World Meteorological Organization
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COMMISSION FOR AERONAUTICAL METEOROLOGY

OFFICE OF THE PRESIDENT

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Our ref.: WDS/AN/CAeM GENEVA, 7 August 2013

Annexes: 2

Circular Letter from the president of the Commission for Aeronautical Meteorology to members of CAeM

CAeM Circular Letter No. XV-III

Dear CAeM members,

We are just one year from the fifteenth session of the WMO Commission for Aeronautical Meteorology (CAeM-15), which is scheduled to be held in July 2014 in Montreal, Canada, conjointly with the ICAO MET Divisional Meeting. At the same time, you may already be aware that a radical and rapid development of new concepts for air traffic management had been proposed in the ICAO Aviation System Block Upgrades (ASBUs) presented during the ICAO twelfth Air Navigation Conference (AN-Conf/12) held from 19 to 30 November 2012.

These ambitious plans are expected to bring significant and long-term changes impacting the current mode of service provision in aeronautical meteorology, so that I consider it important to update you at this juncture on the priorities and progress of the Aeronautical Meteorology Programme (AeMP), using the recent EC-65/Doc. 4.1(1) (Aeronautical Meteorology – Emerging Challenges) as the baseline reference (see Annex I).

First of all, I am sure you are fully aware of the upcoming Amendment 76 to ICAO Annex 3 with applicability date of 14 November 2013. These changes are to be reflected mutatis mutandis in the *WMO Technical Regulations*, WMO-No. 49, Vol. II, Chapter C.3.1.

However, as the formal ICAO approval process of the Amendment 76 will only be completed after EC-65, it is unlikely that the WMO Secretariat will be able to complete all the necessary WMO procedures, including approval by EC by correspondence, and publishing the amended *WMO Technical Regulations* (WMO-No. 49) in time. Here, I would like to seek your indulgence in making all the necessary preparatory work to implement the new requirements in advance of the publication of WMO-No. 49.

To: Members of the Commission for Aeronautical Meteorology (CAeM-233)

cc: Presidents and vice-presidents of other technical commissions)
Presidents of regional associations)
Secretary-General, ICAO) (for information)
Director-General, IATA)
Executive Administrator, IFALPA)
Director-General, ASECNA)

Secondly, as you would note from the EC document in Annex I, overall good progress has been made in CAeM priority areas especially QMS implementation (which was due to be completed by 15 November 2012, and a solid majority of Members appears to have achieved compliance) and the harmonization and improvement in the detection and forecasting of Volcanic Ash clouds in the atmosphere through the WMO-IUGG Volcanic Ash Advisory Group. More efforts will however be needed for Members to complete the implementation of Aeronautical Meteorological Personnel Competency Standards by 1 December 2013 as given in the new edition of the *WMO Technical Regulations* (WMO-No. 49). The success will hinge to a great extent on Members' focus on governance and compliance culture which have been highlighted by the EC discussions. Feedback from some Members also reveals that it may be important to engage aviation users and regulators, e.g. Civil Aviation Authorities (CAAs), in documenting the "mapping" of the global requirements to the national practices, and such user consultation process could actually benefit the Aeronautical Meteorology (AeM) service provider in learning from the CAA practices in personnel licensing and in gaining user recognition of the implemented system.

Thirdly, as I mentioned upfront, it is very important that we follow closely the ASBUs developments determined by the ICAO ANConf/12 as they will surely shape the future evolution or even drastic changes of AeM service delivery in the coming decades.

In this connection, you may be interested in the elaborations in my letter dated 10 January 2013 (Annex II) to the WMO Secretary-General and copied to the WMO President in relation to the future status of AeM in the WMO Strategic and Operating Plans 2016-2019. One point to note, however, in the light of more recent discussions in various ICAO platforms, the timing and implementation schedules of the MET-related ASBUs could be postponed by three years considering the lack of maturity of a number of proposals which will appear as roadmaps for further deliberations by the Conjoint WMO CAeM/ICAO MET Divisional Meeting in 2014.

The ICAO Council, in close cooperation with the WMO AeMP, has recognized the threats to the safety, economy and regularity of aviation that could be caused by the emerging impacts of climate change and variability, with a clearly visible tendency to more frequent, longer lasting and widespread high-impact weather situations impacting not only aircraft operations, but also long-term planning of infrastructure (e.g. hardening coastal airports for sea level rise and storm surges, increased need for night operations due to higher temperatures and thus reduced maximum take-off weight with ensuing fuel restrictions). WMO and its institutional partners in the Global Framework for Climate Services will be asked to investigate new and improved services to ensure the continued sustainable development of aviation in a changing climate.

