Management Systems (QMS).

11.6.10 Cg-XV had requested the Secretary-General of WMO to carry out a QMS implementation pilot project in at least one developing or least developed country. Congress was pleased to be informed that this Pilot Project with the Tanzania Meteorological Agency (TMA) was successfully concluded with the certification audit passed by TMA on 17 December 2010, having received not only support from consultancy companies but also from the WMO Secretariat.

11.6.11 While Congress congratulated the TMA for their remarkable success, it was equally aware that the amount of support for this project, which has provided invaluable experiences, best practice examples and excellent documentation available on the AEM page of WMO Website, http://www.wmo.int/pages/prog/amp/aemp/index_en.html could not be realistically provided to all, or even a large number of Members in the same way. Therefore Members are strongly encouraged to draw benefit from this pilot project through use of its documentation.

11.6.12 Congress further noted with appreciation the excellent provision of expertise, training and resources by the Secretariat with generous support from some Members to regionally based QMS initiatives. To reinforce these efforts, it strongly requested Members with a well-developed QMS in operation to make expertise and resources available on a “twinning basis” in particular to LDCs, SIDSs and developing countries. In this regard, Congress warmly thanked Australia, Finland, Canada, the Russian Federation, South Africa, Spain and the United States of America, among others, for holding, supporting or resourcing training workshops and necessary follow-up for sub-regions such as Southern and Eastern Africa, the South-Western Pacific, Eastern Europe, Western Asia and the Caribbean. Such arrangements were considered the most realistic approach to a globally successful implementation of QMS by the target date.
11.6.13 On the subject of provision and issuance of SIGMET, Congress noted with appreciation the current pilot project on the provision of SIGMET advisory messages involving three selected Members (China, for Eastern & South-Eastern Asia, France for Western and Central Africa, and South Africa for Southern Africa) with a view to improving the level of compliance with ICAO regulations. These advisories are following the example of the well-established advisories for Tropical Cyclones and Volcanic Ash.

11.6.14 Congress strongly encouraged Members in the regions concerned to make every effort to use this opportunity to demonstrate their ability of providing reliable, accurate and timely warnings of hazardous weather conditions to aviation. Congress reminded Members that the aviation stakeholders, who were asked to pay for meteorological services, expected a high level of compliance and service quality. Failure to provide services to the expected standards by a minority of service providers would endanger the current model of service provision on a national basis, and strengthening regional and sub-regional cooperation was seen as the most realistic approach to ensure an acceptable level of service provision globally.

11.6.15 Congress noted with appreciation the successful creation and activity of the joint WMO-IUGG Volcanic Ash Scientific Advisory Group (VASAG) that had been proposed at the occasion of the 5th International Scientific Workshop on Volcanic Ash held in March 2010 in Santiago de Chile and endorsed by both the president of IUGG and WMO EC-LXII in June 2010. This group assumed a key role in the ICAO International Volcanic Ash Task Force. Congress noted with concern different requirements between European air space, for which quantitative ash predictions have been requested from the relevant Volcanic Ash Advisory Centers (VAAC), whereas in other regions the traditional “Ash/No Ash” advisories are deemed sufficient. Congress thus requested the Secretary-General and the VASAG to work closely with ICAO, national and regional Civil Aviation regulatory bodies as well as the Original Equipment Manufacturers (OEM), with a view to clearly define such levels of ash concentration that: (a) could impact the safety of aviation operations; and (b) influence maintenance and air worthiness consideration of aircraft and engines. Congress strongly encouraged Members to make every effort to support this initiative, in cooperation with national volcanological institutes by creating and coordinating a composite observing system (ground, in-situ and space based), that would allow observations of and quantifying such ash concentrations in near-real time and could be used to calibrate ash dispersion and transport models.

Development of new forecast services including those for Air Traffic Management

11.6.16 The rapid growth in air traffic in the recent past, in spite of the temporary slow-down associated with the economic crisis of 2008/2009, is increasing the pressure on the global air traffic system, and requires new concepts to overcome capacity limitations for air routes and airports.

11.6.17 Congress recalled that new Air Traffic Management (ATM) concepts for performance-based air navigation also required increased levels of service from the aeronautical meteorological service providers. In particular, the strong linkage between poor weather conditions in terms of low visibility and ceiling, turbulence, icing and severe convection in the wider approach and departure area around hub airports were found to be a strong contributing factor to flight delays. Congress noted that in the European area, the initiative for defragmentation of airspace (enforced by EU legislation), the so-called Functional Airspace Blocks (FAB) could require a re-organization of service delivery to meet the requirements of FABs encompassing several countries and thus affecting the arrangements between WMO Members/ICAO contracting States. Members concerned are obliged to conclude State Treaties regulating their cooperation, including aspects of sovereignty, liability, and cost recovery. Members, especially those in Developing and Least Developed Countries, were encouraged to observe and where they are able, participate in the development of new services for ATM.