In any event, considering the substantial changes and demands for actions by Members in upgrading AeM services in response to new user requirements, in my view, it is of paramount importance that AeM should remain a priority area of WMO in the next financial period. Here, I would urge everyone of you, as members of CAeM, to get this message across to your Permanent Representatives so that a well-informed decision could be made by the next Congress on this important matter.

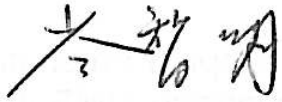
Added to this already heavy agenda for AeM in the future are the recent organizational developments in the field of air traffic management and regulations in Europe – amongst those a controversial proposal for AeM service provision to be open for competition. Should this proposal be implemented by the European Commission, there will certainly be cascading impacts in other regions.

Such a drastic change could seriously affect the viability of many current service providers, and requires sound risk management. Regional cooperation and improved coordination appears as a responsible strategy for future provision of regionalized AeM services.

Full implementation of the WMO WIGOS, sharing of best practices, R&D resources, and availability of training, twinning and mentoring on a regional level will contribute to a successful retention of aviation as a core user. Members should start to consider their roles and institutional changes such as regionalized cost-recovery mechanisms for future service delivery, and be ready to actively participate in the Conjoint Meeting discussions to determine the best way forward for AeM in the decades to come.

Finally, I would like to mention that effective governance and proactive partnership will be key to the AeM service provision in the future. In this connection, you will hear from the CAeM Expert Team on Governance and Partnership (ET/GP) as they will play a pivotal role in developing and enhancing guidance material in these areas in response to the request by EC, and in communicating the latest developments to Members. Please stay connected and provide your updated contacts to Ms Cyndie Abelman, Chair of ET/GP (e-mail: Cyndie.Abelman@noaa.gov).

Yours sincerely,



(C.M. Shun)
President, CAeM

World Meteorological Organization **EC-65/Doc. 4.1(1)**

EXECUTIVE COUNCIL

Submitted by: Second Vice-President

Date: 24.V.2013

SIXTY-FIFTH SESSION
Geneva, 15 to 23 May 2013

Original Language: English

Status: **APPROVED**

EXPECTED RESULT 1

AGENDA ITEM 4.1: SERVICE DELIVERY

AERONAUTICAL METEOROLOGY – EMERGING CHALLENGES

SUMMARY

DECISIONS/ACTIONS REQUIRED:

(a) Encourage Members in a position to do so to support those Members experiencing difficulties in the implementation of Quality Management Systems for Aviation through twinning/mentoring arrangements by providing experts time and best practice examples;

(b) Urge Members to progress the implementation of the priority issues QMS and Personnel Competence standards, and to provide expertise and support to those Members experiencing difficulties;

(c) Urge Members to provide up-to-date status information on their implementation of priority issues including SIGMET issuance to populate the CPD;

(d) Adopt Resolution: 4.1/1 (EC-65).

CONTENT OF DOCUMENT:

The Table of Contents is available only electronically as a Document Map*.

* In MS Word 2007 or 2003, go to “View” > “Document Map”, or click on the “DocMap” button on the “WMO Tools” toolbar. In MS Word 2010, go to “View” > “Navigation Pane”. In MS Word on a Mac, go to “View” > “Navigation Pane”, select “Document Map” in the drop-down list on the left.

APPENDIX A:
DRAFT TEXT SUPPORTING THE DECISIONS OF EC-65 – FOR INCLUSION IN THE GENERAL SUMMARY

4. IMPLEMENTATION OF THE WMO STRATEGIC PLAN 2012-2015, WITH FOCUSED PRIORITY AREAS (AGENDA ITEM 4)

4.1 Service Delivery (agenda item 4.1)

Aeronautical Meteorology – Emerging Challenges

Quality Management Systems for aeronautical meteorological services

4.1.1 The growth of global aviation currently varies markedly across different regions. In areas of traditionally high economic activity and a strong aviation sector such as North America and Europe, the density of traffic is beginning to impact further growth potential, and thus significant investments in aviation projects such as the US NextGen air traffic management system, the European SESAR Joint Undertaking, the Japanese CARATS and other emerging projects in Asia and the Middle East are being launched to better manage air traffic in these regions. Official ICAO Air Traffic Forecasts (of Revenue Passenger Kilometres) see a continued robust growth for South and Central America (around 7 percent/a), Southeast Asia and the Middle East (up to 9 percent/a) and also signs of accelerating growth over parts of Africa. The crucial issues to be addressed by the Aeronautical Meteorology Programme include the implementation and further development of Quality Management Systems (QMS), assessment and documentation for the competency of personnel, SIGMET deficiencies, new services to Air Traffic Management (ATM) and the predictions and warnings of volcanic ash, space weather and nuclear and chemical emergencies. The Council recalled the need to align the programme with the WMO strategic planning process and the new ICAO Global Air Navigation Plan with its stepwise Aviation System Block Upgrades (ASBU). The Council further requested CAeM, together with ICAO, to conduct workshops dealing with the development and implementation of suitable key performance indicators for aeronautical meteorological services beyond the accuracy criteria cited in ICAO Annex 3 to guide the direction of development.

4.1.2 The Council recalled that aeronautical meteorology was a priority for WMO because for many NMHSs the aviation sector is a crucial client on which the viability of many NMHSs depended. For a part of the developing world, tourism is a central part of the national economies, relying mostly on aviation as the carrier of tourists. A globalized economy with separation of locations for management, marketing and production sites relies entirely on rapid access by safe and efficient aviation. In the view of WMO's partner organization, the International Civil Aviation Organization (ICAO), the future development of aviation will be building on the pillars of safety and quality management, use of advanced technologies for operations and Air Traffic Management, regionalization of services to aviation, and establishment of high standards of infrastructure, personnel competence and efficiency. For Members and their meteorological service providers to civil aviation, these challenges will require a significant increase in their efforts that will be made possible by a much increased regional and global level of cooperation.

4.1.3 In this respect, the Council recalled that EC-64 had requested Members to provide in-kind contributions at current, or wherever possible increased levels, to the Aeronautical Meteorology Programme particularly in support of developing country Members. The Council was reminded that there are many challenges for NMHSs in providing services to aviation which are reflected in the five top level priorities of the Commission for Aeronautical Meteorology below:

(a) Implementing and sustaining QMS noting that a number of Members appear to have missed the ICAO implementation deadline of 15 November 2012;

(b) Undertaking assessment and documentation of the competency of Aeronautical Meteorological Personnel (AMP) noting the WMO deadline of 1 December 2013;

(c) Improving the efficiency and effectiveness of SIGMET issuance;

(d) Improving services to aviation, in particular for air traffic management in high-density airspace, but also for average density areas;

(e) Improving Members' ability to respond to volcanic ash and other large-scale, high-impact events, e.g. space weather, tropical cyclones and nuclear incidents.

Support for the Twinning/Mentoring Framework in Quality Management Systems (QMS) Implementation

4.1.4 The Council recognized that, following the expiry of the deadline on 15 November 2012, ICAO provisions concerning the quality management of meteorological services for international air navigation were now upgraded from a Recommended Practice to a Standard. The recent survey undertaken by the Secretariat was missing replies from a large number of Members.

4.1.5 The Council was, however, informed of an agreement in principle between the relevant WMO and ICAO Secretariats that Members not complying with the Recommended Practice of obtaining certification in accordance with the ISO 9001 Standard, should, as a minimum, provide evidence for having achieved the following milestones:

(a) Evidence of a contractual arrangement between the Meteorological Authority and Service Provider with clearly established responsibilities;

(b) Availability of quality policy, quality manual and complete set of work instructions/ process descriptions at all workplaces, and routine use of these documents by staff;

(c) Documented evidence of user consultation and feedback (publications, questionnaires, records of user meetings, actions stemming from these);

(d) Evidence of corrective and preventive action processes; and

(e) An internal audit plan, audit reports and documented follow-up decided by a Management Review meeting.

4.1.6 Noting that some Members lacked capacity for internal audits, the Council re-iterated that a 'twinning' or 'mentoring' framework was expected to help overcome this critical issue. The Council, noting Resolution 26 (Cg-XV), appreciated the commitment of the relevant Task Team on the QMF to actively support the establishment of twinning/mentoring arrangements that would include the training of internal auditors on a regional basis, as a part of the WMO's QMS implementation activities. The Council also encouraged the regional associations and their relevant working structures, in particular those for a language community, to play an active role in this activity coordinating also with non-NMHS service providers.