11.6.18 Congress took note with appreciation that an ICAO/WMO Asia/Pacific MET/ATM Traffic Management Seminar was held in Fukuoka, Japan in January 2011, to share the experiences and
knowledge and develop understanding of meteorological services in support of Air Traffic Management (ATM). Congress also welcomed the intention of the Japan Meteorological Agency to contribute to the activities related to ATM, based upon its experiences of the establishment and the operation of Air Traffic Meteorological Center.

11.6.19 Congress, having been informed of the development of Network (Net)-centric new Weather Information Exchange Models (WXXM) developed by Air Traffic Management initiatives such as NextGen (in the United States) and Single European Sky ATM Research (SESAR) (in Europe), which were based on industry-standard forms of data representation such as Extensible Markup Language (XML) and Geography Markup Language (GML), requested the presidents of CBS and CAeM to work with the Secretary-General to expedite the transition of traditional alpha-numeric OPMET data representation to these emerging standards for system-wide information management.

11.6.20 Congress recalled that Cg-XV had already encouraged Members to study how the concept of such regional and sub-regional cooperation agreements should be used by them to benefit from economies of scale in areas such as research and development, training and infrastructure planning and deployment. Congress agreed that the development, harmonization and regulation of new services for ATM would be a high-priority issue for the Aeronautical Meteorology Programme in close coordination with ICAO. Success in this area was paramount to a continued involvement of aeronautical meteorological service providers in aviation. Congress also noted the participation of South Africa in the ICAO 37th Assembly in Montreal, Canada during October 2010. In this Assembly, South Africa presented a working paper which highlighted the progress made in the Meteorological Association of Southern Africa (MASA) project on regional meteorological cooperation to facilitate the safety of air transport.

11.6.21 Recognizing the expected impact of climate change on all economic sectors, and the transport and aviation industry in particular, Congress encouraged WMO representatives on different ICAO operational and study groups to develop proposals in line with the GFCS for future inclusion in the requirements for meteorological services to aviation.

11.6.22 Congress adopted Resolution 11.6/1 (Cg-XVI) – Aeronautical Meteorology Programme.
Annex to paragraph 11.6.1 of the general summary

PROGRAMME DESCRIPTION

AERONAUTICAL METEOROLOGY PROGRAMME (AeMP)

Main Long-term Objective

The Aeronautical Meteorology Programme has the objective of furthering the application of meteorology to aviation by providing aviation stakeholders with operational meteorological information required for a safe, regular and efficient air navigation considering also the mutual impact of aviation, the global environment and, in particular, climate change.

Purpose and scope

The AeMP promotes improvements in the capabilities of Members, particularly in developing countries and those in transition, through technology transfer and capacity-building, so as to enable them to serve international and national civil air navigation and to meet the requirements for such services as defined by the relevant bodies of ICAO, national meteorological authorities and civil aviation authorities. The education and training component of the programme, in close cooperation with the relevant programmes of WMO and the ICAO, continually reviews the changing competency requirements of personnel in aeronautical meteorology, and maintains a competency assessment toolkit to enable Members to monitor, verify and document the competency of their personnel. The governance and partnership element of the programme provides guidance material, exchange of best practice models, documentation and training to Members encountering difficulties in providing services to the required standards. These activities include guidance on verification and evaluation of products, individual assistance in difficult cases, and fostering of regional cooperative agreements through relevant Task Teams of regional associations. Close liaison is maintained with ICAO, regulators and Air Navigation Service Providers to translate scientific progress into operational benefits. Areas of work will include new net-centric information systems, up-linking ground- and space-based observations as well as nowcast products to aircraft and ATM units, and issues of Volcanic Ash and Space weather. Estimating impacts of climate change on aviation operations with services helping to adapt to such changes are another area of future priorities.

Governance

The constituent body providing technical guidance to the programme is the Commission for Aeronautical Meteorology which meets every four years, and holds conjoint meetings with the relevant ICAO body typically every 12 years.

Programme Structure

The programme is implemented by expert teams or experts in the following areas:

1. Education and Training;
2. Development of an Aeronautical Forecaster Competency Assessment Toolkit;
3. User Needs for Meteorological Services in the Terminal Area;
4. Governance and Partnership;
5. Coordination of Implementation Activities;
6. Space Weather;
7. Operational Meteorological Data Exchange;
DRAFT RESOLUTION

Res. 11.6/1 (Cg-XVI) – AERONAUTICAL METEOROLOGY PROGRAMME

THE CONGRESS,

Noting:

(1)  Resolution 18 (Cg-XV) - Aeronautical Meteorology Programme,

(2)  The Abridged Final Report with Resolutions and Recommendations of the Fourteenth Session of the Commission for Aeronautical Meteorology (WMO-No. 1053),

(3)  The recommendation by the Executive Council at its sixty-second session (Abridged Final Report with Resolutions of the Sixty-Second Session of the Executive Council (WMO-No. 1059), general summary, paragraph 7.2.17) to the Secretary-General to treat the Aeronautical Meteorology Programme as a future priority issue,

Considering:

(1)  That aviation is a key economic sector in most countries and aeronautical meteorology is an important component in ensuring safe and efficient operation of this sector,

(2)  That aviation meteorology is the main source of income through cost recovery for many National Meteorological Services, particularly in developing countries,

(3)  There is constant pressure within the aviation sector to increase efficiency in the provision of services including those that would lead to improved safety levels,

(4)  That National Meteorological and Hydrological Services are required by the 17th edition of Annex 3 of ICAO, paragraph 2.2.3 (from 15 November 2012) to implement recognized quality management systems with the recommendation that they should be certified according to the International Organization for Standardization Standard 9001:2008,

(5)  That national and transnational Air Traffic Management authorities in several regions are implementing new airspace structures and consequently request the provision of aeronautical meteorological services to aviation in line with the new airspace structures,

(6)  That national and transnational Air Traffic Management authorities and groupings are requesting new and extended services for Air Traffic Management in line with Global Performance Based Air Navigation,

(7)  That improved harmonization of many WMO Aeronautical Meteorology Programme activities including training, capacity-building, scientific development and infrastructure investments would greatly assist in meeting the needs of Global Performance Based Air Navigation,

(8)  That aeronautical meteorology has to play an important role in cross-cutting activities including disaster prevention and mitigation, support for developing countries, in particular least developed countries and small island developing States, for whom aviation is a key development factor,

Further noting Resolution 18 (EC-LXII) and the Abridged Final Report with Resolutions of the Sixty-first Session of the Executive Council (WMO-No. 1041) and in particular its paragraph 4.2.47
concerning the timelines proposed by EC-LXI for compliance with competency (1 December 2013) and qualifications (1 December 2016) requirements;

Decides to modify the AMP Competence Standards as defined in Resolution 18 (EC-LXII) as shown in the Annex to this resolution;

Further decides that the WMO Aeronautical Meteorology Programme is a high-priority programme that should be suitably resourced, thus enabling it to provide help to all Members in need to address the requirements of aviation stakeholders;

Urges all Members to ensure that funds provided for meteorological services to aviation are used to meet ICAO requirements of these services;

Urges all Members to collaborate actively, by making time and expertise of their staff available for the work of expert teams in the implementation of the Aeronautical Meteorology Programme including quality management systems;

Requests the Executive Council, with the assistance of the Commission for Aeronautical Meteorology and other relevant technical commissions, to guide and support the implementation of the Aeronautical Meteorology Programme;

Requests the regional associations to support existing or create, where not yet in place, dedicated regional groups in developing implementation plans for aeronautical meteorology and facilitating Members’ implementation in close collaboration with partner organizations and aviation stakeholders by providing the necessary resources;

Requests the Secretary-General:

(1) To collaborate in the operation or, where necessary, the establishment of these groups with the International Civil Aviation Organization, Agency for Air Navigation Safety in Africa and Madagascar, the European Organization for the Safety of Air Navigation (EUROCONTROL), International Air Transport Association, International Federation of Air Line Pilots’ Associations, International Federation of Air Traffic Controllers’ Associations, regional and national aviation meteorology regulators and service providers as well as user representatives;

(2) To bring this resolution to the attention of all concerned.

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Note: This resolution replaces Resolution 18 (Cg-XV) which is no longer in force.

Annex: 1
Annex to draft Resolution 11.6/1 (Cg-XVI)

AERONAUTICAL METEOROLOGICAL PERSONNEL COMPETENCE STANDARDS

AERONAUTICAL METEOROLOGICAL FOREcaster

An Aeronautical Meteorological Forecaster,

A. For the area and airspace of responsibility,

B. In consideration of the impact of meteorological phenomena and parameters on aviation operations, and

C. In compliance with aviation user requirements, international regulations, local procedures and priorities,

Should\(^1\), in taking into account conditions A to C, have successfully completed the BIP-M\(^2\) and should\(^3\) be able to:

1. Analyse and monitor continuously the weather situation;
2. Forecast aeronautical meteorological phenomena and parameters;
3. Warn of hazardous phenomena;
4. Ensure the quality of meteorological information and services; and
5. Communicate meteorological information to internal and external users.

AERONAUTICAL METEOROLOGICAL OBSERVER

An Aeronautical Meteorological Observer,

A. For the area and airspace of responsibility,

B. In consideration of the impact of meteorological phenomena and parameters on aviation operations, and

C. In compliance with aviation user requirements, international regulations, local procedures and priorities,

Should\(^3\), in taking into account conditions A to C be able to:

1. Monitor continuously the weather situation;
2. Observe and record aeronautical meteorological phenomena and parameters;
3. Ensure the quality of the performance of systems and of meteorological information; and
4. Communicate meteorological information to internal and external users.

\(^1\) ‘Should’ to become ‘shall’ in a November 2016 amendment of WMO-No. 49 Volume I;
\(^2\) As defined in the revised WMO-No. 49 Volume I;
\(^3\) ‘Should’ to become ‘shall’ in a November 2013 amendment of WMO-No. 49 Volume I.