4.1.7 Noting further the recommendations developed by the Meeting of Presidents of Technical Commissions and Regional Associations in January 2013, the Council requested the Commission for Aeronautical Meteorology and the Secretary-General to provide Members with updated information on the perceived risks to their NMHSs or other service providers of failing to comply with new and stringent ICAO and WMO regulations.

4.1.8 The Council noted with concern that several Members had apparently not been able to undertake even initial steps towards the implementation of the QMS and WMO Competence Standards, in some cases due to a serious underfunding of the NMHS or service provider. It was

noted that in many of these cases, the costs for air navigation services, which should include those for aeronautical meteorological services, failed to reach the organization providing the service. As one of the fundamental tenements of QMS stipulated that such a system can only be considered functional if a firm commitment by the executive management and the parent organization (government ministry, department or similar) is demonstrated by the provision of adequate resources for the operational activities and the application of the QMS. The Council thus requested the Secretary-General to undertake, in close coordination with ICAO, an evaluation of the cost recovery mechanism and/or government funding situation in Members experiencing such extreme difficulties, and to make the findings of these evaluations available to the Members concerned with a view to improving their resourcing in a sustainable way. The Council strongly requested further ICAO/WMO efforts, e.g. in the form of conjoint expert missions to Members or subregions, in order to resolve such funding issues where they severely affected compliance with ICAO and WMO regulations.

Competency of Aeronautical Meteorological Personnel (AMP)

4.1.9 The Council, noting the deadline for implementation of AMP Competency Standards of 1 December 2013 as given in the new edition of the WMO Technical Regulations (WMO-No. 49), Vol. 1, was informed of rapid progress in the implementation of the CAeM Competency Assessment Toolkit in most WMO Regions with the help of the relevant task and expert teams of the Commission for Aeronautical Meteorology. The Council warmly welcomed the holding of AMP competency assessment workshops hosted and facilitated by several Members, and supported the cost-effective mapping of required competencies to web-based and other training material, with a view to addressing any competency deficits detected by the assessments. The Council appreciated the highly productive cooperation with the US COMET programme, which has provided access to a range of learning modules including a newly developed module on QMS. These are available on the COMET website at https://www.meted.ucar.edu/.

4.1.10 Recognizing the important role that Regional Training Centers (RTCs) have in the successful implementation of the AMP Competency Standards, the Council urged the ETRP and CAeM to coordinate with the RTC network and other training and education institutes on the further development of mechanisms, documented in line with QMS principles, to support the training, education and ‘best practices’ in the assessment of AMP. In this context, the Council warmly thanked the significant contributions to the work of the Expert Team on Education, Training and Competencies (ET-ETC) by the staff and management of the CIMH, which played a pivotal role in the success of this expert team.

4.1.11 The Council, recognizing also the significant resources needed by Members to comply with this new regulation, considered mitigation options for Members that would have difficulties in assuring that all relevant personnel be assessed and found competent by 1 December 2013. It recalled the request by the Members present at the recently held Technical Conference in connection with the sixteenth session of RA IV in Curaçao to complete the cycle of competency assessment workshops by holding such an event for RA III and RA IV in 2013.

4.1.12 In a QMS sense, the first priority for Members would be to establish a clear plan for the assessment of competencies, including:

(a) To create teams of assessors building on the individuals that have participated in WMO assessment training workshops;

(b) To establish a prioritized list of personnel that requires assessment;

(c) To develop, as a first step, an initial assessment methodology based on desk-top evaluations of quizzes, portfolios and existing evaluations including verification of products;

(d) To develop a prioritized plan for individual, in-depth assessments of personnel based on the results of the desk-top evaluations;

(e) An estimate of the time and resources needed for the completion of these steps;

(f) To inform the Quality Management Team of the NMHS and the WMO Secretariat of this estimate through suitable focal points or rapporteurs;

(g) To seek cooperation arrangements with other Members of the region, in particular where numbers of staff and resources are very limited.

SIGMET Advisory Trial

4.1.13 The Council noted that ICAO, in close collaboration with WMO and with the assistance of France, South Africa and China, had conducted a SIGMET advisory trial in RA I and RA II in mid-2011, in order to address long-standing SIGMET issuance deficiencies. The Council noted with concern that, although RA IV was not part of this exercise, some Members in the Region struggled to comply with the relevant ICAO regulations due to a severe lack of personnel and financial resources made available to them. The Council noted with concern that some aviation stakeholders and authorities were exerting strong pressure on ICAO to transition to a more phenomena-based, regionalized provision of Meteorological Hazard Advisories, which would possibly affect the role and resourcing of some of the smaller Members in the Region.

4.1.14 In the case of severe resource deficiencies, the Council further encouraged those Members concerned to seek the temporary transfer of their SIGMET responsibilities through negotiations involving ICAO to a Member in a position to provide this service on their behalf until such time that the necessary capabilities have been re-established, and noted Resolution 6 (EC-64) – Alternate means of compliance with ICAO SIGMET Provisions.

4.1.15 The Council further noted the requirement by aviation users that SIGMET information be better harmonized across the boundaries of Flight Information Regions (FIR), and encouraged the establishment of regional coordination mechanisms, making best use of existing CAeM Aviation Task Team structures and ICAO regional planning and implementation groups to liaise between Meteorological Watch Offices to support this effort.

4.1.16 The Council having been informed of plans by ICAO to create a structure of SIGMET advisory centers as developed during the advisory trial in 2011, encouraged Members with adequate resources in competent personnel and advanced infrastructure to cooperate with this project by closely following the ICAO regulatory process and exploring the possibility to become a candidate advisory center.

Information relating to the status of SIGMET implementation by Members

4.1.17 The Council, having been informed of significant information deficits concerning the implementation status of such priority items as QMS, Competency Assessments and SIGMET issuance, strongly requested Members to provide the necessary status information to the Secretariat by timely replies to relevant questionnaires. The Council reminded Members that only complete, up-to-date and accurate information on the implementation status can be used to prioritize Secretariat and other support to Members. The Council thus adopted Resolution 4.1/1 (EC-65).

Meteorological services for air traffic management and data-centric information exchange models

4.1.18 The Council noted the work of the Expert and Task Teams jointly established by CAeM and CBS to drive and facilitate the migration of aeronautical meteorological information (such as METAR/SPECI, TAF and SIGMET) to a XML/GML digital form, formatted in accordance with a

globally interoperable information exchange model. To this end, and recognizing regional air traffic management improvement programmes such as NextGen (United States), SESAR (European Union) and CARATS (Japan), the Council noted that ICAO, with the assistance of WMO, was addressing the future system-wide information management of aeronautical meteorological information that will support the future global air traffic management environment. The latest version of the ICAO Global Air Navigation Plan (GANP) encompassed a system of sequential Aviation System Block Upgrades (ASBU) that were designed to take full advantage of emerging new technologies in all areas of aviation to cope with the expected growth of traffic and the ensuing increased traffic density.

4.1.19 Aviation meteorology is seen as a fundamental enabling factor for the transition to new, trajectory-based air traffic management concepts, for which highly accurate, reliable and detailed meteorological information will be a pre-requisite to maintain and improve safety and economy while reducing the environmental impact in an increasingly dense air space. The Council further supported the development of new, tailored meteorological services for Air Traffic Management with emphasis on high-density air space and aerodromes by a newly established Project Team of ICAO in close cooperation with WMO, whereby the CAeM Expert Team on Meteorological Service to ATM and Meteorological Information Exchange (ET-M&M) is providing the scientific and technical input.

4.1.20 The Council, however, expressed concern about the accuracy and performance requirements for data and information currently discussed at the relevant ICAO groups, and urged the Commission for Aeronautical Meteorology (CAeM), the Commission for the Atmospheric Sciences (CAS) and the Commission for Instruments and Methods of Observation (CIMO) to study and evaluate these emerging requirements in terms of scientific and operational feasibility, cost implications and realistic implementation time-lines. Considering the future development of net-centric technologies in aeronautical meteorological services, the Council noted the importance of addressing issues of quality, integrity and reliability of aeronautical meteorological data and information, and its protection from unauthorized access, when introducing SWIM principles in support of the future global air traffic management system.

Volcanic Ash

4.1.21 The Council strongly supported the work of the WMO/IUGG Volcanic Ash Scientific Advisory Group. It was informed that since its establishment in March 2010, this group had played a significant role in advancing the scientific understanding of volcanic ash detection and forecasting in support of continued safe and efficient civil aviation operations. The Council was also informed of the recent conclusion of the ICAO International Volcanic Ash Task Force (IVATF). IVATF had involved many Members and resulted in a large number of recommendations to go forward to the International Airways Volcano Watch Operations Group. The Council noted that the recommendations will have procedural, training, and resource implications for many Members and requested the president of CBS to cooperate with CAeM in providing all necessary support to the Volcanic Ash Advisory Centres, Meteorological Watch Offices and Volcano Observatories for this challenging task. The Council encouraged in particular those Members with a large number of active volcanoes to review their activities and involvement in this process.

4.1.22 The Council further noted with appreciation that a number of “Best Practice Seminars” on Volcanic Ash Operations, initiated by ICAO with strong WMO involvement, had taken place, twice at the ICAO HQ in Montreal in 2011 and 2012, and once in parallel with a very successful WMO Volcanic Ash Workshop in Citeko, Indonesia in 2013. Also a successful dispersion model ‘inputs and outputs’ workshop was held at the NOAA Center for Weather and Climate Prediction (NCWCP) Facilities in 2012.

4.1.23 The Council was informed of an emerging consensus within the Volcanic Ash User Community that a gradual transition from determining the location of “any ash” towards a more

quantifiable prediction of ash loading would require an upgrade of the relevant observing capabilities. The Council thus noted with appreciation that a joint letter by the Secretaries-General of WMO and of ICAO to all Members and Contracting States has strongly requested the Members /Contracting States of the two organizations to enhance and support the observation programmes that will allow to objectively determine the location, height and intensity of volcanic ash clouds. Only an integrated observing system with both ground and space-based observing systems could be expected to deliver the necessary resolution, completeness and reliability of Volcanic Ash (as a specific form of litho-aerosols). Recognizing this, the Council requested that systems developed for volcanic ash observing be incorporated into WIGOS.

Other emerging issues

4.1.24 Aviation as a crucial sector of the transport industry is required to establish sound safety risk management procedures. In this respect, the establishment of a CAeM-CBS inter-commission task team on space weather is developing a concept of operations in close cooperation with ICAO on the potentially harmful effects of solar storms on communications and navigation systems and the health of passengers and crews. The Council strongly supported this cooperation between ICAO, CAeM, CBS and space weather agencies with a view to develop and agree on procedures for, and content of, the data on space weather disturbances and their potential effects on the flight safety.

4.1.25 Similar efforts are underway to provide meteorological support to aviation in the event of the release of chemical and/or nuclear hazardous substances. This work is again undertaken as a multi-disciplinary effort with other UN partners such as WHO, IAEA, ICAO, UNWTO and other stakeholders. The importance of this work was highlighted by the recent nuclear incident in Fukushima (Japan). A draft Terms of Reference for a joint working group of these organizations, to coordinate and strengthen the capacity for emergency response activities in the global transport sector, has been drafted and should be agreed shortly.

APPENDIX B:
DRAFT RESOLUTION
Draft Resolution 4.1/1 (EC-65)

STEPS TO UNDERTAKE IN ACHIEVING COMPLIANCE WITH WMO AND ICAO REGULATIONS

THE EXECUTIVE COUNCIL,

Noting the potentially serious legal and safety consequences of non-compliance with essential ICAO and WMO Standards and Technical Regulations,

Noting further:

(1) The importance of aviation as a key to sustainable development,

(2) The binding agreements between WMO Members/ICAO Contracting States as signatories to the WMO Convention and the ICAO Convention including their relevant Annexes,

Considering the role of cost recovery for services to aviation which depends on demonstrated compliance with the regulations cited above,

Considering further the potentially negative effects on the standing and reputation of NMHSs and other providers of meteorological services to civil aviation in case of a public notification by ICAO of identified deficiencies in their services,

Urges:

(1) That WMO Members should review the status of implementation of the AEM requirements promulgated by ICAO;

(2) That Members should consider making experts' time and expertise available for twinning and mentoring arrangements supporting Members experiencing problems in the development, implementation and maintenance of mandated systems such as QMS, Competency Assessment and Documentation, and SIGMET issuance, and that the Commission for Aeronautical Meteorology with the help of the Task Team on Quality Management Systems Implementation (TT-QMS) be charged to help arrange and support such twinning and mentoring agreements between Members;

(3) That Members who, despite their best efforts, are unable to meet the ICAO and WMO requirements in conformity with the relevant Technical Regulations and ICAO Annex 3 inform both the WMO Secretariat and their appropriate ICAO Regional Office of the current state of compliance, together with a detailed plan for remedial action (which milestones are to be completed, by when) and a realistic estimate for reaching a state of compliance with the ICAO and WMO Regulations. Such a notification of the international organizations, while not replacing compliance, would at least help reduce a serious legal and organizational risk (in terms of liability) to the Members designated Meteorological Authorities and Service Providers;

(4) That WMO review current cost recovery guidelines in conjunction with ICAO, and establish additional guidelines for Members that provide a global or regional advisory service for aviation.

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WDS/AN/CAeM, ANNEX II
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Your ref: SG/ASG/SPO/SOP2016-2019

10 January 2013

By Fax: (41) 22 730 81 81

Secretary-General
World Meteorological Organization
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CH-1211 Genève 2
SWITZERLAND

Dear Sir,

Inputs for WMO Strategic and Operating Plans 2016-2019

I refer to your letter dated 1 August 2012 calling for inputs from Regional Associations and Technical Commissions to the WMO Strategic and Operating Plans for 2016-2019. The Commission for Aeronautical Meteorology (CAeM) is pleased to provide the following inputs taking into consideration outcomes from:

(a) Joint Meeting of the PRAs and PTCs held in Geneva on 28 October 2012;
(b) Twelfth Air Navigation Conference (ANConf/12) of the International Civil Aviation Organization (ICAO) held in Montreal on 19-30 November 2012; and
(c) Fifteenth Session of the Regional Association II (Asia) (RA II-15) held in Doha on 13-19 December 2012 (which was the first regional association session after Cg-Ext(2012)).

First of all, the CAeM has the following five top level priorities for 2012-2015, which reflect the current challenges (and opportunities) faced by Members as for many NMHSs, the aviation sector is a crucial client on which their viability depends:

(1) Implementing and sustaining QMS noting that a number of Members may have missed the ICAO implementation deadline of 15 November 2012;
(2) Undertaking competency assessment of Aeronautical Meteorological Personnel (AMP) noting the WMO deadline of 1 December 2013;
(3) Improving the efficiency and effectiveness of SIGMET issuance;
(4) Improving services to aviation in particular for high-density airspace and aerodromes;
(5) Improving Members' ability to respond to volcanic ash and other large-scale, high-impact events, e.g., space weather, tropical cyclones and nuclear incidents.

RA II-15 noted that the WMO's priorities will be reviewed and revised prior to Cg-17 in 2015 and considered that, while it was very early to settle these priorities now, Aeronautical Meteorological Services remain a priority issue in RA II and that the RA II Management Group should keep this issue under consideration for input into the planning process closer to Cg-17. In particular, RA II-15 expressed concern regarding the progress and pressing deadlines related to aviation services (related to priorities (1) and (2) above), which should be met within the current financial period. It further noted the emerging new ICAO concepts for aviation meteorological services, in particular, the Aviation System Block Upgrades (ASBUs) which will lead to new data-centric environment, system-wide information management, and Single Authoritative Source requirement of weather information, bringing significant challenges (and opportunities) to Members. These would require prioritized and focussed actions by WMO in the future.

RA II-15 also noted with concern that only about one third of the members in the Region had implemented a QMS, and that about one third had implementation activities underway, and about one third had yet to commence implementation in a meaningful way. Implementation of the competency standard for AMP has yet to follow with a WMO deadline of 1 December 2013. While the twinning/mentoring assistance to be arranged for the members in need on QMS and competency standard is expected to require persistent efforts in the years to come, the latest visits by the WMO secretariat to several LDCs currently not implementing QMS have revealed that the critical issue with many of these LDC members appears to be linked to issues of governance, user focus and sometimes outdated structures and work practices which require a more fundamental review before it makes sense to describe the existing practices in terms of a QMS. It should be further noted that the WMO qualification requirement for Aeronautical Meteorological Forecaster has a deadline of implementation of 1 December 2016 and thus the provision of assistance to Members in need in this regard will continue to be a challenge.

At the same time, the recent ICAO ANConf/12 has endorsed the concept of stepwise upgrades to the Air Traffic Systems, to be implemented in several major steps called Aviation System Block Upgrades (ASBU). The time horizon for the last step would be around 2028, but already the "0-level" (the required status quo) could prove challenging to a number of Members. As a positive development, there is now a full recognition of the role of Meteorology in fulfilling the ambitious plans for system upgrades in Air Traffic Management, such as:

(i) ICAO is to develop a global air traffic management-meteorological (ATM-MET) information integration plan; as a first step the creation of a Project Team (PT-MARIE) with participation of both ATM and MET is a clear step in the right direction;
(ii) ICAO is to define the meteorological information exchange model as an enabler for system-wide information management (in close coordination with WMO through a Task Team of CBS and CAeM experts);
(iii) the next Conjoint ICAO Meteorology Divisional Meeting / WMO CAeM-XV Session, to be held in July 2014, is tasked to develop initial provisions in ICAO Annex 3 relating to the ATM-MET integration plan, plus a long-term strategy to support their further development and full implementation (in coordination with WMO); and
(iv) ICAO ANConf/12 duly recognized that some support would be beneficial for Members/States struggling to meet their obligations in the implementation of the ASBUs-MET.

These developments will require a set of priorities and actions on the side of WMO Members and the AeMP, such as:

(i) To coordinate input into and assist with implementation of ASBU-MET 'One Sky' requirements. Members' will need to develop capabilities in terms of review, development and implementation of underpinning science and infrastructure;
(ii) Success of this development will depend on the development of guidance and training for user-focused service delivery with appropriate performance metrics provided by standardized verification and validation methods; and the 'system-wide'

meteorological information exchange model;

(iii) Air navigation MET service provider governance: Members are expected to require support and guidance to implement and maintain standards and regulations for QMS and AMP, and cooperation agreements to enable regionalized service delivery and cost recovery schemes;

(iv) High impact aviation weather hazards requirements: Coordinate input into and assist with implementation of ICAO requirements for adequate advisory warning services such as SIGMET, nuclear emergency, volcanic ash and space weather service delivery mechanisms;

(v) A review and update of the WMO-ICAO Working Arrangements to reflect new and emerging technologies, standards and methodologies (e.g. the regulations concerning “MET codes” require a complete redrafting following the change to meteorological information exchange model. The introduction of AMP competency standards and separate qualifications requirements needs to be reflected in the relevant chapters on training etc).

To facilitate and support a successful realization of the priorities cited above, the Commission and the AeMP propose the following initial “educated guess” of the top level priorities, KOs and KPIs/KPTs for 2016-2019:

(1) Assist Members-in-need to complete implementation of QMS, qualification and competency assessment of AMP, and SIGMET improvement measures (KO and KPI/KPT – additional training/twinning/mentoring assistance available to Members; majority of Members-in-need achieving implementation by 2018);

(2) Develop guidance and coordinate training for Members to implement the Block 0 upgrades, including enhancement measures to monitor and respond to high-impact events (volcanic ash, nuclear radiation emergencies and space weather) (KO and KPI/KPT – guidance and training available to Members; majority of Members achieving implementation by 2018);

(3) Develop guidance and coordinate training for key Members with a regional role to implement the new meteorological information exchange model (KO and KPI/KPT – guidance and training available to Members; 50% of Members achieving implementation by 2018; majority of Members achieving implementation by 2023);

(4) Develop guidance on matters including standardized verification and validation methods, and arrangements to facilitate regionalized model of service provision, for Members to implement subsequent Block 1 upgrades and the corresponding ATM-MET information integration plan (KO and KPI/KPT – guidance, training and assistance available to Members; 50% of Members achieving implementation by 2018; majority of Members achieving implementation by 2023).

To summarize, it is apparent from the above that aeronautical meteorological services will undergo substantial paradigm and institutional changes in the next decade with significant challenges to Members. From this it becomes obvious that aeronautical meteorological services must remain a WMO priority area for 2016-2019, so that focused and prioritized actions by the WMO Secretariat and its Members can be resourced to address these challenges. I am happy to elaborate further at the upcoming 2013 PTC meeting and Joint PRA/PTC meeting.

Yours faithfully,

(CM Shun)
President, CAeM

c.c. Mr David Grimes, President of WMO and Chairperson of the EC Working Group on WMO Strategic and Operational Planning (WG/SOP)